

1. Introduction

A general trend of out-migration from rural areas as well as demographic changes toward an aging population may be viewed as causes of the ongoing shortage of specialists in agricultural companies in Germany (Lehberger and Hirschauer, 2015, 2016; Meyerding, 2016a,b; Winge and Wiener, 2009). Additionally, the lack of attractiveness of agricultural labor, which is often associated with hard physical work or low income (Mußhoff *et al.*, 2013), makes recruiting qualified staff difficult. Consequently, a focus on retaining those employees who already work in the business becomes increasingly important for agricultural companies (Meyerding, 2016a,b). Results from empirical studies suggest that one promising tool to do so is to secure that workers have high levels of job satisfaction (Meyerding, 2016a; Tett and Meyer, 1993). Job satisfaction can be understood as the self-evaluations of people's satisfaction with their jobs (Locke, 1969; Spector, 1997) and can either be qualitatively assessed or – more commonly – quantitatively, measured via psychometric scales. Replacements for corporate managers as well as skilled worker are increasingly hard to find in German agriculture and horticulture. At the same time, there is a large pool of potential managers and employees that has been hardly tapped into: young female professionals.

While management positions remain disproportionally low for women in agriculture in many parts of the world (Mann, 2007; Otomo and Oedl-Wieser, 2009; Statistisches Bundesamt, 2014:399), they have always stipulated an important, albeit less recognized, part of the agricultural workforce (Sachs, 1983). According to official German statistics, women currently represent 38% of salaried employees in agriculture (Statistisches Bundesamt, 2014:24). In horticulture the share of woman is 30% of the 262.300 employees of horticultural companies (Statistisches Bundesamt 2017:369). Thus, it is of interest to note that there is little known about the links between gender and job satisfaction in the agricultural sector. Considering all work sectors, a number of studies suggest that women tend to have higher job satisfaction than their male counterparts (Clark, 1997; Grandey *et al.*, 2005). Regarding gender differences in the evaluation of job characteristics in agriculture, there is some empirical evidence that gender-specific expectations regarding the material and non-material benefits of agricultural occupations exist (Lehberger and Hirschauer, 2015, 2016; Mann, 2007). However, to the best of the authors' knowledge, no study addresses the question of gender-specific job satisfaction and its determinants in the agricultural sector. Gaining insights into these issues is valuable, in particular, if one is interested in retaining female and male workers in the business as well as in order to identify gender-specific strategies to recruit new staff. Gender-specific strategies may be especially important against the background of the general trend towards out-migration of young people from rural areas, where young women are even more likely to leave (Johansson, 2016; Leibert, 2016; Rauhut and Littke, 2016).

The agricultural sector can be divided into many subsectors, where very different working conditions prevail (e.g. animal husbandry vs plant production). We believe it to be insightful to look at these subsectors separately and focus on the present study of employees of horticultural businesses in Germany. We are concerned with two core research questions: first, we want to identify whether gender-specific job preferences of workers in the horticultural sector exist and whether these preferences are satisfied at the current working places. Second, we tackle the question of potential differences in the determinants of job satisfaction in horticulture between men and women.

There are different methods for the quantification and evaluating of job satisfaction (Eid and Larsen, 2008). One way of investigating job satisfaction is to apply Herzberg's (Herzberg, 1966) two-factor model. For instance, Bitsch and Hogberg (2005) used Herzberg's approach for a study in U.S. horticulture based on 31 qualitative interviews. Reiche and Sparke (2012) did a quantitative study with 446 students based on Herzberg's model (Meyerding, 2015) and more recently investigated the job commitment of prospective skilled workers and executives in German horticulture (Reiche and Sparke, 2015). Others have studied the relationship between the use of green spaces and public gardens in the work place on mental well-being (McFarland, 2017) and global production and flexible employment in South African horticulture (Kritzinger *et al.*, 2004).

Many of the empirical studies examining the relation between job characteristics and job satisfaction have been inspired by Karasek's (1979) job-demand-control model. This approach postulated two job attributes in their effect on the satisfaction of a person: decision latitude and job demands. The later has been defined as "the psychological stressors involved in accomplishing the work load" (Karasek, 1979). Decision latitude is defined as the potential control of employees over tasks together with their skill usage. Warr (2007) developed a conceptual framework as a reaction and addition to Karasek's job-demand-control model. Warr's vitamin model is used in the present study. Earlier studies have also used the vitamin model (De Jong and Schaufeli, 1998; De Jong *et al.*, 1999; Jeurissen and Nyklicek, 2001; Meyerding, 2015; Warr, 1990).

To this end, the paper is structured as follows: after this introductory section, we outline the theoretical background and describe the data and methods that we used to understand gender-specific job preference and job satisfaction in the German horticultural sector. Thereafter, we present and discuss the results. In the last section, we outline future research needs and draw some preliminary conclusions on how to mitigate problems of retaining and recruiting horticultural employees by considering gender-specific job preferences and causes of job satisfaction.

2. Materials and methods

2.1 Theoretical background

The theoretical background of the present study is Warr's (2007) vitamin model, which assumes two different types of utility functions when it comes to job characteristics. The first type presents an inverse U-shape (additional decrement). At low levels of these characteristics, satisfaction is also low and increases as the level of the characteristic increases. However, after a moderate level is achieved, the vitamin becomes toxic, and a further increase in the level of the job features leads to a decrease in satisfaction (additional decrement, AD). For the second form, another utility function applies. At low levels of these characteristics, satisfaction is also low and increases as the level of the characteristic does. Beyond a moderate level, the marginal utility decreases (constant effect). These vitamins do not become toxic at very high levels, but their additional effect on job satisfaction becomes very small, to almost zero. They show a constant effect (CE) on subjective well-being for high levels of these kinds of characteristics (Meyerding, 2015). The research design of the present study mentions these different utility functions of job characteristics and job satisfaction.

The present study contains 28 job characteristics, which can be assigned to Warr's 12 vitamins (Meyerding, 2015). These job characteristics are used to operationalize the vitamins and are chosen from the literature. In addition, data on the overall subjective job satisfaction were collected. Table 1 shows the vitamins, their related characteristics in the present study and the underlying utility function. Meyerding (2015, 2016c) successfully tested the operationalization of the vitamin model using the present items and the assumed utility functions in German horticulture.

