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Analyzing job satisfaction and preferences of employees: the case of horticultural companies in Germany

RESEARCH ARTICLE

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Abstract

German horticulture, as well as horticulture and agriculture in other industrialized countries, faces increasing skilled labor shortage. Additionally family run businesses in horticulture and agriculture are lacking a new generation of entrepreneurs, leading to increased structural change. Insights about job attributes attractiveness as well as their impact on job satisfaction lead to a more transparent environment in which employers and employees can make better-informed decisions and redesign the professional environment, resulting in increased job satisfaction, performance and career sustainability. For this purpose, a survey was undertaken from August 2013 to February 2015 through a questionnaire examining the preferences and perception of employees ($N=229$) regarding job characteristics. The theoretical background of the study is Warr's vitamin model, which assumes non-linear relationships between job characteristics and job satisfaction. The strongest connections with job satisfaction among employees are with future prospects and conflict between work-and-family. The study is one of the first of its kind to provide a detailed overview of job satisfaction of different groups of employees in German horticulture.

Keywords: social sustainability, human resources management, employee well-being, horticulture, vitamin model

JEL code: J28, J24, J43, J81, J71, J64

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1. Introduction

Personnel costs account for approximately 40% (own calculation based on the analysis of the main operational comparison in October 2012 by the Centre for Business Management in Horticulture and Applied Research e. V.) of all costs in German horticulture. Employee-related topics will be the cause of fundamental transformation processes in German companies in all industries in the next two decades (Claßen and von Kyaw, 2007: 17), and are seen as key to the future success of horticulture in Germany (Meyerding, 2015; Schreiner *et al.*, 2013: 73-76). Another aspect is the growing attention of consumers and society on the social dimension of sustainability (Lacy *et al.*, 2010), the potential of which has not yet been addressed by a number of sustainability rating systems in agriculture (Meyerding, 2015). Therefore knowledge of the preferences of employees regarding certain job features and the characteristics values of these job features is significant for the development of German horticulture.

There are diverse approaches to the measurement and understanding of psychological satisfaction at work (Eid and Larsen, 2008; Von Rosenstiel *et al.*, 2000). If job satisfaction is to be measured by the subjective assessment of the values of different aspects of the work, it is essential to determine what aspects should be included in the valuation model. Specifically, it is necessary to decide whether environmental characteristics (aspects of the work) alone or additional personal features are to be included in the analysis (Warr, 2012, 2013). One way of evaluating job satisfaction is to use Herzberg's (Herzberg, 1966; Herzberg *et al.*, 1959) two-factor model. For example, Bitsch and Hogberg (2005) used parts of Herzberg's model for a qualitative study in U.S. horticulture based on 31 interviews. More recently, Reiche and Sparke (2012) performed a quantitative study with 446 vocational and master craftsman scholars, adopting an innovative analytical approach, but also mainly based on Herzberg's model (Meyerding, 2015).

Although the theoretical use of Herzberg's *et al.* (1959) model is widespread in business administration, personnel management literature and relevant studies, it is not supported by empirical studies (Von Rosenstiel *et al.*, 2000). According to the author's knowledge, there is little quantitative research in German horticulture that has analyzed the nature of job satisfaction.

Many of the empirical studies examining the relation between job attributes and employee well-being and health have been inspired by Karasek's (1979) job-demand-control model. The model postulated the importance of two particular job attributes in their effect on the well-being and health of an individual: decision latitude and job demands. The later has been described as 'the psychological stressors involved in accomplishing the work load' (Karasek, 1979). It refers to concepts such as complex work, time-pressure, and high working pace. Decision latitude is described as the potential control of employees over tasks together with their individual skill usage. Warr (2007) developed a conceptual framework that can be seen as a reaction and addition to Karasek's job-demand-control model. In Warr's vitamin model, he uses the way vitamins affect human health as a metaphor for the effect of environmental influences on well-being and mental health (Warr, 2007). Central attributes of the vitamin model are its comprehensive description of the concept of mental health. The curvilinear relations between job attributes and different kinds of well-being and mental health, the differential effects of specific job attributes and the effect of personal characteristics.

A central theme of Warr is the assumption that different job attributes are associated with different dimensions of well-being in different ways. For example, job demands are assumed to be more strongly related to the comfort-anxiety dimension while job autonomy should be more associated with enthusiasm-depression. In the present study it is not distinguished between different dimensions of well-being, but focused on the concept of job satisfaction. Differential relations have been found in earlier studies using the vitamin model (De Jong and Schaufeli, 1998; De Jong *et al.*, 1999; Jeurissen and Nyklicek, 2001; Meyerding, 2015; Warr, 1990). Few studies investigating curvilinear relations between job attributes and mental health have shown some evidence for non-linear relationships (De Jong and Schaufeli, 1998; Jeurissen and Nyklicek, 2001; Meyerding, 2015, 2016).

The objective of this study is to examine the relationships between job aspects and job satisfaction in German horticulture, to show the preferences of employees according to the job aspects in question and investigate the likely effects of personal characteristics. At the same time, it demonstrates that a job satisfaction indicator, based on the survey method used here, contains the most important aspects relevant to job satisfaction in German horticulture. In addition, the preferences with respect to the job characteristics investigated are considered. This is intended to show which areas in particular need to be considered by horticultural companies to be attractive employers today and in the future.

