CHAPTER 2

FACIAL ATTRACTIVENESS, SEXUAL SELECTION, AND PERSONNEL SELECTION: WHEN EVOLVED PREFERENCES MATTER

Abstract

Using an evolutionary perspective, we looked at sex differences in the influence of facial attractiveness of applicants in hiring decisions, and determined whether expected contact intensity with applicants and experience in personnel selection influenced these preferences. Students and professionals selected mock applicants who varied on attractiveness for jobs that differed on expected contact intensity. We found effects of evolved preferences regarding mate selection and intrasexual competition when the expected contact intensity was high. People showed a preference for attractive opposite-sex applicants (mate selection). Furthermore, women preferred female applicants with low attractiveness over female applicants with high attractiveness (intrasexual competition). We found no salient differences between professionals and students.

The heuristic ‘what is beautiful is good’ permeates our cognitions. Attractive people are considered to be more competent (Jackson, Hunter, & Hodge, 1995), especially socially competent (Eagly, Ashmore, Makhijani, & Longo, 1991), and they are judged more positively (Langlois et al., 2000). A large body of evidence shows that due to this “attractiveness heuristic” attractive applicants do have an advantage in hiring decisions (Cesare, 1996; Chiu & Babcock, 2002; see Marlowe, Schneider, & Nelson, 1996), although the relation between attractiveness and competence in reality seems to be small (Langlois et al., 2000; Zebrowitz, Hall, Murphy, & Rhodes, 2002). Moreover, professionals are as susceptible to attractiveness bias as non-professionals are (Cesare, 1996; Gilmore, Beehr, & Love, 1986; Hosoda, Stone-Romero, & Coats, 2003; Marlowe, Schneider, & Nelson, 1996; Olian, Schwab, & Haberfeld, 1988). From the point of view of decision theory, attractiveness should only be a criterion in personnel selection when attractiveness has a presumed or observed influence on job success. For some high social contact jobs attractiveness might be important, but for most other jobs attractiveness will not add to job success; yet, highly attractive applicants (particularly highly attractive women) are often preferred. In our view the preference begs for a theoretical explanation. Moreover, the effects of the interaction of sex of applicants and sex of assessors with attractiveness of applicants in selection have not yet been systematically examined. Cesare (1996) found more bias against non-attractive women than against non-attractive men. Hosada et al. (2003)

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found no sex differences in their meta-analysis. They caution that this counterintuitive finding could be due to the general nature of their study and that sex differences in attractiveness might depend on specific constellations of assessors, applicants, and job demands (Feingold, 1992; Feingold, 1994; see also Jackson, Hunter, & Hodge, 1995).

An evolutionary psychology perspective could well explain the preference for attractiveness and is able to predict when interactions between sex of assessor and sex of applicant in the importance of attractiveness will occur, by relating choices in personnel selection to preferences to mate choice and intrasexual competition. Men and women differ in the preferences they have for same-sex and opposite-sex attractiveness (Barrett, Dunbar, & Lycett, 2002; for overviews, see Buss, 1999b; Buss & Schmitt, 1993; Miller, 2000; Ridley, 1994). A universal finding is that men place more value on youth and good looks than do women. Moreover, what is a pretty face is not arbitrarily or culturally defined, but has deep evolutionary roots having to do with fertility and youth (Fink & Penton-Voak, 2002; Johnston, 1999). For instance, in females, neotenous traits in faces (i.e., childlike features such as large eyes, small nose, and small ears) are considered to be universally more attractive (e.g., Jones & Hill, 1993). Moreover, a large number of studies have shown that symmetrical faces are often considered to be attractive (Hume & Montgomerie, 2001; Jones et al., 2001; for recent studies, see Mealey, Bridgstock, & Townsend, 1999). The relation between symmetry and attractiveness may in fact be mediated by judgement of apparent health; there is an opposite-sex bias in sensitivity to facial symmetry when judging health from photographs (Hume & Montgomerie, 2001; Jones et al., 2001; but see Kalick, Zebrowitz, Langlois, & Johnson, 1998; Milne et al., 2003; Rhodes et al., 2001). Furthermore, symmetry is related to reproductive behaviour, with symmetrical individuals having higher levels of sexual activity with different partners (for recent overviews see Gangestad & Simpson, 2000; Kowner, 2001; Mealey, Bridgstock, & Townsend, 1999). In sum, it seems that the heuristic to focus on attractiveness has some biological basis: Facial attractiveness based on facial symmetry is a visual marker for fertility, genetic quality, and health.

An evolutionary perspective provides a parsimonious and powerful explanation for the findings why we find certain faces beautiful and others not, and why men and women differ in their preferences; it also puts other preferences and behaviours that have organizational consequences like hierarchical tendencies and power use in perspective (for recent overviews and discussions of the application of evolutionary approaches in the study of organizational behaviour, see Nicholson (1997; 2000; 2001), Pierce and White (1999), Sandelands (2002) and Colarelli (2003). It explains these findings, and connects them to a wealth of other findings regarding human and animal behaviour by referring just to one simple concept, derived from general evolution theory: sexual selection. In a sexual reproducing species like humans, sexual partners have to be selected and competed for: Darwin called this “sexual selection”. Those people in our evolutionary past who had a set of cognitions that enabled them to choose the right partners, had a competitive advantage in producing healthy offspring. We inherited their heuristics in that we also use cognitions that make us choose fertile partners of high genetic quality, good development and health. Facial attractiveness is a proxy for these things; people who found the right indices attractive chose partners of high quality, and because of that, they had more surviving offspring. This inherited heuristic (i.e. the set of cognitions that
regulate partner choice based on (facial) attractiveness), will slightly differ between men and women because in the course of human evolution, men and women met different restrictions regarding the number of offspring they could produce. Men were restricted by sexual access to fertile women, while women were restricted by the limited capacity of their body to produce children. For men it was adaptive to choose women who displayed cues of high fertility. Because fertility, health and good development are correlated with appearance, men will tend to place higher value on "good looks" and youth than women do. Information about good looks is for a good part gathered from facial cues (Thornhill & Grammer, 1999). Therefore, men are expected to place higher value on a pretty face than women do.

Women’s ability to produce offspring is not restricted by sexual access to fertile men, as most men are fertile until the day they die. Rather, women are limited by the capacity of their own bodies to produce offspring. To be adaptive, women pay more attention to the ability to invest in offspring, which is far less correlated with facial attractiveness than direct physical cues such as health and fertility. Examples of proxies for the ability to invest in offspring are status and intelligence; these characteristics are valued more by women than by men in prospective partners (see for an overview and an excellently balanced comparison study Li, Bailey, Kenrick, & Linsenmeier, 2002).

Same-sex individuals compete for partners of the other sex. This is referred to as intrasexual competition. This is the mirror of partner choice: What the opposite sex likes become weapons or resources of competition within same-sex individuals. From the fact that men are more interested in physical cues in prospective partners than are women, we can predict that women dislike good looks in other women more than men dislike attractiveness in other men (for an overview on female competition, see Campbell, 2004). Men, on the other hand, will compete more regarding status and resources. That is why they will not mind attractiveness in other men as much as women mind attractiveness in other women.