2.2. Questionnaire and research design

After a cognitive testing of the questionnaire and five additional interviews, the survey was conducted between August 2013 and December 2014.¹ The data was also used in Meyerding (2015). A questionnaire was designed and implemented both on paper and in a web-based format. To generate a sample as diverse as possible, we recruited participants via multiple channels: we presented the research on a horticultural trade fair, at growers' meetings and at a national farm consultants' meeting. In addition, there were two reports published in the horticultural trade press as well as through social networks. In total, answers from 218 employees could be used for the analysis.

¹ Due to budget and organizational constraints, it was not possible to generate a set of panel data, which would have allowed for attenuating seasonal effects. Collecting the data at different times in the year is particularly important in horticulture, because the workload for employees can differ a lot throughout the year.

Table 1. Vitamins of Warr's vitamin model and job characteristics in the present study (adapted from Meyerding, 2015, 2016c).¹

Vitamin model	Job characteristics in the present study	Utility function
1 Control (AD)	1a Task discretion	AD
	1b Influence over the wider organization	AD
2 Skill (AD)	2a Skill use	AD
	2b New learning	CE
3 Goals (AD)	3a Number of job demands	AD
	3b Difficulty of job demands	AD
	3c Task coherence	CE
	3d Conflict between job demands	CE (inverse)
	3e Conflict between work and home	CE (inverse)
	3f Emotional dissonance (inverse)	AD
4 Variety (AD)	4a Range of different tasks	AD
5 Clarity (AD)	5a Future predictability (excludes job tenure)	AD
	5b Clear role requirements	AD
	5c Availability of feedback	AD
6 People (AD)	6a Amount of social contact	AD
	6b Quality of social contact	AD
7 Money (CE)	7a Pay level	CE
8 Physical security (CE)	8a Pleasant environment	CE
	8b Safe work practices	CE
	8c Adequate equipment	CE
9 Significance (CE)	9a Value to society	CE
	9b Significance to self	CE
10 Supervision (CE)	10a Supervision is considerate	CE
	10b Supervisor is supportive	CE
11 Career (CE)	11a Job security	CE
	11b Good future prospects	CE
12 Fairness (CE)	12a Fair treatment of employees	CE
	12b The organization's morality in society	CE

¹ AD = additional decrement; CE = constant effect.

The questionnaire consists of four sections. The first section asks the employee about a preferred job and the importance of all 28 job characteristics to detect individual preferences. Responses could be given on a Likert-type scale, ranging from 1=*unimportant* to 6=*essential*. The second section asks about the satisfaction with current job characteristics in the current job. The participants were requested to evaluate these characteristics based on the past four weeks. In order to assess the characteristics, a modified Kunin (1955) scale was used to support the participants to grasp the nature of the values of the characteristic in question. This is particularly necessary, because the values are often assumed linearly related to positive feelings (more is better). The Kunin scale uses faces with emotions to represent the evaluations in each cell. A description of the value can still be found in the top of each column. For characteristics with an AD effect, response options in these sections were: 1=*extremely low*, 2=*very low*, 3=*a little low*, 4=*about right*, 5=*a little high*, 6=*much too high*, 7=*extremely too high*. For CE characteristics, the following response options were given: 1=*extremely too low*, 2=*much too low*, 3=*a little low*, 4=*about right*, 5=*quite acceptable*, 6=*very acceptable*, and 7=*extremely acceptable*. For the features 3d and 3e (CE inverse) *extremely too low* to *quite too low* were replaced by *extremely too high* to *a little high* but coded inversely, indicating that lower levels of conflicts are more desirable than higher ones. The third section contains characteristics of the company, such as the line of business to which it belongs and the size, in terms of staff employed, and whether the

farm produces in a greenhouse or on open-field area. The last section of the questionnaire includes personal demographics, such as gender, age, and level of education.

As for the process of data analysis, the following steps were carried out: to answer our first research question regarding gender-specific job preferences and in how far these are currently satisfied, we divided the sample of 218 respondents into two subsamples: women and men. We then compared the results of the two genders regarding their job satisfaction, their job preferences and their satisfaction with the job characteristics at their current working place. To test whether the identified differences are significant, we referred to results of Mann-Whitney-U tests. To answer our second research question concerning gender-specific job satisfaction and its determinants, we first ran a factor analysis. This was done to condense the 28 items used to operationalize the Warr vitamins into a limited amount of coherent factors. Using the factors as independent variables and the data on job satisfaction as the dependent variable, we then ran an ordinary-least-squares-model (OLS) regression for each subsample (women and men) and consequently compared the results.

As mentioned earlier, Meyerding (2015, 2016c) successfully tested the vitamin model in German horticulture. The functional forms of the assumed utility functions (AD and CE) of the vitamins are not subject to this article. For this reason, the additional decrement (AD) characteristics were transformed for the following analysis. Much-too-high values of the characteristic (CE) were coded equally with the much-too-low values. The results are transformed variables that contain numbers, for example, 1 for very negative values of a job characteristic (too low or too high) to 3 for values of a job characteristic that are about right. This was necessary to perform the before described data analyses.

3. Results and discussion

3.1 Sample description

The participants in this study come from all over Germany with a higher amount from the west than from the east, which is in line with the distribution of horticultural activity in Germany. The majority of participants work for horticulture service companies (36.8%), followed by floriculture (15.1%), tree nurseries (12.4%), multi-line companies (10.8%) and retail horticulture companies (8.6%). These shares are close to those in the population at the most recent horticultural census date (Gurrath, 2006) except for vegetable farms, which are underrepresented. Their employers had in most cases less than 20 employees (without seasonal labor) (76.2%) and less than five seasonal workers (76.5%), which is nearly the same as the population means (Statistisches Bundesamt, 2006). Of the sample, 42.5% were women (30% in the population, Statistisches Bundesamt, 2017:369). Most participants were fulltime employees (81.0%) (51% in the population where seasonal laborers are included, Statistisches Bundesamt, 2006:144) and had a permanent employment contract (74.3%). Only 5.6% were seasonal workers. The youngest participant was 17 and the oldest 69 years old (average 34.8, standard deviation 11.36). There is a slight accumulation of participants between the age of 20 and 30, which might be caused by the use of social media as a distribution channel. Information about the educational and age structure of the employees in German horticulture is not available for the population (Meyerding, 2015).