This empirical quantitative study examines the relationships between 28 job characteristics and job and life satisfaction in German horticulture. Furthermore, the preference structure with respect to the job characteristics investigated is clarified. For this purpose, more than 229 complete records were examined. The theoretical background and the methodology of the study are based on the current version of Warr's (2007) vitamin model, which provides 12 job features (vitamins) and their hypothetical utility functions. The utility functions describe the nature of the relationship between job features and different forms of satisfaction. The operationalization of the vitamin model and the curves of the utility functions in German horticulture have previously been tested by Meyerding (2015).

In principle, satisfaction measures aim to make human emotion observable. To investigate why some people are happier than others, this article considers perspectives that are either 'eco-centric' or 'person-centered.' In the first case, the influence of the environment on the satisfaction of an individual is analyzed. In the second case the influence of a person's own characteristics on individually experienced satisfaction is analyzed.

2. Material and methods

2.1 Job satisfaction measurement based on the vitamin model

The main difference between Warr's vitamin model and other models (Brayfield and Rothe, 1951; Herzberg *et al.*, 1959; Weiss *et al.*, 1967) is not the choice of features, but the idea that the expression of the characteristics does not have a linear relationship with satisfaction. Consequently, there are features that have diminishing marginal utility or negatively affect satisfaction when showing very high values (Figure 1).

Satisfaction and the course of the utility function vary from person to person. A stronger link between low values for environmental aspects and subjective satisfaction has been shown in several studies. Cummins (2000) argues that subjective satisfaction is maintained at a stable individual level as long as the values of environmental characteristics are in the moderate range. Within this range, it is to be expected that people adjust their expectations and feelings, and so maintain their individual equilibrium (Headey and Wearing, 1992: 39). For each of these characteristics, a deficit is perceived as an active threat and does not represent a desirable goal.

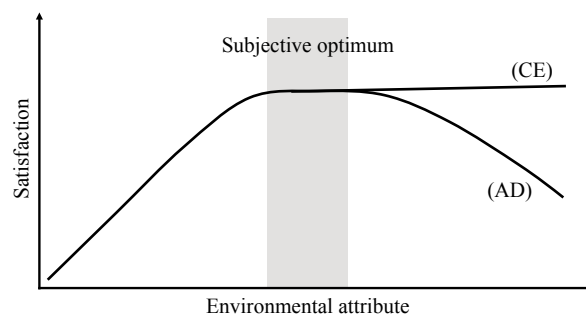


Figure 1. The vitamin analogy: bell-shaped curve of the utility function (AD) and diminishing marginal utility (CE) (adapted from Warr, 2013).

Table 1 lists the 12 features of the vitamin model. The operationalizations of these latent variables are identified by lowercase letters. The type of utility function is given by the abbreviations (CE) for diminishing marginal utility and (AD) for a bell-shaped curve (Warr, 2013). The vitamins are operationalized in this study through their 28 aspects. Meyerding (2015) has successfully tested the operationalization through confirmatory factor analysis, and the validity of the entire model in the context of German horticulture using a structural equation model.

■ *Job characteristic 1: the possibility of personal influence*

Two aspects of this job characteristic must be considered: intrinsic and extrinsic (Karasek, 1979). The intrinsic aspect (1a) involves the adaptation of other job characteristics, such as the opportunity for self-determination in the level of skill use, objectives, and variation from time to time. The extrinsic aspect (1b) relates to one's influence on the organization as a whole. High perceived responsibility can lead to fears of bad decisions, cognitive overload, and fear of unpredictable events.

Table 1. The 12 vitamins of Warr's model and their 28 aspects for evaluation by employees.¹

Vitamin model	Job features 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 There are two possible utility functions for the vitamins and relevant job characteristics: decreasing marginal utility (CE) and a bell-shaped curve (AD); the vitamins and many job characteristics are from Warr (2007: 239-240); cf. Meyerding (2015).

■ *Job characteristic 2: the possibility of using one's skills*

There is a range of evidence that employees who are limited in the use of their skills are less satisfied than others. The personal appreciation of own skills (2a) is illustrated by the study of Lewin *et al.* (1944). The ability to learn (2b; Patterson *et al.*, 2004), i.e. to acquire new skills, is a key feature in the model of positive progression in work presented by Spreitzer *et al.* (2005).

■ *Job characteristic 3: external goals*

At low levels of this job characteristic, few demands are placed on the individual and there is little external pressure to carry out an activity. Very high levels of externally set goals require attaining many and/or difficult goals; this can lead to feelings of being badgered, inability to maintain the quantity or quality of work output required, and possibly fear of failure (Warr, 1987). This third job characteristic has six aspects. The first aspect (3a) concerns the number of tasks. The second aspect (3b), which is associated with the first, is the possibility of requirements that are too demanding. This results in dissatisfaction according to the bell-shaped utility function. Thus, an individual optimum exists: a certain amount of goal setting, which requires a degree of effort, is desirable. However, increasing demands lead to overload (MacDonald *et al.*, 2001). The third aspect (3c) is task identity. A specific aspect of goals in a work environment is the degree to which the individual tasks are positively related. Hackman and Oldham (1975) defined work identity as the degree to which it requires doing a task 'completely,' that is performing something from the beginning to the end with a visible result. The fourth aspect (3d) is role conflict. High demands are observed to result from a conflict of roles. Another form of role conflict occurs between working life and private life, and is described as work-home conflict and work-family conflict (3e; Greenhaus and Beutell, 1985). The sixth aspect (3f) is emotional dissonance. A special form of high job demands arises in situations in which the employee is expected to show an emotion without actually feeling it (Glomb *et al.*, 2004).

■ *Job characteristic 4: variety*

This feature of the vitamin model includes variations (4a) in the conditions of the workplace and in the activities which are carried out by the employees. People prefer change in their experiences to find a balance between comfort and relief from repetitive routines and behaviors (Kornhauser, 1965).