In three studies, we tested if these evolved preferences are still operating today in a setting that some parallels with mate selection, namely personnel selection. We expected that the influence of evolved preferences would be discernable in modern personnel selection settings, because choosing people is exactly what these evolved preferences were meant to facilitate.

Of course, sexual selection implies a certain amount of expected contact intensity. If people do not expect to have any contact with the chosen applicant, mechanisms of sexual selection and sexual competition may not be adequately triggered because there are no perceived mating opportunities. It might be the case that low expected contact intensity with applicants, as is the case in selection procedures where external experts are used, does not trigger evolved (opposite-sex) mate choice or (same-sex) intrasexual competition mechanisms. We also addressed this issue. Finally, we tested if experience in personnel selection overrules evolved preferences.

The first study addressed the question of whether evolved mechanisms of mate choice and intrasexual competition influence the selection of job applicants. In the second study, we examined to what extent expected contact intensity between the participants and the applicants would influence selection decisions. Finally, in a third and last experiment, we
examined the generalisability of the findings of the first two studies to experienced Human Resource Management professionals.

Study 1

In this first experiment, we assessed the influence of the evolved preferences on selection decisions. We tested the following hypotheses:

1) Men are more likely to hire highly attractive women than women are likely to hire highly attractive men (mate choice).

Because men value attractiveness more in women than women do in men, intrasexual competition results in the preferences stated in hypothesis two:

2) Men are more likely to hire highly attractive men than women are likely to hire highly attractive women (intrasexual competition);

Method

Participants

Participants were 57 male undergraduates (mean age = 21.9; SD = 1.9) and 52 female undergraduates (mean age = 22.1; SD = 2.1). We invited them to join the study while they were having coffee in a coffee corner on campus. They participated voluntarily and were not paid for their cooperation.

Materials

To obtain photos of attractive and less attractive men and women, we took 100 photos, 50 of each sex, of students in a different city than where our final participants lived, to avoid possible familiarity of the participants with the people on the photos. The photograph showed only the faces of the men and women. If they wore glasses, headgear or conspicuous earrings or piercings they were asked to remove them, and when they would or could not do this, they were excluded. All photographed persons were of Caucasian descent. Three male judges (mean age = 21.4) and three female judges (mean age = 20.8) ranked these photos, for men and women separately, in order of attractiveness. We excluded the two most attractive and unattractive photos, and subsequently photos with a large standard deviation, until the eight least attractive and the eight most attractive photos of each sex remained. Interrater reliability was assessed for the ratings of these 16 photos of each sex by calculating Spearman's rho for ranking scores on the raw ranking scores of the selected photos. The median value of Spearman's rho was .86 (range: .83 to .93) for the photos of men, and .79 (range: .66 to .90) for the photos of women. Both values were sufficiently high to be able to use the selected 32 photos as stimuli.

A booklet with photos and a personality description represented the mock applicants. The photos varied in attractiveness (high or low), and the personality descriptions implied lower
or higher levels of agreeableness and dominance. Agreeableness and dominance were chosen, because these two dimensions are the main dimensions of individual differences in interpersonal behaviour (Gifford & Hine, 1994; Gifford & O’Connor, 1987; Moskowitz, 1994; Wiggins, 1996), and thus might provide adequate additional information about the applicants on which the assessors could base their judgments.3

Procedure
The participants read a description of a job with low task demands which was about ten lines long (a student-assistant job with photocopying and data entry as main activities). The description did not provide any concrete information about the level of job performance that could be expected (e.g., past experience). We asked our participants to imagine that they worked in the department with the vacant position and that they were a member of the selection committee. They were asked to rate the likelihood they would hire each applicant for the job on a 10-point scale. The order in which the mock applicants of both sexes were presented was counterbalanced.

Results
We tested our hypotheses by means of a Repeated Measures ANOVA with sex of applicant and attractiveness as within factors and sex of participant as between factor. The means are shown in Figure 1.

The third order interaction between sex of participant, sex of applicant and attractiveness was significant $F(1, 107) = 8.62, p < .01$. The first hypothesis stated that men are more likely to hire attractive women than women are likely to hire attractive men. This hypothesis was confirmed. Men gave highly attractive female applicants a mean score of 5.49, while women gave highly attractive male applicants a mean score of 5.16 ($t(107) = 3.89, p < 0.001$, see Figure 1. The second hypothesis, stating that men are more likely to hire attractive men than women are likely to hire attractive women was also confirmed: men gave highly attractive male applicants higher scores than low attractive male applicants, while women gave highly attractive female applicants lower scores to attractive female applicants than to unattractive female applicants (see Figure 1).

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3In none of the three studies did we find a statistically significant interaction between sex of participant, sex of applicant and agreeableness or dominance. We did find some scattered results that were not relevant to our hypotheses. Overall, in all three studies we predictably found that low agreeable and high dominant persons were less likely to be hired. All results are obtainable on request.
Figure 1. Mean rating given by male and female participants to female and male applicants with high and low attractiveness.

Discussion and conclusion

The goal of this experiment was to test whether evolutionary determined preferences were discernable in a modern job selection context. We did find compelling evidence for the attractiveness heuristic: people select other people for a job based on facial attractiveness in a way that is comparable to the way they select partners as predicted by evolutionary theory. It could be argued that the attractiveness heuristic will only affect job selection situations in which (like in the case of choice of partners) a certain amount of contact between the partners can be expected. It could be that evolved preferences are less salient when the assessors do not expect to have much contact with the applicants they select. This is important to know, because it has implications for the domain specificity of the attractiveness heuristic. We addressed this question in study 2.

Study 2

Applicants are usually selected by their future colleagues, supervisors, or professionals from assessment companies. The expected contact intensity between assessor and applicant varies across these parties, which may have an impact on their usage of the attractiveness heuristic. The second experiment was aimed at assessing the role of expected contact intensity in triggering evolved preferences. If the heuristic would be domain specific (as evolved
mechanisms often are), high expected contact intensity should trigger evolved preferences more effectively than low expected contact intensity: when there will be no opportunity to actually meet the people they select later on, partner choice or intrasexual competition will not be relevant. We constructed two different conditions in which the expected contact intensity of the participants with the mock applicants was systematically manipulated, while job demands were kept at a constant, intermediate level. In the highest contact intensity level, mate choice and intrasexual competition were hypothesized to become more prominent than in the low contact intensity level.

Method

Participants
The sample consisted of 57 male participants (mean age = 21.5 years; $SD = .63$) and 70 female participants (mean age = 20.2 years; $SD = .57$), who were all students of the University of Tilburg. They were paid a small amount of money for their cooperation.

Materials
The same photos as those used in Study 1 represented the applicants. We manipulated expected contact intensity by stating that the applicant would be working either at a different project, at partly overlapping projects or at the same project as the participant. These three jobs, student-assistant positions, were briefly explained.