The demographic statistics for the male and female subsample are summarized in Table 2. The average age of the participating men was 35.15 (SD=12.24), while women were on average 34.04 years old (SD=10.27). Approximately 70% of participating men and approximately 50% of women hold leadership positions. Additionally, participating men work part-time and obtain temporary jobs less often than women. As there is only limited information about the population of employees of horticultural companies in Germany, it is not clear if the sample is representative for the population.

Table 2. Summary statistics of the male and female subsample.

Characteristics Specifications	Male (n=111)		Female (n=82)		Test statistics ^a
	Frequency	Percentage	Frequency	Percentage	
Mean age	108	35.15 (12.24)	77	34.04 (10.27)	-0.649 (<i>t</i> -test) ^b
Leadership responsibility					
Yes	70	63.1	38	46.3	5.828 ^{**c} (χ^2)
No	31	27.9	36	43.9	
Missing	10	9.0	8	9.8	
Education					
Did not finish graduation	1	0.9	0	0.0	-1.109 (Mann-Whitney-U Z-value)
Still pupils	21	18.9	12	14.6	
High school graduation or equivalent	34	30.6	22	26.8	
Technician/specialist degree	22	19.8	20	24.4	
Technical college/university degree	23	20.7	21	25.6	
Missing	10	9.0	7	8.5	
Part/full-time					
Part-time	7	6.3	17	20.7	6.366 ^{**c} (χ^2)
Full-time	71	64.0	53	64.6	
Missing	33	29.7	12	14.6	
Contract					
Permanent position	61	55.0	41	50.0	4.514 ^{**c} (χ^2)
Temporary position	13	11.7	22	26.8	
Missing	37	33.3	19	23.2	
Core or seasonal work					
Core employee	73	65.8	61	74.4	0.004 ^d (χ^2)
Seasonal employee	5	4.5	4	4.9	
Missing	33	29.7	17	20.7	
Horticultural division					
Floriculture	11	9.9	12	14.6	8.194 ^e (χ^2)
Vegetable production	4	3.6	3	3.7	
Tree nursery	12	10.8	9	11.0	
Fruticulture	6	5.4	4	4.9	
Trade	5	4.5	4	4.9	
More subjects business	7	6.3	11	13.4	
Services	41	36.9	19	23.2	
Retail	11	9.9	5	6.1	
Other	14	12.6	15	18.3	
Missing	0	0.0	0	0.0	

^a ** significant at the 0.05 level (two-tailed); * significant at the 0.1 level (two-tailed).

^b Heterogeneous variance; women n=82, men n=111.

^c 0 cells (0.0%) have expected count less than 5.

^d 2 cells (50.0%) have expected count less than 5.

^e 4 cells (22.2%) have expected count less than 5.

3.2 Average satisfaction

Participating women have an average job satisfaction of 4.79 (SD=1.51), while men have a slightly higher mean job satisfaction of 4.96 (SD=1.43). As the descriptive statistics of the sample reveal that participating women more often work in part-time or even temporary jobs and hold leadership responsibilities less often, the difference in job satisfaction in itself is not surprising. Nonetheless, results of a Mann-Whitney-U test indicate that the differences in job satisfaction are not significant in our sample ($P=0.459$). Consequently, our data and analysis cannot be viewed as supportive evidence of earlier research results, indicating that women tend to report higher job satisfaction, despite an obvious disadvantaged position of women in the labor market (Clark, 1997; Kaiser, 2007).

Observed life satisfaction differences in reviews are either slightly in favor of men (Haring, 1984) or of women (Wood *et al.*, 1989). It seems appropriate to conclude that context free well-being is in general similar between sexes. This is also true for the employees in German horticulture in the present sample. But in the case of context based job satisfaction in more recent studies American female samples have tended to report greater overall job satisfaction than men (Bender *et al.*, 2005; Erickson *et al.*, 2000; Grandey *et al.*, 2005). This significant dissimilarity was also reported through regression analysis by Clark (2005) in 19 countries but could not be observed in the present study. The difference might be explained through a variety of factors. In addition to potential differences in the job characteristic values available for women and men (also seen in this study), there probably exists more person based sources of the variation between the genders which were not examined here. Nolen-Hoeksema and Rusting (1999) assessed three general possibilities: dispositional, biological, and responses to the social context. They concluded that especially the biological explanations for greater anxiety and depression among females are poorly supported. Dispositional differences were thought to be more important, for example, women's greater intensity of emotional experiences, and stronger empathy with other people. The review also named possible social-context effects, in terms of women's overload from home as well as employment, and stereotypical expectations about emotionality in women and men (Warr, 2007:292-293).

As noted above, findings regarding job satisfaction often differ: either no differences – such as in the present study – or women report higher values than men. Given that women sometimes receive lower pay (Blau and Kahn, 1996) and have less positive job characteristic values (Bielby and Baron, 1986; Jacobs, 1995), it might be assumed that women's average job satisfaction should be lower than that of men. Two sets of possible explanations, why that expected job satisfaction deficit is not consistently found, may be mentioned, different processes of judgment and differences in job content.

First, it could be the case that the mental processes women differ on average when thinking about their work in relation to other possible jobs (Clark, 1997; Mottazi, 1986). In general, it could be the case that women more think of their own jobs in comparison with others that are of lower quality, for example, held by other women, or typically through downward counterfactual comparison (Warr, 2007:293). This was again not the case in the sample in German horticulture, where men frequently evaluated the job characteristics in their present job more positive than woman.