■ *Job characteristic 5: clarity of the environmental situation*

A lack of clarity in the environmental situation is undesirable in itself. Caplan (1975) developed a 'job-futures-ambiguity' scale for the first of the three aspects of this characteristic; this includes the security of career development (5a) and the expected future value of one's own abilities. The second aspect is the clarity of the role (5b), which includes the amount of information provided on what behavior and performance levels are required (Glazer and Beehr, 2005). The third aspect is feedback (5c) on one's own performance, which is essential to gain or maintain the personal ability to influence the environmental situation, as well as for the development and use of one's own abilities.

■ *Job characteristic 6: contact with other people*

Two aspects of this feature should be considered: first, the quantity (6a) of contact and second the quality (6b) of the contact.

■ *Job characteristic 7: money*

The amount of salary is of personal importance, not only to secure one's existence or a particular lifestyle, but for its social importance, 'equal' treatment, and as a sign of personal success (Srivastava *et al.*, 2001). The relationship between income and satisfaction is higher in low-income groups than at a moderate level

(Kornhauser, 1962). Studies in this field are often based on a version of equity theory (Adams, 1963). This implies that people compare their ratio of input and income to the input-output ratio of other people. Inputs are usually defined in terms of skills, effort, qualifications, working conditions, and working hours, etc.

■ *Job characteristic 8: physical security*

At work, central issues of physical security (8) are the absence of danger (8b) and the presence of good working conditions, ergonomically appropriate equipment (8c), and comfortable and safe levels of temperature and noise exposure (8a), for example. Inadequate equipment can be both intrinsically undesirable and a cause of dissatisfaction, resulting in errors and interruptions in the working process (Salvendy, 2012: 708).

■ *Job characteristic 9: valued social position*

Professions and jobs differ in the value that is attributed to them by society but also within an organization. It transpires that job satisfaction is related to this subjective value (9a; Bradburn and Caplovitz, 1965). The 'task significance' scale of the job diagnostic survey records the importance that employees attach to their work tasks (9b; Hackman and Oldham, 1975). This job characteristic is open to subjective interpretations to a greater extent than others.

■ *Job characteristic 10: supportive leadership*

Between 1950 and 1970 (Ronan, 1970), studies of aspects of leadership were often carried out using interviews and questionnaires containing items addressing the perceptions of staff concerning the extent to which the behavior of executives was considerate (10a). The questions concerned also the support (10b) and the respect shown to the employees, compliance with the welfare of employees, and the tendency to praise and value their work. Behavior that can be defined as considerate includes a willingness to listen and to accept suggestions from employees.

■ *Job characteristic 11: career prospects*

A career (11) is often understood as upward advancement in the job hierarchy. Careers can, however, also develop positively for the individual in other ways, such as through career changes, or assuming an alternative role or teaching activities. Two aspects of career prospects should be considered. First, jobs differ in their job and income security (11a). The second aspect of career prospects is the possibility of taking on another role (11b).

■ *Job characteristic 12: equality*

The last job characteristic with diminishing marginal utility in the vitamin model includes two aspects of equality (12): fairness in the relationship between an employee and employer (12a), and fairness of the company toward society as a whole (12b).

The relations to be examined may be influenced by third factors. Third factors, which only have an impact at a single point in time, can include current mood, the social environment, or even the weather. Long-term variables include demographic characteristics, such as age, education, gender, skills, and the character of employees. The characteristics also have a tendency for constant evaluation, so a person perceives both the environmental situation and subjective satisfaction more positively or more negatively at different times. In addition, the different selection of jobs as a third variable could be responsible for an observed correlation. For example, less satisfied people might tend to choose jobs with certain characteristics or not to change jobs ('drift hypothesis'), so that a recorded association between these characteristics or characteristic values and dissatisfaction will be due, at least in part, to differences in the sample, rather than to the job characteristics

themselves. Other third variables that may have an impact on an observed correlation are additional job features not included in the study.

2.2 Personal characteristics and their influence on subjective satisfaction

Environmental features are only partly responsible for satisfaction. Understanding the influence of personal characteristics is important to ensure proper interpretation of the results of the measurement.

■ *Different individual comparison processes and reference values*

When employees are asked to evaluate a particular job characteristic, they turn to comparisons and look for reference values with which they compare their individual situations. Depending on which reference values are used, the subjective evaluation and therefore the level of satisfaction change, regardless of the objective value of the characteristic.

■ *Demographic characteristics and their influence on subjective satisfaction*

Overall, women tend to exhibit higher job satisfaction than men (Grandey *et al.*, 2005). Whether a causal relationship between gender and satisfaction can be determined here is questionable. However, with regard to job characteristics, differences between the genders can be observed (Grandey *et al.*, 2005). It has frequently been observed that older people are more satisfied than younger (Mroczek and Spiro, 2005). The reasons for the higher satisfaction of older people could be changes in their evaluation processes, but also various aspects in the values of job characteristics.

■ *Different forms of employment and their influence on subjective satisfaction*

A third group distribution could relate to different forms of employment with different characteristics, for example, part-time and full-time jobs, or fixed and temporary employment (Trzcinski and Holst, 2003). It is also useful to distinguish between core workers and loan or seasonal workers as seasonal workers occupy a special position in German horticulture and contribute significantly to the performance process.

■ *Influence of individual personality on subjective satisfaction*

Other personal factors that have an impact on subjective satisfaction are personality and innate cognitive differences. Although these personality traits are not considered in this study, but it is crucial to note that these partly innate character traits have an influence on perceived subjective satisfaction.