Procedure
The participants were invited to join the study by means of announcements on public notice boards. They individually received the instructions. The participant was asked to imagine that they were working as a student-assistant in the department they were working. The participants rated the likelihood that they would choose each applicant on a 7-point Likert scale. The order in which the mock applicants of both sexes were presented was counterbalanced.

Results
We tested our hypothesis by means of a Repeated Measures ANOVA with sex of applicant and attractiveness as within factors and sex of participant as between factor for each condition separately. The means are shown in Figure 2 for the low contact condition and in Figure 3 for the high contact condition.
In the low contact condition, the third-order interaction between sex of participant, sex of applicant and attractiveness was not statistically significant, $F(1, 125) = 1.57, p = .21$, (see
Figure 2). This means that no evolved preferences of partner choice were present in this condition, and no further testing was needed.

In the high contact condition, however, the third-order interaction between sex of participant, sex of applicant, and attractiveness, was statistically significant, $F(1, 125) = 257.91, p < .001$. The means are shown in Figure 3. The first hypothesis of Study 1 stated that men are more likely to hire attractive women than women are likely to hire attractive men. This hypothesis was also confirmed. Although unlike in Study 1, men gave highly attractive female applicants a mean score of 4.16, while women gave highly attractive male applicants a mean score of 4.05, the difference between the scores that men gave to high and low attractive female participants was greater that the difference between the scores women gave to high and low attractive male participants $t(125) = 2.47, p = 0.02$ (see Figure 3). This means hypothesis 1 was again confirmed. The second hypothesis of Study 1, stating that men are more likely to hire attractive men than women are likely to hire attractive women was also confirmed again: men gave high attractive male applicants higher scores than low attractive male applicants, while women gave high attractive female applicants lower scores than low attractive female applicants (see Figure 3). Our hypothesis was confirmed: in the low contact condition no evolved preferences were discernable, while in the high contact condition, the same effects of evolved preferences were found as in Study 1.

Discussion and conclusion

We found evidence for the domain specificity of the attractiveness heuristic. Evolved preferences were most adequately triggered when assessors expected to have a lot of contact with the selected applicants. This finding provides an argument against using direct colleagues in the selection process. On the other hand, direct colleagues are excellent job experts and involving them in the selection process may help to smooth the acceptance process of the new colleague. Methods that do yield information concerning the attractiveness of applicants (e.g. photo’s or interviews) can be used later in the selection procedure, and incorporated in the final decision, while a first screening could be based on letters or other means that do not involve information about the applicant’s physical attractiveness.

Study 3

It is important to take the study of the influence of evolved preferences out of the laboratory into the real world of selection: Are professional interviewers/assessors also influenced by evolved preferences or does experience overrule evolved preferences? It is reasonable to expect that Human Resource Management (HRM) professionals are less prone to irrelevant influences of evolutionary mechanisms, such as the attractiveness heuristic, when selecting people because of their formal education and experience. The third experiment was designed to test this hypothesis. The design was similar to the previous experiments. The participants had to choose mock applicants for a job with moderate job demands: an assistant in a copy shop or a help desk worker. In Study 2, we found that expected contact intensity influenced the triggering of evolutionary mechanisms. In this study we tried to replicate this finding.
Expected contact intensity was varied by telling participants that they would have to work together in the case of the help desk worker (high contact), but not in case of the copy shop assistant (low contact).

Method

Participants

The professionals were 26 men and 25 women working in the HRM field and experienced in selecting applicants, a somewhat smaller sample than was used in the studies using students, because of the relative difficulty to obtain the cooperation of HRM professionals compared to students. Due to problems during the data collection, no exact ages of the samples can be reported. However, the participants were all between 27 and 32 years. They had all more than two years experience working as a personnel manager in medium to large companies, and their work included assisting in the selection of personnel or selecting personnel themselves.

Materials

The design of the experiment was the same as that of the previous ones. The jobs were represented by a short description of about 10 lines. The participants had to choose mock applicants for a job with moderate job demands: An assistant in a copy shop with whom the participants would not have much contact, and a helpdesk operator with whom they would have much contact. We did not pilot test the jobs for gender stereotypicality, but is not likely that either of these jobs are very gender specific.

Procedure

The participants received written instructions. The HRM professionals completed the forms at the job or at home. We used a somewhat different rating scale in this study: the participants rated the likelihood that they would hire each applicant for each job in percentages in 10% increases. They were explicitly asked to fill out the forms without consulting others. The order in which the mock applicants of both sexes were presented was counterbalanced.

Results

We tested our hypotheses by means of a Repeated Measures ANOVA with sex of applicant and attractiveness as within factors and sex of participant as between factor for each condition separately. The means are shown in Figure 4 for the low contact condition and in Figure 5 for the high contact condition. In the low contact condition, the third-order interaction between sex of participant, sex of applicant and attractiveness was not statistically significant, \( F(1, 49) = .004, p = .95 \), (see Figure 4). This means there were no effects of evolved preferences discernable in this condition, and no further testing was needed.
In the high contact condition however, the third-order interaction between sex of participant, sex of applicant and attractiveness, was statistically significant, $F(1, 49) = 9.13$, $p = .004$. The means are shown in Figure 5. The first hypothesis of Study 1 stated that men are more likely to hire attractive women than women are likely to hire attractive men. The difference between the scores that men gave to high and low attractive female participants was greater that the difference between the scores women gave to high and low attractive male participants $t(49) = 2.33$, $p = 0.02$, see Figure 5. This means hypothesis 1 was confirmed. The second hypothesis of Study 1, stating that men are more likely to hire high attractive men than women are likely to hire high attractive women was not confirmed: men gave high attractive male applicants higher scores than low attractive male applicants, but women did not give high attractive female applicants lower scores than low attractive female applicants (see Figure 5). The hypothesis of Study 2 regarding contact intensity was again confirmed: in the low contact condition no evolved preferences were discernable, while in the high contact condition, the same effects of the attractiveness heuristic were found as in those in Study 1, although female HRM professionals did not prefer low attractive female applicants over attractive female applicants.
Figure 5. Mean rating given by male and female HRM professional participants to female and male applicants with high and low attractiveness in the high expected contact condition.

Discussion and conclusion

In Study 2 and 3 effects of the attractiveness heuristic were found only under conditions of a high level of expected contact intensity. In the high contact condition, HRM professionals were almost as influenced by evolved preferences as were the students in Study 1 and Study 2. Overall, the results of Study 3 are comparable to those obtained in a student sample in the high contact condition. HRM professionals also exhibited the attractiveness heuristic in that they showed a higher preference for attractive applicants of the opposite sex, and this preference is more pronounced for male HRM professionals than for female HRM professionals. However, no indication of intrasexual competition was found: female HRM professionals did not give higher scores to unattractive female applicants than to attractive female applicants, as students did in Study 1.
Overall, it seems that evolved preferences regarding attractiveness are also present in experienced HRM professionals when there is a certain amount of expected contact. They show the same preferences as students did in study 2. Experience does not easily overrule evolved preferences.