Another possibility is that some job characteristics may on average be judged as less personally salient by women than by men, so that lower levels of those characteristics show a smaller negative impact on women's job satisfaction. Or certain core tasks might on average be more attractive, for example, caring activities, or less attractive, for example, physical labor, to women, so that between-gender satisfaction patterns in certain studies partly reflect divergent evaluations of the tasks they are required to undertake. This might be the explanation why women in the present study show no significant differences in overall job satisfaction in comparison with their male colleagues, beside the fact that their evaluation of the job characteristics is in most cases less positive as the evaluation of the male subsample. Clark (1997) showed that British women on average expected to earn less than men. Those low expectations about income partly accounted for their high level of job satisfaction. But this effect might become less important since role models of men

and women could have changed over time. For example, given that men and women are coming more to undertake similar jobs, women's social and counterfactual comparisons might gradually change to involve higher standards of job characteristics, yielding a reduction in women's job satisfaction relative to those raised comparison levels. Younger women may have more positive expectations about jobs than older ones, so that their comparative judgments of experienced job characteristics tend to be reduced, coming more parallel to men. This pattern could not be observed in the present study. Where there is no significant correlation between age and job satisfaction for women. But in the whole sample including men and women there is a negative relationship between age and job satisfaction ($r_s = -0.15$, $P < 0.05$, $n = 194$), indicating that older employees are more dissatisfied than younger ones. This dissatisfaction of older employees in horticulture might be the result of more physical stress ($r_s = -0.19$, $P < 0.01$, $n = 194$).

The trend of similar job satisfaction for women and men across time might perhaps reflect a more general increase in the involvement of paid work in women's life satisfaction. This pattern is in horticulture not equal yet, since in the sample, the relationship between job satisfaction and life satisfaction is still stronger for men than for woman. Tait *et al.* (1989) examined the relationship between job and life satisfaction in studies in two time periods. Before 1974, the average correlation for woman was low (0.16), but thereafter it increased to 0.31 (Warr, 2007:294-295).

3.3 Gender-specific differences in preferences for job characteristics

An overview of the results for the preferences of women and men are presented in Table 3. Overall, men and women do not differ in many regards concerning their preferences for job characteristics. For both genders, the two most important job characteristics are the opportunity to learn new skills and to be treated fairly by the employer. However, some substantial and significant differences could be detected. The right column of Table 3 reports the *P*-values for the Mann-Whitney-U test.

Results from female respondents showed significantly higher average values for four items: *new learning* (2b), *conflict between job demands* (3d), *conflicts between work and home* (3e) and *emotional dissonance* (3f). While results from male respondents indicate several higher average values for job characteristic preferences, none of these differences is significant in our sample.

Comparing our findings to earlier research findings, our results can be understood as further evidence that, on average, women view the opportunity for self-development within their jobs as significantly and substantially more important than men (Konrad *et al.*, 2000). What is more, our study supports earlier findings that women are more concerned about negative effects of work hours on family life (Wharton and Blair-Loy, 2006). Overall, the results concerning gender-specific differences are comparable to those of previous studies, even if many gender-specific differences are not significant in our sample. For example, Clark's (1997) examination of responses from a British national sample also found gender differences in average salience. Male employees ranked *pay* (7a) and both *promotion prospects* (11a, 11b) as significantly more important than did female employees (Clark, 2005; Warr, 2007:295-296). The same was observed in the present study in the case of *pay* (7a), even if not significant in our sample.

Judgements of personal salience in terms of the rated importance of a role characteristic are often described in employment settings as "job attribute preferences". In an early study, Centers and Bugental (1966) found that female employees in the United States tended more than male employees to value social support in their jobs (6b, 10a, 10b), and that male employees assessed as more important the *opportunity for skill use* (2a). Similar results could be found by Neil and Snizek (1988) in an Australian investigation. In the present sample in horticulture, women also prefer the job characteristics 6b, 10a and 10b more than men, but this result is not statistical significant. This again indicates that gender roles and therefore values in German horticulture possibly are becoming more and more homogeneous. With respect to skill use, this characteristic is more significantly important to women than to men in the present sample. This is not in line with the results of Centers and Bugental (1966). A meta-analysis by Konrad *et al.* (2000) confirmed that women more than men

Table 3. Mann-Whitney-U test statistic for mean preferences of women and men.¹

Job characteristics	Mean		Mann-Whitney-U-test P-value
	Women	Men	
1a Task discretion	4.22	4.32	0.561
1b Influence over the wider organization	3.62	3.60	0.728
2a Skill use	5.15	4.91	0.131
2b New learning	5.27	4.99	0.032**
3a Number of job demands	3.90	3.77	0.347
3b Difficulty of job demands	3.98	3.80	0.258
3c Task coherence	4.98	4.79	0.141
3d Conflict between job demands	4.12	3.80	0.092*
3e Conflict between work and home	5.09	4.41	0.000**
3f Emotional dissonance (inverse)	5.15	4.82	0.018**
4a Range of different tasks	4.20	4.14	0.997
5a Future predictability (excludes job tenure)	3.74	3.75	0.946
5b Clear role requirements	4.34	4.10	0.246
5c Availability of feedback	4.39	4.18	0.259
6a Amount of social contact	3.88	3.92	0.761
6b Quality of social contact	4.33	4.14	0.338
7a Pay level	4.02	4.07	0.739
8a Pleasant environment	4.22	4.24	0.744
8b Safe work practices	4.18	4.24	0.750
8c Adequate equipment	4.78	4.89	0.587
9a Value to society	4.12	4.21	0.684
9b Significance to self	4.72	4.61	0.564
10a Supervision is considerate	5.12	4.91	0.164
10b Supervisor is supportive	4.83	4.73	0.746
11a Job security	4.71	4.58	0.544
11b Good future prospects	4.49	4.24	0.258
12a Fair treatment of employees	5.20	5.14	0.724
12b The organization's morality in society	4.68	4.56	0.346

¹ ** Significant at the 0.05 level (two-tailed); * significant at the 0.1 level (two-tailed); women n=82, men n=111.

tend to view as important *supportive coworkers* (6b) and *supervisors* (10a, 10b) and the *opportunity to work with and help others* (9a); women also on average more valued the *opportunity for self-development* (2a, 2b; also significant in the present sample) and the presence of *variety in a job* (4a). Conversely, on average men have been found to rate as more important the opportunities for *job autonomy and personal influence* (1a, 1b). However, previous patterns differed somewhat between analyses, and specific details remain in need of further investigation. The results of the present sample are comparable to those of previous studies, even if many relationships are not significant. Clark (1997) examination of responses from a British national sample also found gender differences in average salience. Male employees ranked *pay* (7a) and both *promotion prospects and job security* (11a, 11b) as significantly more important than did female employees (Clark, 2005; Warr, 2007:295-296). The same were observed in the present study in the case of *pay* (7a), even if not significant. But cannot be supported for *promotion prospects* (11b) and *job security* (11a).