■ *Influence of individual abilities and level of education*

Also, one's own abilities and level of education could affect subjective satisfaction (Ganzach, 1998). However, a higher level of education increases the likelihood of having a job that has beneficial levels of different job characteristics (Ganzach, 2003).

2.3 Research design

As mentioned earlier an online-questionnaire was designed and distributed mainly through social media between late 2013 and early 2014. In total 229 complete data sets from employees of horticultural companies were collected. SPSS 24 (IBM, Armonk, NY, USA) was used to perform the statistical analysis.

The questionnaire contained first the preference measurement for all 28 job attributes using a Likert scale from 1 for unimportant to 6 for essential. The participants were asked to think about their dream job and how important the job attributes investigated are in this dream job. The concept of a dream job was used

because the participants should take a step away from their current job, to think about freely what is really important to them in working life.

The second part of the questionnaire was about the values of the 28 job attributes in the current job. A Kunin (1955) scale was used for this part, to help the participants to grasp the nature of the two different kind of job attributes according to the vitamin model: bell-shaped curve of the utility function or additional decrement (AD) attributes, where too high values are harmful, and diminishing marginal utility or constant effect (CE) attributes, where more of this attribute, after a subjective optimum, does not lead to an increase in subjective well-being. The Kunin scale uses emotion icons (faces) to assess the values of characteristics. This is especially necessary as they are often assumed to be linear. All variables were coded in a way that higher values of the variable represent better/more positive states of the attribute in question.

As mentioned earlier, in the case of aspects for which a bell-shaped curve of the utility function is assumed (AD) (1a, 1b, 2a, 3a, 3b, 4a, 5a, 5b, 5c, 6a and 6b), the transformed variables have been used, in this case very high characteristic values were coded as very low, as both should have a negative impact on job satisfaction. Accordingly, for AD aspects, the coding for the transformed variables is as follows: 1,2,3,4,3,2,1. The two aspects concerning conflict (3d and 3e) are inversely coded due to their relationship, so that high conflict levels are indicated by low codings.

In a third part of the questionnaire, the participants were asked to provide some social-demographic information such as age, education, and gender as well as data about the company they are currently working in, like branch, number of employees, etc.

To rank the preference for the job attributes the mean values for the preference measurement of the first part of the questionnaire were calculated. This shows which attributes are especially important from the opinion of employees of horticultural companies. These preferences does not tell us the impact of the job attributes on job satisfaction.

To show the effect of each attribute on job satisfaction the Spearman correlation coefficients for the relationship of the values of the job attributes in the current job and job satisfaction were calculated. As mentioned earlier, the variables are code in a way that higher values indicate positive states of the job attribute. This was particularly important for the bell-shaped (AD) attributes.

Furthermore, personal characteristics and characteristics of the position and company the employees are working in can have an influence on job satisfaction but also on job attribute preferences and subjective perceived values (states) of the job attributes in the current job. For this reason, the Spearman correlations of the personal and structural characteristics with preferences and current job attribute evaluation are calculated as well. Another question is if the personal and structural characteristics substantially help to explain job satisfaction? To answer this question two regression models, one without and one including these additional variables are compared.

To identify job attributes where action is needed, the attributes are also presented in an importance grid combining preferences for and impact of the different job attributes. If an attribute is both, important to the employees and has also a strong relation with job satisfaction, it should be under particular consideration by the employers.

To see which job attributes in horticulture are negatively or positively rated by employees, the mean values of the evaluation of the job attributes in the current job are shown. For identifying future trends and possible differences between the generations the result of the present study are compared to those of a study focusing on vocational and master craftsmen scholars as well as students of horticulture science (Meyerding, 2016) are compared at the end of the result section.

4. Results

4.1 Sample description

Employees of horticultural companies took part in the study from August 2013 to February 2014; 229 full records are included in the analysis. In Figure 2 (left), the origins of the participants are shown on a map of Germany, using the respondents' zip codes. The distribution on the map shows that the study participants come from all over Germany, with the eastern part less well represented than the western part.

Participants in the study represent the diversity of the sectors in German horticulture (Figure 2, center). Thus, vegetable farms and fruticulture are underrepresented in the study. They account for 59% (vegetable farms) and 22% (fruticulture) of the population of workers in German horticultural production (Statistisches Bundesamt, 2006). The age distribution, shown in a histogram in Figure 2 (right), shows that the study participants are (as expected) not normally distributed: there are two accumulations around 27 years and 51 years. The first accumulation, as well as the low average age of 35 years, can be explained by the use of social media as a distribution channel, social media being predominantly the province of younger workers (Busemann, 2013).

Overall, the level of education in the sample is slightly higher than would be expected in the population. The relatively high level of education within the sample can be explained by the fact that young participants have a higher level of formal education than older participants (Piopiunik and Wößmann, 2011), and the average age of respondents is relatively low at 35 years. Furthermore, it can be suggested that people with a higher level of education are more likely to be willing to participate in an online survey generated by a university institution (Häder, 2015: 180).

In the sample, the proportion of companies with more than 10 employees is slightly larger (Figure 3) than in the population as approximately 80% of the horticultural production companies have fewer than 10 employees, but the horticulture census of 2005 does not distinguish between seasonal workers and permanent employees (Statistisches Bundesamt, 2006: 72-73).

Of the study participants in the observed group of employees, 42% are women. The vast majority (82%) are not self-employed, have a permanent contract (74%), and work full time (84%). Only 6% would call themselves loan or seasonal workers. Many of the study participants have a form of management responsibilities (61%).