General Discussion and Conclusion

In three studies men and women selected mock applicants for jobs in order to determine to what extent they would display preferences in line with predictions from sexual selection
theory (i.e., preference of attractive opposite-sex individuals and dislike of attractive same-sex individuals). Our participants showed a higher preference for highly attractive opposite-sex applicants (a preference related to mate choice), although male participants showed this tendency more than did female applicants. Male students were more likely to hire attractive same-sex applicants than were female participants, a preference related to intrasexual competition; HRM professionals, studied in the last experiment, did not show this preference. We expected that their experience would make them more likely to overrule the attractiveness heuristic more than students would, but this was hardly the case. However, the results were comparable to those obtained in the student samples. An exception was that female HRM professionals did not prefer unattractive female applicants to attractive female applicants. They simply did not select female applicants, regardless of attractiveness. Strictly speaking, we should interpret this as an absence of effects of preference relative to intrasexual competition. On the other hand, it could be argued that effects of intrasexual competition were even more pronounced in female HRM professionals than in the female students: female HRM professionals did not prefer women at all. This finding is hard to explain in another way than as of effects of intrasexual competition. It is unlikely that female HRM professionals would be more susceptible than students to negative stereotypes regarding women and work. More likely is that preferences regarding intrasexual competition were more adequately triggered in female HRM professionals as a result of the age of the female applicants. The applicants were much younger than the HRM professionals, and youth is very important sexual selection criterion of men when choosing women: men prefer young women more than women prefer young men, because fertility is highly related to age in women, but much less so in men (for an overview, see Buss, 1999a; Johnston, 1999). In both samples effects of evolved preferences were only present when the expected contact intensity between the applicant and the assessor was high. Concluding, HRM professionals were as much influenced by evolved preferences regarding attractiveness as students were. Earlier studies have shown that students and HRM professionals are equally prone to gender and attractiveness bias (Cesare, 1996; Gilmore, Beehr, & Love, 1986; Hosoda, Stone-Romero, & Coats, 2003; Marlowe, Schneider, & Nelson, 1996; Olian, Schwab, & Haberfeld, 1988).

The pervasive influence of the attractiveness heuristic found in this study might have implications for selection processes in general. It has been found repeatedly that unstructured selection processes have little or no predictive validity. It is a still largely unknown why experts, often with considerable experience, can overestimate their selection skills. It is quite likely that their judgment is influenced, presumably unknowingly, by various heuristics which challenge the overall validity of the judgment. The attractiveness heuristic could be one of those.

Evolutionary theory predicts that female partner choice is less focused on markers of health and fertility than male partner choice. Instead, female partner choice is more focused on markers of the ability and willingness to invest. However, it is important to realize that these preferences are not absolute. Women do select men on physical features, such as facial attractiveness, as we found in all three studies. It is important to realize that because no information about the status and affluence of the applicants was given to the female participants, these specifically female partner choice preferences were not triggered in our
studies. Future research that takes a similar approach as used here, but instead focusing on the role of status and wealth and other indices that trigger female partner choice, could clarify this issue so as to evaluate the relative impact of the attractiveness heuristic and the preference for resourceful male partners.

Evolved preferences play a role in selection decisions, but attractiveness is seldom relevant for the job. It is important to make assessors aware of their evolved preferences. In this light, the use of multiple decision-makers, including both men and women, is recommended. Moreover, at least one assessor should not have a lot of contact with the chosen applicant, especially when mechanisms of mate choice will be triggered, i.e. when opposite-sex applicants are selected. Furthermore, procedures without information about attractiveness of the applicants to assessors can be expected to counter some of the impact due to the attractiveness heuristic. Placing methods that enable the collection of information without yielding attractiveness information (e.g. test scores) and asking for preliminary decisions based on this information may help to reduce the impact of evolved preferences regarding attractiveness. Finally, a good job analysis that is carefully translated into well-defined selection criteria will make assessors less susceptible to effects of evolved preferences. We did not manipulate job demands here; future research in which job demands are systematically manipulated could shed more light on this issue. Evolved preferences can be expected to have a minimal impact when there is a clear person-job fit. Further research should assess the extent to which various evolved preferences bias selection decisions and determine how selection procedures can be designed in order to minimize their effects. Such an analysis should begin with a systematic analysis of the role of attractiveness and of the conditions in which attractiveness is (counter) productive.

When qualifications of applicants are equal, it could be advantageous for the organization to choose an attractive applicant. For instance, attractiveness is related to health, and health is clearly and important selection criterion. Also, because attractive people are seen as more intelligent and having a better personality, it could be advantageous to employ attractive workers. However, in many other cases the use of the attractiveness heuristic is counterproductive for the employer. This study demonstrates the viability of evolutionary reasoning and perhaps even the necessity of using evolutionary insights in personnel selection research. After all, behind every assessor or interviewer is a long lineage of ancestors who successfully chose each other.
CHAPTER 3

WHEN YOU HAVE TO CHOOSE: GENDER DIFFERENCES IN AMBITION

Abstract

We administered a newly developed ambition inventory consisting of: 1) choices in time-allocation within different time budgets; 2) behavioural alternatives within situational constraints; 3) bogus job advertisements; 4) traditional non-constrained attitude-like questions. This inventory was filled out by a sample of the total Dutch population of 72 men (mean age 30, SD 4.2) and 111 women, (mean age 30, SD 4.4). All measures except the traditionally used items yielded gender differences in ambition. Women opted for less ambitious choices in the time budget questions, in the situational questions, and in the bogus job vacancies. The consequences of gender differences in ambition for research and personnel decisions are discussed.

The proportion of women in top-management positions is still quite small in many, if not all, countries. In the US 15.7 percent of corporate officers positions among Fortune 500 companies are women (Catalyst, 2004). In The Netherlands, the percentage of women among managers of profit-organizations was 13% in 2003 (Emancipatiemonitor 2002, 2004).

A widely accepted explanation for this is the “glass ceiling”, an invisible barrier for women, consisting of stereotypes, prejudices, organization-cultural features, role models and other social psychological phenomena (for an overview see Powell, 1999). Glass ceiling theories seek the causes of female under-representation in the “demand side”: selection and promotion processes. Few approaches focus on the “supply side”: differences between men and women. In an influential review by Powell (1999) supply theories concentrating on the results of hormonal, cognitive and motivational differences between men and women were underrepresented and dated: the most modern supply theory considered was from 1980! Many relevant developments in research into gender differences have taken place since then, especially on the genetic, hormonal and evolutionary front (for reviews, see Palmer & Palmer, 2002; Plomin, DeFries, Craig, & McGuffin, 2003; Sanders, Sjodin, & de Chastelaine, 2002). For instance, there are consistent gender differences in cognitive abilities and personality (for recent overviews, see Costa, Terracciano, & McCrae, 2001; Hough, Oswald, & Ployhart, 2001; Lynn, 1994; Lynn & Irving, 2002; Lynn, Irving, & Cammock, 2002; Mau & Lynn, 2000). These gender differences have been shown to occur reliably even in early development and they partly are related to hormonal systems (Collaer & Hines, 1995; Dabbs, Alford, & Fielden, 1998; Sanders, Sjodin, & de Chastelaine, 2002).