Overall, previous studies of personal salience suggest that women, in comparison with men, on average more value mutually supportive relations with colleagues and convenient working schedules. However, men tend on average to see autonomy, skill use, income, and job security as more important than do female employees. In considering women's greater job satisfaction in several studies, it is possible that those job

characteristics that are more negative for women are on average of relatively low salience to them, and thus have a smaller impact on their satisfaction.

3.4 Gender-specific average satisfaction with current job characteristics

Before discussing the results of gender-specific differences in satisfaction with current job characteristics, it should be stressed that the values of the two kinds of characteristics (AD and CE features) must be evaluated separately: due to the described different measurement scales used within the questionnaire as well as the data transformation process, an AD characteristic with a mean value of 2.00 might not be equivalent to a CE feature with the same mean (Table 4).

For the AD features, women and men most positively evaluated *new learning* (2b) and *emotional dissonance* (3f). Women reported very low levels of the job characteristics' *influence over the wider organization* (1b) and *future predictability* (5a). Men reported very low levels of the job characteristics' available *feedback* (5c) and *influence over the wider organization* (1b).

Table 4. Mann-Whitney-U test for mean satisfaction with current job characteristics evaluated by women and men.¹

Job characteristics	Mean		Mann-Whitney-U-test P-value
	Woman	Men	
1a Task discretion	3.35	3.53	0.059*
1b Influence over the wider organization	2.90	3.26	0.013**
2a Skill use	3.51	3.49	0.923
2b New learning	4.57	5.03	0.041**
3a Number of job demands	3.26	3.32	0.553
3b Difficulty of job demands	3.44	3.52	0.386
3c Task coherence	5.02	5.42	0.069*
3d Conflict between job demands	4.40	4.54	0.450
3e Conflict between work and home	4.06	4.39	0.170
3f Emotional dissonance (inverse)	5.01	5.38	0.140
4a Range of different tasks	3.63	3.61	0.871
5a Future predictability (excludes job tenure)	3.28	3.37	0.763
5b Clear role requirements	3.40	3.58	0.098*
5c Availability of feedback	3.02	3.14	0.517
6a Amount of social contact	3.50	3.56	0.765
6b Quality of social contact	3.49	3.65	0.252
7a Pay level	3.85	4.12	0.319
8a Pleasant environment	4.50	4.77	0.144
8b Safe work practices	4.67	5.04	0.050**
8c Adequate equipment	4.66	4.98	0.071**
9a Value to society	4.50	4.88	0.048**
9b Significance to self	4.95	5.36	0.056*
10a Supervision is considerate	4.52	5.00	0.071*
10b Supervisor is supportive	4.21	4.74	0.058*
11a Job security	4.78	5.37	0.012**
11b Good future prospects	4.73	5.16	0.099*
12a Fair treatment of employees	4.90	5.31	0.236
12b The organization's morality in society	4.91	5.01	0.830

¹ ** Significant at the 0.05 level (two-tailed); * significant at the 0.1 level (two-tailed); women n=82, men n=111.

For the CE features, women reported the most positive values in the case of the job characteristics *fair treatment of employees* (12a) and *considerate supervision* (10a). *Pay level* (7a) and *conflict between job demands* (3d) show the most negative characteristic values for female participants. The results for male participants show the highest values regarding *task coherence* (3c) and *job security* (11a), while *pay level* (7a) and *conflict between work and home* (3e) show the lowest characteristic values.

It is interesting to note that, compared to the male respondents, female respondents showed a higher average value for only one item: *skill use* (2a). The difference in mean between the two groups, however, is very small and not significant. In contrast, for almost half of all the items, male respondents indicated considerably and significantly higher mean value than female respondents. According to the results of the Mann-Whitney-U tests, these are: *job autonomy* (1a), the *influence over the wider organization* (1b), *new learning* (2b), *task coherence* (3c), *clear role requirements* (5b), *safe work practices* (8b), *adequate equipment* (8c), *value of the own work to society* (9a), *significance of the work to oneself* (9b), *supervision* (10a, 10b), *job security* (11a) and *good future prospects* (11b). We can thus summarize at this point that female respondents tend to evaluate the satisfaction with current job characteristics in horticultural business far less positively than male respondents. One explanation for these findings is that participating men and women on average undertake jobs that differ in ways that might give rise to different average levels of satisfaction. This explanation is supported by earlier findings, indicating that the tasks that women and men carry out in jobs do differ significantly. For example, it has been frequently noted that male employees report greater opportunity for *personal control* (1a, 1b) than do women (Grandey *et al.*, 2005; Neil and Snizek, 1988; Rode, 2004; Roxburgh, 1996). The same applies also to the opportunity of *skill use* (2a) (Rode, 2004).

Our results concerning gender-specific average satisfaction with current job characteristics are interesting, inasmuch as we simultaneously found evidence that, while women tend to evaluate the satisfaction with current job characteristics in horticultural business far less positively than men, the overall job satisfaction is only slightly and insignificantly lower for women.

A second possible explanation for gender patterns in job satisfaction concerns the level of the job characteristic values. In the present sample some significant differences were found in favor for men. But there were no significant differences regarding job satisfaction between women and men. One explanation could be that the impact of these job characteristics on job satisfaction is not so high for women, than for men. Another example is the study by Sousa-Poza and Sousa-Poza (2000), they asked whether the different national patterns might be accounted for by average differences in men's and women's job characteristics. Gender divergence was present for those countries in which male and female job satisfaction most differed. For example, in the UK and US – which exhibited the highest discrepancy in overall job satisfaction in favor for women – female employees reported higher levels of the vitamins 6, 9, 10, and 11 than did men (the opposite what was found in the present study). On the other hand, in Spain – where women's job satisfaction was particularly low relative to men's – female employees reported particularly low levels of those job characteristics (Warr, 2007:297).