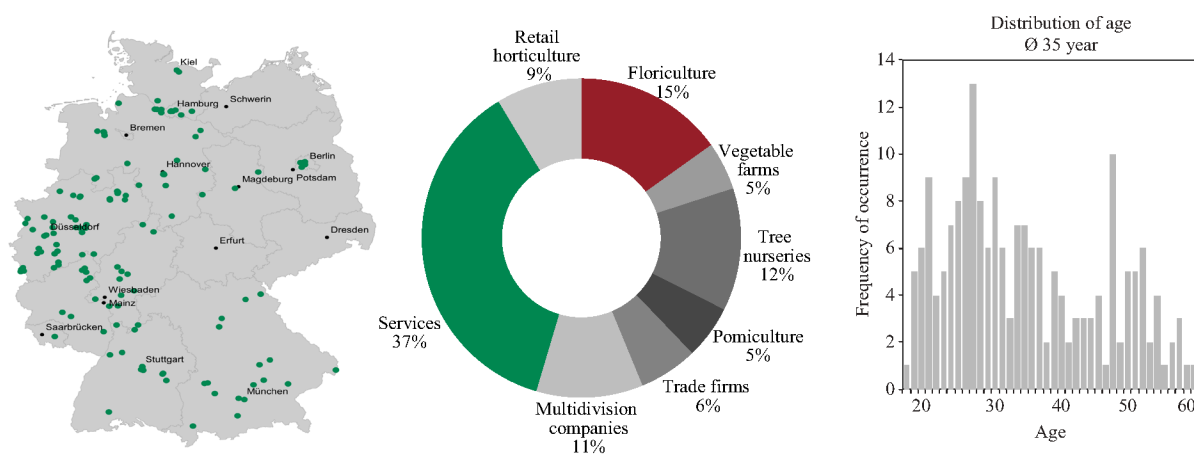


Figure 2. Sample description.

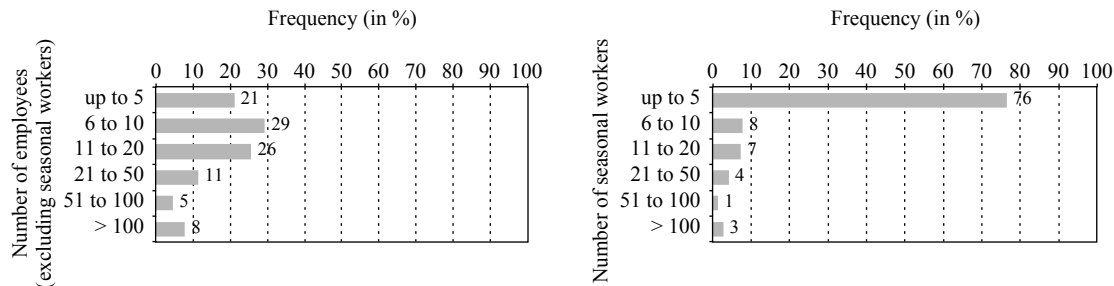


Figure 3. Distribution of the number of employees and seasonal workers in the horticultural companies.

4.2 Preferences of employees regarding job characteristics

The study participants were asked to evaluate the 28 aspects of the 12 job characteristics on a six-point Likert scale (from 1=unimportant to 6=essential). For this purpose, they should imagine their dream job and evaluate the aspects that would be particularly important in their fictitious dream job. This wording was chosen to gain distance from their current position. The aim of the question was to determine the general preferences of employees, regardless of their current work. Figure 4 shows the mean values of these evaluations, with a small standard deviation of 1.0 to 1.2.

In first place is the employer's fair treatment of its employees (12a), followed by opportunities to expand one's abilities and learn (2b), the considerate behavior of the supervisor toward staff (10a), and the use of one's own skills and experience (2a). Also, emotional dissonance (3f), operationalized with the statement 'in my work I can be completely myself' and task identity (3c) 'to perform tasks from the beginning to the end with a visible result,' are very important for the participants. The work in horticulture is often of a physical nature, so appropriate equipment (8c, tools and machines) is strongly preferred by the employees. Also, the sustainability of the employer (12b), operationalized by the statement 'the company's dealings with society as a whole (suppliers, customers, and the environment),' is of great importance to the employees. The amount of salary (7a) is in the middle and is of moderately minor importance. In relation to other aspects,