This chapter is based on Luxen, M.F., Schokker, M, & Buunk, B. P (Submitted). When You Have to Choose: Gender Differences in Ambition
This article focuses on gender differences in ambition as one of the possible mechanisms that explains gender-based occupational segregation. The word ambition comes from the Latin ambire, which means walking around trying to get votes or support to get into high status positions. It takes ambition to get ahead. Ambition is the motivation that leads to acquiring personal human capital. Because of this interaction between ambition and acquisition of personal human capital, small gender differences in ambition, if any, may have large effects in the long run. As an example, consider the world of chess. In the 2002 world top 30 list of chess players, there was only one woman, Judit Polgar, at number 19. Gender differences in particular cognitive abilities like pattern recognition or spatial perception (Hough, Oswald, & Ployhart, 2001; Lynn & Irwing, 2002) might be a small part of the answer why there is only one woman in the list, but it is highly unlikely that gender differences in cognitive capacities are the main cause of the lack of women in the chess top 30. However, differences in ambition and competitiveness are likely to be part of the answer. Probably, fewer women than men are interested in becoming the world chess champion, and again fewer women are willing to endure the heavy competition on the way to the top. In addition, the social environment stimulates women to become chess champions probably less than it does men, and so things get exaggerated even more. Of the women and men who could have been able to become world champion, probably more women gave up along the way. This selection can apparently be so severe that there are virtually no women at the top of the chess world. While proximate answers of gender differences lie in environmental, hormonal and psychological processes, the ultimate cause of gender differences is our biological history: human evolution. Evolution is the starting point of gender differences. In the near future, the Journal of Organizational Behaviour will publish a special issue where the applicability of evolutionary psychology to organizational behaviour will be explored. Regarding gender differences, an evolutionary approach to understanding the role of attractiveness in selection proved to be fruitful (Luxen & Van de Vijver, in press. This study is an extension of the application of evolutionary psychology to gender differences relevant to organizational behaviour.
Parental Investment Theory and Gender Differences in Ambition

Because evolution is a very slow process it is unlikely that there has been enough time to radically change human genome since the rise of *Homo sapiens*, around 500,000 years ago. This is why evolutionary psychology argues that evolution “designed” the human cognitive system in a certain environment and that this knowledge may help us understand current human behaviour. Especially relevant to gender differences is Parental Investment Theory (Trivers, 1972; 1996). In sexually reproducing species, there is an optimum between mating effort and parental effort. The energy that is put into parenting offspring cannot be used to produce more offspring. In humans, the sex that initially makes the highest parental investment, i.e. gestation and lactation, are females. The reproduction rate of the low investing, normally males in mammals, is dependent on the accessibility of mates: they have become mating specialists. The low investing sex is competing for mates, while the high investing sex is choosing mates: “female choice, male competition”.

In humans, the ability (and willingness) to invest resources in offspring, are important selection criteria for women (Barrett, Dunbar, & Lycett, 2002; for recent overviews of human evolutionary psychology see Buss, 1999; for overviews of human sexual selection see Geary, 1998; Mealey, 2000; Miller, 2000; Palmer & Palmer, 2002), Those men that acquired high status and high control of resources produced more offspring, and these men are our ancestors. Control of resources was and is, almost by definition, highly correlated with the position in the social system (Betzig, 1986; Eibl-Eibesfeldt, 1989). Today, all over the world women prefer high status men more than men prefer high status women, while men show more concern in acquiring resources and status than do women, and are more risk-taking with regard to resource acquisition and mate selection (Barrett, Dunbar, & Lycett, 2002; Buss, 1999; Fetchenhauer & Rohde, 2002; Mealey, 2000). Cross-cultural studies have shown that gender differences are strikingly similar all over the world, with men being more competitive, aggressive and status striving than women (Eibl-Eibesfeldt, 1989; Wood & Eagly, 2002).

Gender Differences in Competition and Ambition Regarding Work

Recent studies have demonstrated that gender differences in ambition in the form of managerial aspirations (Tharenou & Terry, 1998) is predictive for career advancement, especially for early career advancement (for an overview regarding managerial careers, see Tharenou, 1997; for an empirical study, see Tharenou, 2001). A study by Van Vianen and Fisher (2002), showed that women’s overall ambitions were lower than men’s, and that organization culture influenced women’s ambition: male culture diminished ambition (see also Eagly & Johnson, 1990; Eagly, Karau, Miner, & Johnson, 1994).

However, these studies assess ambition by means of attitude-like self-report questionnaires of the common one-dimensional type, like “I would like to be in a position of greater influence in the department/organization”. Using this methodology might obscure gender differences, because it does not put any constraints on the choices, like real life does. For instance, it may be that there are no gender differences in wanting to be of greater influence in the department, but there might be gender differences in making choices regarding time.
allocation and behaviour within certain situations to get into such a position. Time that is
spent on one activity cannot be spent on another, and situational factors may preclude some
choices, and this should ideally be reflected in ambition measures. To reflect the limitations
of time and situations on choices regarding ambition, we developed an ambition inventory in
which ambition was assessed in four ways. In the first part, we used questions with time
budget restrictions (e.g. choosing to spend time on children or work under different time
limitations). In the second part, we used situational descriptions and behavioural alternatives
(e.g. helping a colleague or choosing for competition or choosing for private activities in a
situation where there is an opportunity for career advancement). Thirdly, we used bogus job
advertisements. Lastly, we used traditional, non-constrained attitude questions (e.g. “I want to
have a lot of responsibility”). This inventory was administered to a non-student sample of
people between 22 and 36 years old.

Method

Participants and procedure

72 men (mean age 30, SD 4.2) and 111 women (mean age 30, SD 4.4) filled out the
questionnaire. A considerable number of participants misunderstood the instructions for the
budget questions and were removed from the analysis of that part of the questionnaire,
leaving 42 men (mean age 29 years, SD 3.6) and 57 women (mean age 29 years, SD 4.7)
available for analysis for the budget questions. There was no relation between drop-out and
gender $\chi^2(1) = 1.09, p = .30$, nor between drop-out and education $\chi^2(2) = .52, p = .97$. 25%
of the men and 39% of the women had children; 54.4% of the men and 58.6% of the women
were married or had another legal partnership which is common in Dutch society. We did not
select our sample on the basis of having children because we were interested in gender
differences in ambition in the entire population. 12% of the total sample had a lower level
(professional) education, 58% a middle (administrative) level, and 29% a higher level
education like university or higher professional education.

The participants were invited to join the study either at Groningen Airport, in a shopping
mall in Groningen, or during swimming contests in a sports hall in Groningen. This
procedure may have introduced some unpredictable pre-selection, but on the other hand it is
highly likely that our participants were more representative for the whole population than
using a student sample or a sample drawn from a certain organisation. The participants filled
out the questionnaire without consulting others; they did this either on-site or they could
send them back to Groningen University free of charge. They joined the study under
informed consent. They were asked to fill out their names on separate sheets from the
questionnaire for the reward: one of them, randomly chosen, got 50 euro for participating.