Different exposure to environmental features may affect satisfaction. Perhaps men and women on average undertake jobs that differ in ways that might give rise to different average levels of satisfaction. However, it has frequently been found that male employees tend to report greater opportunity for *personal control* (1a, 1b) than do women (Grandey *et al.*, 2005; Neil and Snizek, 1988; Mottazi, 1986; Rode, 2004; Roxburgh, 1996). The same applies to opportunity of *skill use* (2, Rode, 2004). This was also true for men in horticulture in the sample of the present study. On the other hand, women's jobs have sometimes been found to provide significantly more *supportive supervision* (10, Mottazi, 1986; Sousa-Poza and Sousa-Poza, 2000), *coworker support* (6b, Roxburgh, 1996), and *job security* (11a, Rode, 2004; Sousa-Poza and Sousa-Poza, 2000), and to involve *less physical danger* (8b, Sousa-Poza and Sousa-Poza, 2000). No gender differences in *job demands* (3) or *variety* (4) were presented by Roxburgh's (1996) comparison, but hard *physical demands* (3b) were less prevalent for women in Clark's (2005) analysis of multinational data. The female subsample examined by Grandey *et al.* (2005) reported lower *job variety* (4) than did men. In a US sample, Grzywacz and Dooley

(2003) found that 7% of men and 23% of women were in jobs identified as “economically inadequate” (low levels of job characteristic 7), and a high income was significantly more common for men than for women in Clark’s (2005) analysis across several countries. *Good relations at work* (6b) were reported significantly more often by women than by men in Clark’s (2005) multicountry analysis. An issue of particular research interest in recent years is the extent to which *work and family responsibilities conflict* with each other (3e). Thus are there possible male-female differences in the amount of that conflict. As with exposure to other job characteristics, results have varied between samples. Although some studies have found that women report more overall interference between work and home than do men, no gender difference was observed in several other investigations (Butler *et al.*, 2005; Parasuraman *et al.*, 1996), which was also the case in the present study. Byron’s (2005) review suggested that although no gender differences are present overall, a difference does occur when participants are parents; women exposed to child-care demands tended to report more conflict between work and home (Warr, 2007:297-300). This was not included in the questionnaire of the present study and might be an opportunity for future research.

3.5 Relationships between job characteristics and job satisfaction

The relationship between the job characteristics examined and overall job satisfaction for women and men is presented in Figure 1. Major differences between the effect sizes exist for men and women.

The strongest relation with job satisfaction is the report for *good future prospects* (11b), that is, to have the feeling to make progress toward one’s personal goals. This job characteristic is on the first rank for both men and women. But the rest of the order is different between the two sexes. The relationship with job satisfaction is very strong in the case of women for *adequate equipment* (8c), *significance to self* (9b), *safe work practices* (8b) and *emotional dissonance* (7f). The characteristics *quality of social contact* (6b) and *difficulty of job demands* (3b) play a negligible role for women’s job satisfaction in the present sample.

For men, the *conflict between work and home* (3e) shows the second highest correlation with job satisfaction, followed by *considerate supervision* (10a), the *organization’s morality in society* (12b) and *supportive*

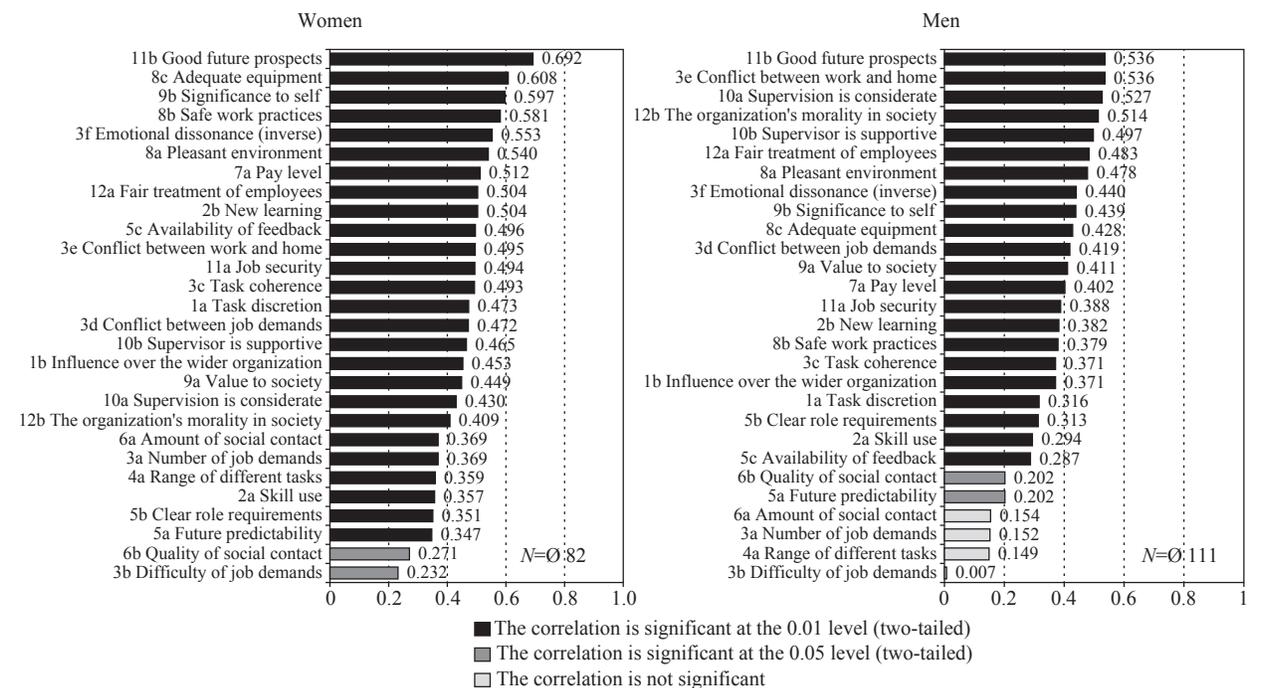


Figure 1. Spearman’s rho (r_s) for job characteristics and job satisfaction.

supervision (10b). The job characteristics 6a, 3a, 4a and 3b show only low relationships with job satisfaction for men.