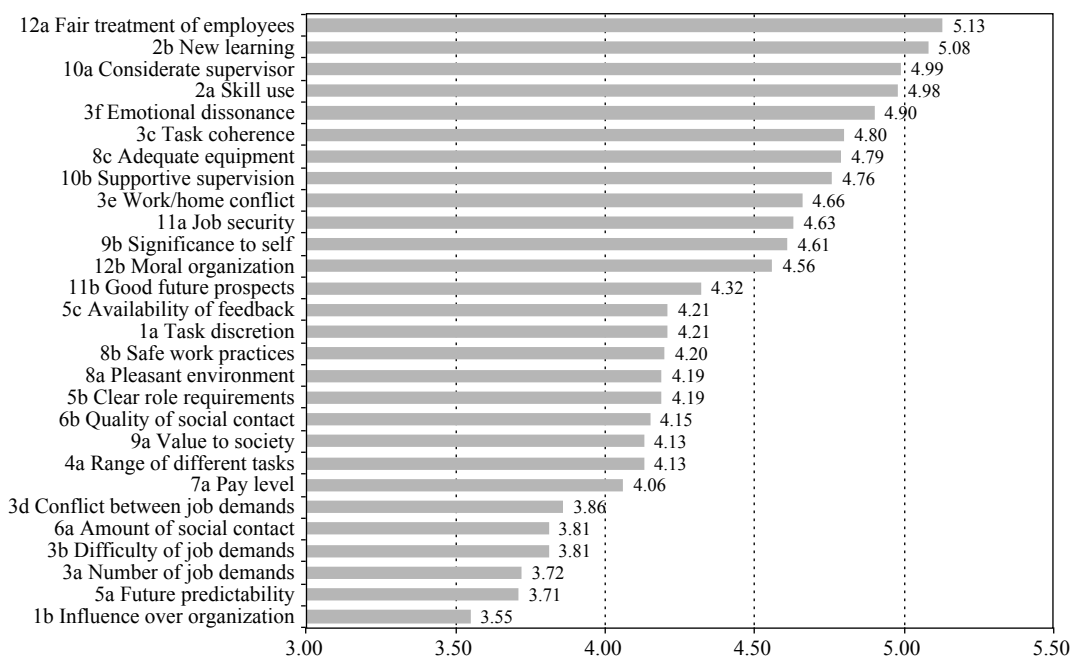


Figure 4. Preferences regarding aspects of job characteristics.

the predictability of the future with respect to the job (5a, without career prospects) and one's impact on the organization as a whole (1b, also through trade unions or works councils) are of minor significance for the employees in German horticulture.

4.3 Influence of job characteristics on job and life satisfaction

The main objective of the study is to investigate which job characteristics or aspects show the strongest influence on employee satisfaction in German horticulture. For this purpose, the relationship between the subjective evaluation of the characteristics and subjective job satisfaction was observed. Table 2 lists the correlation coefficients. As normal distribution cannot be assumed, Spearman's rho (r_s) correlation coefficient was used (Field, 2009: 179-180). Also the directions of the relationships are unknown; therefore the correlation coefficients are two-tailed (Field, 2009: 176). From Table 2, it can be seen that the job aspects also correlate with each other. Thus, an employee with a high evaluation of job autonomy (1a), for example, may be able to exert a positive influence on its variety (4a, $r_s=0.22$; $P<0.01$), as well as influencing working time to a greater extent, which then leads to a lower conflict between work and family life (3a, $r_s=0.28$; $P<0.01$; reverse coded, so higher values reflect less conflict).

The strongest connection with job satisfaction is observed for future prospects (11b), i.e. feeling that one is moving in a positive direction. Following closely in second place comes the conflict between work and family life (3e), followed by the employer's fair treatment of employees (12a) and appropriate equipment (8c) with the same correlation coefficient.

The aspects supportive leadership (10b), considerate leadership (10a), and emotional dissonance (3f) can be found in the third place. The leadership style and the possibility of being oneself at work without having to make too great an adjustment show a strong influence on employee satisfaction in German horticulture.

Ranked high in fourth place are (12b) the employer's dealings with society as a whole (customers, suppliers, and the environment) and the personal value of the work (9b), that is, the extent to which the employees identify themselves with their work. The sustainability of the horticultural company thus has a strong relationship with employee satisfaction. Employees in horticulture want to work for the 'good,' because this increases one's social position (9a; value of the job for society; $r_s=0.41$; $P<0.01$) and the personal value of the work (9b; $r_s=0.50$; $P<0.01$).

Only after these aspects are classic job features, such as adequate working environment (8a), job security (11a), and safe working processes (8b). In midfield are aspect (2b) skill learning and the aspects (3d) task conflict, (9a) the value of the job for society, (7a) the salary and (3c) the job integrity, i.e. to carry out a task from the beginning to the end with a visible result.

In the bottom midfield, there are aspects such as (1b) the impact on the organization as a whole and (1a) working autonomy, (2a) being able to use one's own abilities, (5c) the availability of feedback, and (5b) clear definition of what is expected in the respective role. The difficulty of tasks (3b) shows no significant relationship with job satisfaction in the sample.

Table 2 also shows the relationships between the individual job aspects and life satisfaction as a whole. This shows a different picture from the case with job satisfaction. Here also, (11b) good prospects has the strongest correlation, but this is not as high as for job satisfaction. In second place, just as for job satisfaction is (3e) conflict between work and family life. The following points, however, differ. The third strongest connection is (3f) emotional dissonance, followed by (3d) task conflict, and (7a) salary.

Table 2. Relationships between aspects of job characteristics and job and life satisfaction.¹