Materials

To avoid social desirability, we have put the bogus jobs and statements at the end of
questionnaire. The first part consisted of questions with time-constraints. The participants
indicated how many hours they would spend on four items that described main life-activities:
a) Pursuing a high standard of living; b) Spending time with their children; c) Spending time...
on a high status career; d) Spending time on their partner. To ensure validity, four distracters were added: a) Helping friends b) Participating in voluntary work c) Spending time on a hobby or sport to relax d) Doing sports to let yourself go. The participants were asked to allocate three different amounts of time. Half of the respondents first allocated 20 hours, subsequently 40 hours and lastly 60 hours, the other half got the time budget in reversed order. The second part of the questionnaire consisted of four questions with situational restrictions. The items consisted of a short description of a situation at work that posed a conflict with private life. Two sources of conflict were used: work-children and work-voluntary work. The situations also described a colleague who either asks for help or who takes a competitive role. The two conflicts and two roles of the colleague were completely crossed, thus resulting in four situations. (for situation-response methodology, see Endler & Magnusson, 1976; for a recent application of the use of situation description in work related research see Greenhaus & Powell, 2003; for overviews of issues regarding situational questionnaires, see Hettema, 1994). The participants were asked to imagine they were in the described situations and indicated whether they would: a) say to the manager that they (the participants) are better suited to do the job; b) work overtime; c) tell the colleague they are better suited for the job; d) choose for partner/children/voluntary work, or e) consider the importance of the conflict for the colleague.

The third part consisted of four bogus job advertisements. The participants stated their preferences for a job as manager or assistant manager within two banks (a high paying, high status investment bank, or a less-paying "green" bank that makes social/environmental concerns its core business for a part-time vacancy and a full-time vacancy. The last part consisted of fourteen traditional statements taken from the existing literature (van Schie, 1997; van Vianen, 1999; see van Vianen & Fischer, 2002); see Table 1 for a list. The participants stated their preference on a five-point anchored scale ranging from completely disagree (1) to completely agree (5).
Results

*Time budget constrained measures*

We expressed the scores as percentages of each budget (low, medium, high) and performed a one-way Multivariate Analysis of Variance with the activities and distracters as dependent variables and gender of participant as a factor for each time budget. None of the distracters yielded statistically significant gender differences (all $F$’s $(1, 96)$; highest $p = .81$, lowest $p = .28$). The mean percentages of time given to each of the life activities within each budget are in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Low budget</th>
<th>Medium budget</th>
<th>High budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td><strong>Women</strong></td>
<td><strong>Men</strong></td>
</tr>
<tr>
<td>Pursuing a high standard of living</td>
<td>13.7*</td>
<td>7.4</td>
</tr>
<tr>
<td>Spending time with their children</td>
<td>21.9*</td>
<td>30.4</td>
</tr>
<tr>
<td>Spending time on a high status career</td>
<td>7.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Spending time on partner</td>
<td>24.6</td>
<td>27.1</td>
</tr>
</tbody>
</table>

Note. **gender difference in means is statistically significant $p < .01$.**

In the low-budget condition, men spent 1.9 times more time of their budget on pursuing a high standard of living than women did $F(1,96) = 7.93, p = .006$, while women spent 1.4 times more time of their budget on spending time with children then men did $F(1,96) = 10.47, p = .002$. In the medium-budget condition, men spent 1.2 times more time of their budget on having a high-status career then women did $F(1, 96) = 10.41, p = .002$, while women spent 2 times more time of their budget on their children $F(1, 96) = 10.28, p = .002$ and 1.1 times more time on their partner then men did $F(1, 96) = 7.25, p = .008$. In the high-budget condition, men spent 1.1 times more time of their budget on having a high status career then women did $F(1,96) = 10.27, p = .002$, while women spent 1.5 times more time of their budget on their children then men did $F(1,96) = 5.52, p = .021$. These gender differences are quite large, and moreover, in all three budgets a clear pattern reminding of traditional gender roles appears: men prefer to spend more time on work and status related activities, while women prefer to spend more time on their children or their partner.
Time allocation across the first and the last 20 hours: necessities and luxuries

Necessities are things that have to be fulfilled first, before time or money is devoted to other things. On the other hand, luxuries are things where time or money gets devoted to only after necessities have been fulfilled. The budget questions gave us the opportunity to assess what men and women consider necessities and luxuries (for more on this methodology, see Li, Bailey, Kenrick, & Linsenmeier, 2002).

The choices under the smallest time budget of 20 hours can be regarded as how men and women would spend their first 20 hours. The choices of the last 20 hours can be calculated by subtracting the scores of the choice of the 40 hours budget from the 60 hours budget. If people spend more on a certain activity in the first twenty hours than in the last twenty hours, they consider this activity a necessity. Conversely, when they spend more in the last 20 hours than in the first twenty hours on a certain activity, they consider this activity a luxury.

In Table 2 the mean difference between the time spent in the first 20 hours and in the last 20 hours of the four target life activities are represented. A positive value indicates that more time is spent in the last 20 hours than in the first 20 hours, and thus that the activity is seen as a luxury. Similarly, a negative value indicates a necessity. We performed a Repeated Measures Analysis of Variance with first or last twenty hours as a within-subjects factor and gender as a between-subject factor for each activity with time allocation as the dependent variable. There were no significant gender differences on the distracters. Of the target activities, unexpectedly, there were no statistically significant gender differences on spending time on a high status career $F(1, 96) = .25, p = .62$, but there were two statistically significant gender differences in what was considered a luxury and a necessity: women saw spending time with their children more as necessity than men did, $F(1, 96) = 9.96, p < .000$, and they saw spending time with their partner more as a necessity than men did $F(1, 96) = 4.59, p = .003$.

Finally, men thought a high standard of living was more a necessity than women did $F(1, 96) = 3.09, p = .08$, although this effect was only marginally statistically significant. Again, men opted more for work and status related activities, while women opted more for children and their partner.
Table 2

Difference in Mean Percentage of Time Budget Allocated by Men and Women between the High Budget and Low Budget Condition.

<table>
<thead>
<tr>
<th>Life activity</th>
<th>Difference: First-last 20 hours</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td></td>
</tr>
<tr>
<td>Pursuing a high standard of living</td>
<td>-0.71</td>
<td>6.79</td>
<td></td>
</tr>
<tr>
<td>Spending time with children**</td>
<td>-11.90</td>
<td>-25.18</td>
<td></td>
</tr>
<tr>
<td>Spending time on a high status career</td>
<td>5.95</td>
<td>7.68</td>
<td></td>
</tr>
<tr>
<td>Spending time on partner**</td>
<td>-15.71</td>
<td>-22.68</td>
<td></td>
</tr>
</tbody>
</table>

Note: **p < .01

Situationally constrained measures

The data were first analyzed using a Repeated Measures Multivariate Analysis of Variance with role of colleague (2 levels) and type of conflict (2 levels) and response alternative (5 levels) as within-subject factors and gender as between-subject factor. Contrary to the expectations, there was no statistical significant interaction between gender, role of colleague and behavioural alternative $F(1,176) = .007, p = .93$: men and women did not react differently to either a competitive colleague or a colleague who is asking for help.