■ *Factor analysis results*

To condense the 28 items into a limited number of coherent dimensions, we conducted an explorative factor analysis (main axis factor analysis, rotation method: Varimax with Kaiser normalization, rotation converged in 8 iterations). By using a minimum factor loading of 0.400, six separate dimensions were extracted (Table 5). No item loaded on two factors above the set minimum of 0.400, which simplified the interpretation. The minimum Cronbach's alpha value was 0.724, indicating a high reliability of the factors.

The first factor, *security and significance of workplace* condenses questions regarding the economic and physical security of the workplace as well as the significance of the job for the participants and the society. The second factor, *dealing with employees and society*, is composed of questions on how the executive managers and the company as a whole deal with their employees and further stakeholders. The third factor, *skill use and ability to exert influence*, condenses those items where respondents evaluated how far their skills are utilized in their workplace as well as how much influence they have over their own task and the wider organization. This factor also includes *future predictability* (excluding job tenure); this is the case because, if one has high *job autonomy* and *influence over the wider organization*, one can also plan future work steps and schedules and is not so often confronted with plan changes and resulting unpredictability. The fourth factor represents questions regarding how working tasks are carried out and whether employees receive *feedback* and *learn new skills* while doing so. The fifth factor, *social contact*, reflects the amount and quality of social contact in the workplace. The last factor, *conflict potential*, is composed of questions relating to conflicts between *job demands* and *home demands*. A more detailed description of the factors and regarded job characteristics can be viewed in Supplementary Table S1.

■ *Regression results*

Table 6 shows the results of the gender-specific OLS regressions, which shed light on the factors that shape the respondents' job satisfaction.

Concerns regarding multicollinearity can be mitigated by the variance inflation factor. The factor is at a maximum of 1.27 in the female subsample and 1.07 in the male subsample. The F-statistics show that both regressions as a whole are significant. With an adjusted R^2 of 0.600 in the female subsample and 0.454 in the male subsample, the regressions explain roughly half of the variance of the dependent variable.

In both subsample regressions, five of the six factors are significant. Moreover, a look at the standardized beta-coefficient indicates that, for both women and men, the factor *security and significance of the workplace* is the most influential factor determining their level of job satisfaction.

Table 5. Extracted factors.¹

Factors	Cronbach's alpha
Security and significance of workplace	0.856
Dealing with employees and society	0.912
Skill use and ability to exert influence	0.822
Working tasks and feedback	0.708
Social contact	0.741
Conflict potential	0.724

¹ Kaiser-Meyer-Olkin criteria = 0.894; 53.14% explained variance.

Table 6. Regression results.

Independent variables	Female subsample (n=82)		Male subsample (n=111)	
	Standardized coefficient	P-value ¹	Standardized coefficient	P-value ¹
Security and significance of workplace	0.437	0.000***	0.466	0.000***
Dealing with employees and society	0.205	0.006***	0.361	0.000***
Skill use and ability to exert influence	0.318	0.000***	0.235	0.002***
Working tasks and feedback	0.169	0.031**	0.245	0.001***
Social contact	0.094	0.208	0.103	0.154
Conflict potential	0.172	0.018**	0.141	0.052*
F-statistics (P-value)	F(6,750) = 21.27 (0.000***)		F(6,104) = 16.27 (0.000***)	
Adjusted R ²	0.600		0.454	

¹ Level of significance (two-tailed two-sample *t*-test): $P < 0.01 = ***$, $P < 0.05 = **$, $P < 0.10 = *$.

However, some insightful differences in the importance of the individual factors can be detected between the two genders. The factor *dealing with employees and society* is the second most influential factor for men, while for women it is the third most important factor. Moreover, the difference in the standardized beta coefficient is relatively substantial. This result suggests that women's job satisfaction is less influenced than men's job satisfaction by the way employers deal with employees and other stakeholders. This is surprising, inasmuch as agriculture is a male-dominated working sector, where women often report encountering difficulties asserting themselves (Lehberger and Hirschauer, 2015, 2016; Schmitt, 1997).

We find that the factor *skill use and ability to exert influence* is comparably more important for women's job satisfaction, while *working tasks and feedback* is more important for men's job satisfaction.

For men, the least important and least significant factor is *conflict potential*, while the standardized beta coefficient suggests that, for women, this factor is more important. This finding supports other evidence, indicating that women are more concerned about time management (Wharton and Blair-Loy, 2006). This is especially the case when it comes to potential conflicts between job and home demands.

The only factor that is not significant in our sample is *social contact*. Consequently, our results cannot be taken as direct support of previous evidence, indicating that positive *social contact* is a substantial factor for understanding employees' job satisfaction in general (Carlson and Mellor, 2004; Clark, 2005).

In conclusion, our data and analysis suggest that, while women's and men's level of satisfaction is significantly influenced by the same extracted factors, the influence of the factors', however, varies substantially between the genders.

3.6 Moderators of job satisfaction links

When analyzing gender and job satisfaction, the question arises whether an individual or group characteristic serves as a moderator of the associations between job characteristics and job satisfaction. In fact many job satisfaction correlations have been found to be similar between the sexes. However, a consistent pattern of difference is emerging for a number of characteristics (Warr, 2007:300-305).