	J	L	2b	3c	3f	7a	8a	8b	8c	9a	9b	10a	10b	11a	11b	12a	12b	3d	3e	1a	1b	2a	3a	3b	4a	5a	5b	5c	6a	
J Job satisfaction	1																													
L Life satisfaction	0.53**	1																												
2b New learning	0.45**	0.20**	1																											
3c Task coherence	0.44**	0.23**	0.56**	1																										
3f Emotional dissonance	0.50**	0.29**	0.47**	0.59**	1																									
7a Pay level	0.44**	0.28**	0.28**	0.28**	0.34**	1																								
8a Pleasant environment	0.48**	0.22**	0.38**	0.32**	0.32**	0.34**	1																							
8b Safe work practices	0.46**	0.25**	0.39**	0.37**	0.32**	0.38**	0.63**	1																						
8c Adequate equipment	0.51**	0.20**	0.35**	0.37**	0.41**	0.36**	0.57**	0.65**	1																					
9a Value to society	0.44**	0.20**	0.37**	0.39**	0.42**	0.35**	0.37**	0.41**	0.42**	1																				
9b Significance to self	0.49**	0.27**	0.47**	0.57**	0.48**	0.27**	0.38**	0.47**	0.45**	0.66**	1																			
10a Considerate supervisor	0.50**	0.19**	0.46**	0.42**	0.48**	0.37**	0.34**	0.38**	0.37**	0.39**	0.50**	1																		
10b Supportive supervision	0.50**	0.22**	0.45**	0.41**	0.43**	0.30**	0.32**	0.32**	0.40**	0.42**	0.53**	0.82**	1																	
11a Job security	0.46**	0.20**	0.27**	0.31**	0.30**	0.33**	0.41**	0.36**	0.40**	0.41**	0.46**	0.41**	0.39**	1																
11b Good future prospects	0.62**	0.38**	0.46**	0.37**	0.41**	0.31**	0.40**	0.41**	0.32**	0.48**	0.54**	0.41**	0.40**	0.55**	1															
12a Fair treatment of employees	0.51**	0.24**	0.42**	0.42**	0.55**	0.37**	0.35**	0.39**	0.42**	0.36**	0.45**	0.74**	0.71**	0.42**	0.45**	1														
12b Moral organization	0.49**	0.24**	0.30**	0.36**	0.46**	0.30**	0.30**	0.43**	0.53**	0.41**	0.50**	0.58**	0.58**	0.42**	0.39**	0.72**	1													
3d Conflict between job demands	0.44**	0.28**	0.26**	0.37**	0.39**	0.29**	0.26**	0.36**	0.37**	0.33**	0.36**	0.34**	0.37**	0.22**	0.31**	0.43**	0.42**	1												
3e Work/home conflict	0.51**	0.36**	0.23**	0.32**	0.3**	0.41**	0.31**	0.42**	0.35**	0.39**	0.37**	0.39**	0.32**	0.27**	0.35**	0.40**	0.39**	0.55**	1											
1a Task discretion	0.39**	0.23**	0.30**	0.24**	0.27**	0.26**	0.27**	0.31**	0.28**	0.35**	0.33**	0.38**	0.41**	0.23**	0.29**	0.33**	0.32**	0.32**	0.28**	1										
1b Influence over organization	0.39**	0.21**	0.28**	0.18**	0.23**	0.25**	0.24**	0.24**	0.26**	0.33**	0.29**	0.27**	0.31**	0.19**	0.29**	0.28**	0.34**	0.24**	0.30**	0.52**	1									
2a Skill use	0.35**	0.09	0.31**	0.23**	0.23**	0.17*	0.16*	0.24**	0.24**	0.26**	0.24**	0.34**	0.37**	0.23**	0.23**	0.28**	0.27**	0.30**	0.19**	0.42**	0.36**	1								
3a Number of job demands	0.26**	0.13*	-0.01	0.09	0.19**	0.24**	0.09	0.10	0.20**	0.20**	0.10	0.11	0.14*	0.07	0.12	0.15*	0.20**	0.27**	0.23**	0.29**	0.34**	0.23**	1							
3b Difficulty of job demands	0.12	-0.04	0.21**	0.14*	0.14*	0.18**	0.01	0.13	0.12	0.20**	0.16*	0.12	0.17*	0.09	0.10	0.06	0.11	0.16*	0.04	0.22**	0.1	0.39**	0.24**	1						
4a Range of different tasks	0.28**	0.02	0.13	0.12	0.10	0.16*	0.10	0.15*	0.23**	0.22**	0.19**	0.23**	0.23**	0.19**	0.19**	0.15*	0.25**	0.16*	0.14*	0.16*	0.22**	0.27**	0.36**	0.43**	1					
5a Future predictability	0.27**	0.13*	0.08	0.03	0.10	0.17**	0.12	0.10	0.23**	0.21**	0.13*	0.23**	0.24**	0.34**	0.21**	0.17*	0.20**	0.16*	0.15*	0.23**	0.27**	0.21**	0.26**	0.26**	0.34**	1				
5b Clear role requirements	0.32**	0.07	0.17*	0.17**	0.33**	0.23**	0.19**	0.20**	0.34**	0.24**	0.23**	0.22**	0.26**	0.19**	0.14*	0.25**	0.27**	0.22**	0.16*	0.37**	0.29**	0.32**	0.26**	0.20**	0.20**	0.29**	1			
5c Availability of feedback	0.34**	0.16*	0.39**	0.34**	0.23**	0.24**	0.24**	0.21**	0.19**	0.22**	0.25**	0.33**	0.36**	0.15*	0.20**	0.30**	0.27**	0.25**	0.28**	0.37**	0.38**	0.31**	0.09	0.22**	0.14*	0.16*	0.31**	1		
6a Amount of social contact	0.24**	0.13*	0.11	0.12	0.12	0.15*	0.18**	0.16*	0.15*	0.23**	0.22**	0.18**	0.15*	0.10	0.10	0.10	0.10	0.17**	0.22**	0.15*	0.17**	0.19**	0.23**	0.18**	0.17*	0.23**	0.11	0.25**	1	
6b Quality of social contact	0.25**	0.05	0.15*	0.19**	0.21**	0.16*	0.22**	0.18**	0.26**	0.24**	0.22**	0.24**	0.21**	0.21**	0.17*	0.18**	0.17*	0.17*	0.18**	0.30**	0.27**	0.32**	0.24**	0.19**	0.19**	0.26**	0.19**	0.37**	0.54**	1

¹ ** The correlation significant at the 0.01 level (two-tailed);* The correlation significant at the 0.05 level (two-tailed).