We aggregated the scores of the situations with the cooperative and the competitive colleague, and performed a Repeated Measures Analysis of Variance with type of conflict as within-subject factor and gender of participant as between-subject factor. See Table 3 for the choices of men and women within each conflict.

Within the conflict between work and children the choice for the children is equally popular for men and women. It may be seen as a very serious conflict, where the interests of children simply prevail. This might explains why most gender differences are found within the work-voluntary work conflict. Men tried to influence their boss more by telling them they are the best suited for the job than women did $F(1,181) = 12.41, p = .001$. Also, men also tried to influence their colleague more by telling him or her they (the participants) are the most suited for the job than women did $F(1,181) = 11.97, p = .001$. Women were more willing than men to consider the importance of the opportunity for them and their colleague in both the work-voluntary work conflict $F(1,181) = 13.37, p = .000$ and the work-children conflict $F(1,181) = 5.50, p = .020$, but the gender differences were more significant in the work-voluntary work conflict. Overall, men chose more to compete by means of influencing the boss or by direct competition with the colleague, while women were more willing to consider the interest of the colleague.
Table 3

Means of Scores of Men and Women on Behavioral Alternatives within the Two Conflicts.

<table>
<thead>
<tr>
<th>Choice</th>
<th>Work vs. voluntary work</th>
<th>Work vs. Child</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Saying I am better to boss</td>
<td>1.99</td>
<td>1.56</td>
</tr>
<tr>
<td>Do overwork</td>
<td>2.28</td>
<td>2.12</td>
</tr>
<tr>
<td>Saying I am better to colleague</td>
<td>1.92</td>
<td>1.51</td>
</tr>
<tr>
<td>Choosing not to work overtime</td>
<td>3.43</td>
<td>3.55</td>
</tr>
<tr>
<td>Considering importance</td>
<td>3.33</td>
<td>3.82</td>
</tr>
</tbody>
</table>

Note. *** p < .001   * p < .05

Bogus jobs

The hypotheses were tested by means of a Repeated Measures Analysis of Variance design with status of job (two levels), and orientation of bank (2 levels) as within factor and gender of participant as between factor. The means are represented in Figures 1a, 1b and 1c.
As expected, women were more interested than men in part-time employment $F(1, 176) = 10.20, p = .002$, showed more interest than men in a lower status job $F(1, 176) = 11.59, p = .001$, and showed more interest in the political and environmental and social impact of their potential employer $F(1, 176) = 3.89, p = .049$. All in all, this means that men were again more ambitious and status directed than women.

**Traditional measures: statements with no explicit constraints**

To test for gender differences in the questions without any constraints, a Multivariate Analysis of Variance with the fifteen questions as dependent variables, and gender of participant as a factor was performed. The results are in Table 4.
Table 4
Means of Men and Women and Effect Sizes on the Unconstrained Questions and Rotated Factor Loadings of the Unconstrained Items on the Three Factors with an Eigenvalue greater than 1.

<table>
<thead>
<tr>
<th>Item</th>
<th>Men</th>
<th>Women</th>
<th>Difference</th>
<th>Loadings on Factor 1 (explained variance 35.3 %)</th>
<th>Loadings on Factor 2 (explained variance 9.6 %)</th>
<th>Loadings on Factor 3 (explained variance 8.6 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think career planning is worth the trouble</td>
<td>3.60</td>
<td>3.74</td>
<td>-0.14</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A career is a means to express myself</td>
<td>2.96</td>
<td>3.08</td>
<td>-0.12</td>
<td>0.63</td>
<td>0.2</td>
<td>0.17</td>
</tr>
<tr>
<td>I would pursue a good job and as a consequence losing family time</td>
<td>2.36</td>
<td>2.07</td>
<td>0.29*</td>
<td>0.59</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>I would like to be self-employed</td>
<td>3.14</td>
<td>2.92</td>
<td>-0.22</td>
<td>0.59</td>
<td>0.32</td>
<td>-0.27</td>
</tr>
<tr>
<td>I like thinking about my career</td>
<td>3.49</td>
<td>3.65</td>
<td>-0.16</td>
<td>0.59</td>
<td>0.25</td>
<td>0.14</td>
</tr>
<tr>
<td>If I were self employed, I would put in extra time for extra profit</td>
<td>3.29</td>
<td>2.99</td>
<td>0.30</td>
<td>0.58</td>
<td>0.11</td>
<td>0.39</td>
</tr>
<tr>
<td>Leisure is not more important than a good job</td>
<td>2.58</td>
<td>2.55</td>
<td>0.04</td>
<td>0.56</td>
<td>0.25</td>
<td>0.27</td>
</tr>
<tr>
<td>I would put in overtime to get promoted</td>
<td>3.31</td>
<td>3.05</td>
<td>0.25</td>
<td>0.49</td>
<td>0.31</td>
<td>0.49</td>
</tr>
<tr>
<td>I would not leave a management position to someone else</td>
<td>3.17</td>
<td>2.83</td>
<td>0.34</td>
<td>0.15</td>
<td>0.84</td>
<td>0.2</td>
</tr>
<tr>
<td>I want to manage people in my job</td>
<td>3.42</td>
<td>3.28</td>
<td>0.13</td>
<td>0.24</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>I want to have a lot responsibility</td>
<td>3.75</td>
<td>3.72</td>
<td>0.03</td>
<td>0.25</td>
<td>0.72</td>
<td>0.11</td>
</tr>
<tr>
<td>I would accept a management position</td>
<td>3.1</td>
<td>2.95</td>
<td>0.14</td>
<td>0.69</td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>I would see myself rather than a good colleague in a high position</td>
<td>2.60</td>
<td>2.26</td>
<td>0.33*</td>
<td>0.34</td>
<td></td>
<td>0.7</td>
</tr>
<tr>
<td>I would take care that I would get promoted instead of colleague if there is a chance</td>
<td>2.44</td>
<td>2.32</td>
<td>0.13</td>
<td>0.21</td>
<td>0.27</td>
<td>0.65</td>
</tr>
<tr>
<td>I would rather have a high status job than a lesser job that gives personal satisfaction</td>
<td>1.80</td>
<td>1.59</td>
<td>0.31*</td>
<td>0.11</td>
<td></td>
<td>0.63</td>
</tr>
</tbody>
</table>

Note. All F tests F(1, 180). * p < .05, in bold type. Factor loadings smaller than .10 are not represented, factor scores of items loading highly on only one of the factors in bold typeface.

As expected, the unconstrained items showed little evidence of gender differences in ambition. Interestingly, the three items that do show statistically significant gender differences involve a choice between two things: men make more ambition-related choices than women on these items.