Mottazi (1986) examined correlations with overall job satisfaction separately for the two genders. Holding constant other variables, such as age, education, income, and other job characteristics, he found that the *opportunity for control* (1a, 1b) made a greater contribution to job satisfaction for men (Bryce and Haworth, 2003; Pugliesi, 1995; Weaver, 1978), and that *supportive supervision* (10b) was more strongly correlated

with job satisfaction for women. However, for seven other features (pay, working conditions, promotion prospects, etc.) job satisfaction correlations were similar for men and for women. The results were different in the present sample. Women showed higher correlations for the *opportunity for control* (1a, 1b) and job satisfaction and for men *supportive supervision* (10b) had a stronger relationship with job satisfaction as for women. Surprisingly work-home conflict was much more related to men's job satisfaction than for women's in the sample of employees in German horticulture.

Carlson and Mellor (2004) found that the presence of caring and *supportive work group* (6b) was more strongly associated with women's job satisfaction than with men's (Clark, 2005). The same pattern was observed in the present study.

With respect to job characteristic 7a (*availability of money*), Bender *et al.* (2005) found that men's earnings were significantly associated with overall job satisfaction, but that the association was nonsignificant for women, controlling the same demographic and occupational variables in both cases. Again a different result were found for the present sample, 7a (*pay*) is significantly more related to job satisfaction for women than for men in a linear regression, controlling variables such as part-full-time job, temporary contract, seasonal worker status, education, leadership responsibility and age. *Job security* (11a) was more strongly associated with job satisfaction for men than for women in Clark's (2005) data from several countries. This was again not the case in the present study.

Why do those particular patterns of gender moderation occur or not occur? It is possible that the satisfaction of individuals or groups is more associated with environmental characteristics that are judged to be more personally salient to them, whereas characteristics of lesser perceived importance are necessarily less strongly linked to satisfaction (Warr, 2007:302). But other effects might also play a role. For example, *work-home conflict* is rated more important in the present sample of employees in German horticulture by women than by men but is more associated with job satisfaction for men than for women, even when controlling for other variables such as part-full-time job, temporary contract, seasonal worker status, education, leadership responsibility and age in a linear regression for both sexes. Attention needs also be directed to the composition of male and female samples. For example, there may be some confounding influence from a mixing of part-time and full-time respondents; more part-timers are likely in female than male subsamples, and part-timer's preferences for certain job characteristics may differ from those of full-timers. Similarly, preferences might vary between upper and lower level job holders, with more men at upper levels. Sample composition is not always clear in published reports, and its impact has not been explored in this area (Warr, 2007:303). Another methodological concern arises from possible between-sample variations in the rated salience of job characteristics. For example, it may be the case that differences occur between job characteristic preferences of women in more "masculine" and more "feminine" occupations, perhaps through differential self-selection into roles, or because the two subgroups have different comparison arising from their expose to different job content (Konrad *et al.*, 2000; Warr, 2007:304).

The result of the regression with the five factors suggests that women's job satisfaction is less influenced by the way that employers deal with employees and other stakeholders. This is surprising inasmuch as agriculture is male dominated working sector, where women often report to encounter difficulties to ascertain their selves (Lehberger and Hirschauer, 2015, 2016). The factor '*skill use and ability to exert influence*' is comparably more important for women's job satisfaction, while '*working tasks and feedback*' is more essential to men. For men, the least central and significant factor is '*conflict potential*', while the standardized beta coefficient suggests that for women this factor is much more important. This finding supports other, and above described, research results, indicating that women are more concerned about time-management. This is especially the case when it comes to potential conflicts between job and home demands. In conclusion, the data and analysis suggest that while women's and men's level of satisfaction is significantly influenced by the same extracted factors, the factors influence itself varies substantially between the genders.

There is a general need to examine systematically the moderating impact job characteristics' personal importance assessed in the sample of employees whose satisfaction is examined. As illustrated earlier, it could be that average between-gender differences in salience are accompanied by differences in the strength of association with the same employees' satisfaction. However, more evidence is needed, and possible differences in that pattern between different forms of well-being (satisfaction is only one of them) have to be investigated (Warr, 2007: 305).

Finally, it may be that gender differences in the perceived importance of job characteristics are becoming less marked. Recent decades have seen structural changes that have increased women's employment opportunities relative to men's and strengthened their role as an income-provider for themselves and their family. These shifts may on average have modified women's views about desirable job characteristics, bringing those more into line with the job characteristics preferences of male workers. Additional longitudinal evidence about gender-linked changes in perceptions and values is desirable (Warr, 2007:305).

4. Conclusions and outlook

To the best of our knowledge, no quantitative research has yet tackled the issue of gender-specific job preferences and satisfaction and its determinants in horticultural businesses. In our survey of horticultural employees, we found evidence that only a few significant differences regarding job preferences exist between the two genders. However, we also found evidence that, while women are significantly and substantially less satisfied with many current job characteristics, significant gender-specific differences in overall job satisfaction cannot be detected. Our analysis concerning the determinants of gender-specific job satisfaction suggests that women's and men's are significantly influenced by the same factors, albeit to a different extent. Consequently, the overall finding that women show significantly lower satisfaction values in almost half of the items included in the factor analysis, while their average job satisfaction level only slightly and insignificantly differs, is somewhat counterintuitive and indicates a pronounced need for further research.

Future research is needed to determine whether identified differences and commonalities between the genders apply to other agricultural sub-sections and can thus be generalized for employees in the agricultural sector. If not, future research will need to more precisely determine the specific group characteristics that explain deviations between different subpopulations. Longitudinal evidence about gender-linked differences in preferences and satisfaction may further help to shed light on the long-term developments in the sector.

With a look at the practical problem of how best to retain and recruit qualified staff in horticultural businesses, we may draw some preliminary conclusions. In order to recruit new staff, a look at the results concerning job preferences indicates promising ways to do so. Our results, for example, suggest that, for both genders, the two most important job characteristics are the opportunity to *learn new skills* and to be *treated fairly by the employer*. Consequently, a focus on securing that these two characteristics are fulfilled in horticultural business may be one way to recruit new staff. Moreover, our results concerning the causes of job satisfaction suggest that *security* and *significance of the workplace* are the most important determinants. Consequently, the provision of a safe and secure workplace appears to be one way to secure that employees stay in the business. This holds true for both women and men.

Supplementary material

Supplementary material can be found online at <https://doi.org/10.22434/IFAMR2017.0125>.

Table S1. Factors and factor loadings.

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