To be absolutely sure there were no gender differences in the unconstrained items, we combined them into scale scores, because aggregation of items into scales may result in more reliable scores. Principle Component Analysis followed by a Varimax rotation was performed (for an overview on choices of data reduction techniques and rotations, see Fabrigar, Wegener MacCallum and Strahan 1999). Three factors emerged (criterion: eigenvalue larger than 1), together explaining 53% of the variance. For the rotated factor scores, see the right part of Table 1.

Items loading high on factor 1 were related to career orientation, items loading high on factor 2 were related to managerial ambition, items loading high on factor 3 were related to status aspirations. We constructed scales scores by calculating the mean of the highest loading items
on each of the factors. The reliabilities of the career orientation and management orientation scales were excellent (career orientation: \( \alpha = .74 \); managerial ambition \( \alpha = .85 \)). The reliability of the status aspirations scale was low (\( \alpha = .50 \)), and this scale was removed from further analysis. Comparable with the procedure used with the individual items, a Multivariate Analysis of Variance with the two scale scores as dependents, and gender of participant as a factor was performed. There were no gender differences in career orientation \( F(1, 180) = .21, p = .65 \), nor in managerial ambition \( F(1, 180) = 1.3, p = .25 \). This means that even aggregating the scores to get more reliable data did not yield gender differences. In conclusion, as was expected there are no reliable gender differences in ambition when using unconstrained items. Interestingly, on the questions here that did show some from of constraints, and involved choices and limitation, gender differences did emerge.

Discussion and Conclusion

Evolutionary psychology, and socialization theories, predicts men to be more ambitious and women to be more altruistic, especially with regard to caring for children. In this research, we showed that these gender differences indeed are found when instruments are used that reflect the choice character of behavioural alternatives that are related to ambition and care giving. When unconstrained items are used, no gender differences were found, even when multiple items are combined into scales to enhance reliability. When instruments with higher ecological validity, reflecting choices, are used, the predicted gender differences did emerge. This finding is an important consideration for future research, and for the interpretation of earlier studies that use unconstrained items in assessing gender differences in ambition. When men and women make choices that are limited by three time budgets, women spend more time on being with their children, while men spend more time on pursuing a high standard of living and more time on a high status career. Also, for men a high standard of living is more a necessity, while for women spending time with children and their partner is more a necessity. Overall, when time budget constraints are imposed, men make more ambition-related choices, while women make more caring-related choices, which is in the expected direction.

The items with situational constraints corroborate these findings: when there is a conflict between work and children, men and women do not differ in their choice: they give children priority. In this respect using this conflict was unwise; however, using this conflict greatly enhanced ecological validity. However, when there was a conflict between voluntary work and work, men choose for their work. Furthermore, they choose for their work using competitive strategies. In both conflicts, women are more likely than men to be considerate instead of competitive. Overall, when situational constraints are imposed, men make more ambition-related choices, while women make more caring-related choices, which is in line with expectations. Lastly, when choosing bogus jobs, women are more interested in a lower paying low status job, and in a lower paying job within an organization where making money is not top priority, which is again as expected.
In this study, we used a heterogeneous sample of the Dutch population instead of a convenience sample like psychology students or people working in a certain organization, and this adds to the ecological validity of the findings. Furthermore, the use of a Dutch sample adds to the validity of our findings, because Dutch culture is one of the most gender-egalitarian cultures in the world, (Fernandez, Carlson, Stepina, & Nicholson, 1997; Hofstede, 1998; Spector, Cooper, & Sparks, 2001) Replication of this study in more masculine cultures, like the U.S. culture or the South American cultures, would probably yield even more significant gender differences.

Dutch culture is also egalitarian concerning status differences. (Fernandez, Carlson, Stepina, & Nicholson, 1997; Spector, Cooper, & Sparks, 2001). This might explain why there were no gender differences on questions explicitly referring to acquiring status. If you strive for status in The Netherlands, you certainly do not admit it openly. Again, it would be interesting to replicate this research in a country with a high score on power distance, like Germany or the U.S.

The choice of item content was connected to the choice of sample: choices between children, partners, and the content of the conflicts in the situational items can be expected to be less appropriate to other samples, especially samples of older or younger participants. The time allocation section was filled out incorrectly by 42% of the men, and 49% of the women, a serious limitation of sample size. However, sample size after drop-out was still quite large, even after considerate effort had been made (e.g., extra instruction leaflets, extended explanation) to be very clear. However, there was no statistically significant relation between education or gender and drop-out. This means it is unlikely that this drop-out influenced the findings. A more controlled protocol like supervised or computer-aided testing would solve this problem to a certain extent, but this would make data collection within a total population much more cumbersome (people have to fill out questionnaire on-site and cannot send them back when they feel like it). We chose here to accept drop-out in order to have access to a representative sample.

We asked the participants to indicate their time allocation on a Likert scale from 1 to 10 hours. This somewhat limits the freedom of their choice, and it limits the opportunity to detect differences between time budgets. For instance, when in the 20 hours budget a ten was given, participants had no chance to give even more in the 60 hour budget. This problem might be solved by asking participants to indicate per item the percentage of the budget they would allocate to it. This also has the advantage that the scores of each budget condition become directly comparable. However, this procedure is conceptually more challenging for the participants, and this is an important consideration when using broad population samples.

The finding that women report lower levels of ambition than do men when appropriate instruments are used might partially explain why in most high status positions there are many more men than women. Gender differences in ambition will work as self-selection device in personnel selection procedures. Self-selection based on gender differences in, for example, preferences for organization culture, play a role in the job choices of men and women (van Vianen & Fischer, 2002), and it is likely that gender differences in mean level of ambition have a self-selection effect too. No doubt, other factors than gender differences in ambition play a role in the causes of under representation of women in high status positions: certainly
the glass ceiling exists, although many studies find that glass-ceiling effects and gender discrimination in promotion decisions are non-existent or less pronounced than they were thought to be, but these studies do find a large role for self-selection due to motivation or personality differences (for a meta-analysis, see Tokar, Fischer, & Subich, 1998). The point here is that the glass ceiling might be for a considerable part a self-constructed glass door. Using very large samples, Lyness & Judiesch (1999; 2001) found no evidence of gender bias in promotion decisions but they did find lower rates of female turn-over in management positions. They also found that women are more likely to be promoted than hired into management positions. Taken together, these findings strongly suggest the importance of ambition as a self-selection device in vocational decisions. This self-selection on basis of gender differences in ambition causes restriction of the range of suitable female applicants (for a theoretical analysis of the consequences of restriction of range, see Roth, Bobko, Switzer, & Dean, 2001): there are simply less suitable women to choose from, and logically, this problem gets worse in higher levels of the organizational hierarchy because of accumulation of self-selection.

This research shows that applying findings and insights from evolutionary theory and developments in questionnaire construction might be of use in personnel psychology, vocational psychology and research into the glass ceiling. This is an important finding, because few things are so important as understanding and improving selection and vocational decisions in work-related settings, and few things are so hard to do.