4.4 Influence of personal and structural characteristics on job and life satisfaction, as well as on job preferences

The values of the aspects of job characteristics examined explain approximately 65% of job satisfaction in German horticulture (linear regression, $R^2=0.65$). The rest could possibly be explained by personal characteristics. Furthermore, it is necessary to check whether different groups of employees have different preferences regarding job characteristics and whether the differences are pronounced. The following personal characteristics were analyzed: age, existing management responsibilities, education level, core workforce or loan or seasonal workers, self-employment, gender, number of employees (excluding seasonal workers), and the number of seasonal workers in the participants' companies (Table 3).

Table 3. Relationships between personal and structural characteristics and job aspects.¹

Personal characteristics	Job aspect	Effect size (r_s)
Age	8a Pleasant environment	-0.19**
	10a Considerate supervisor	-0.14*
	8b Safe work practices	-0.19**
	11b Good future prospects	-0.24**
	12a Fair treatment of employees	-0.18*
	12b Moral organization	-0.15*
	3b Difficulty of job demands	0.24**
Managerial responsibility (no=0, yes=1)	2b New learning	0.20**
	3c Task coherence	0.20**
	9b Significance to self	0.22**
	10a Considerate supervisor	0.16*
	10b Supportive supervision	0.15*
	1a Task discretion	0.16*
	1b Influence over organization	0.19**
Temp. employment (yes=1)	5c Availability of feedback	0.19**
	11a Job security	-0.21*
Self-employed (no=0, yes=1)	2b New learning	0.29**
	3c Task coherence	0.24**
	3f Emotional dissonance	0.23**
	8c Adequate equipment	0.18*
	9a Value to society	0.19**
	9b Significance to self	0.17*
	11b Good future prospects	0.17*
	1b Influence over organization	0.14*
Gender (w=0, m=1)	2a Skill use	0.15*
	2b New learning	0.15*
	9a Value to society	0.14*
	11a Job security	0.18*
Number of employees	1b Influence over the wider organization	0.18*
	2b New learning	-0.16*
	3c Task coherence	-0.24**
	3f Emotional dissonance	-0.18**
	9a Value to society	-0.15*
	9b Significance to self	-0.18**
	12b Orga. morality in society	-0.21**
Number of seasonal workers	5a Future predictability	0.16*
	2a Skill use	-0.14*

¹ ** Significant at the 0.01 level (two-tailed); * significant at the 0.05 level (two-tailed).

Older employees in German horticulture are more frequently dissatisfied with their working lives ($r_s = -0.15$; $P < 0.05$) and their lives in general ($r_s = -0.21$; $P < 0.01$) than younger employees.

Men more frequently carry leadership responsibility than women in the sample ($r_s = -0.18$; $P < 0.05$).

Female employees are more likely to have a temporary contract than their male counterparts ($r_s = 0.20$; $P < 0.05$). Temporary employees report low values more frequently for job security (11a). Women are also more often employed part-time ($r_s = 0.21$; $P < 0.05$).

Self-employed horticulture entrepreneurs are more often males ($r_s = 0.20$; $P < 0.01$), have more opportunities to expand their own abilities and learn (2b), are able to conclude a task from beginning to end with a visible result (3c), and can be more completely themselves at work (3f). Self-employed persons are happier with their working lives than employees ($r_s = 0.15$; $P < 0.05$). However, no significant relationship between self-employment and life satisfaction can be observed.

Workers in horticultural companies with more employees (excluding seasonal workers) report fewer opportunities to expand their own abilities (2b), and with the higher degree of specialization in larger organizations, perceive fewer opportunities to complete a task from beginning to end with a visible result (3c). In larger organizations, employees may be less completely themselves (emotional dissonance, 3f).

It is also possible to observe connections between personal and structural characteristics and preferences with regard to job characteristics (Table 4). Executives favor aspects such as job autonomy (1a), the impact on the organization as a whole (1b), and the difficulty of the task (3b). Employees with a higher level of education put astonishingly less emphasis on the compatibility between work and family life (3e), adequate equipment (8c), and own job security (11a).

Table 4. Relationships between personal and structural characteristics and preferences for job aspects.¹

Personal characteristics	Job aspect	Effect size (r_s)
Age	8c Adequate equipment	-0.19**
Managerial responsibility (no=0, yes=1)	1a Task discretion	0.16*
	1b Influence over organization	0.26**
	3a Number of job demands	0.17*
	3b Difficulty of job demands	0.15*
Education level	3e Work/home conflict	-0.20**
	8c Adequate equipment	-0.15*
	11a Job security	-0.17*
Fulltime employees (yes=1)	8c Adequate equipment	0.17*
Self-employed (no=0, yes=1)	1a Task discretion	0.15*
	1b Influence over organization	0.16*
	5b Clear role requirements	-0.19**
Gender (w=0, m=1)	2b New learning	-0.16*
	3e Work/home conflict	-0.27**
	3f Emotional dissonance	-0.17*
Number of employees	3c Task coherence	-0.14*
Number of seasonal workers	8a Pleasant environment	-0.14*
	8b Safe work practices	-0.17*
	12a Fair treatment of employees	-0.20**

¹ ** Significant at the 0.01 level (two-tailed); * significant at the 0.05 level (two-tailed).

For women, compared to their male counterparts, the development of their own skills (2b), the compatibility of work and family life (3e), and being able to be completely themselves at work (3f) are more important than other elements.

Table 5 shows the results of the linear regressions for the complete model; they are listed once without the inclusion of personal characteristics and structural variables, and once with these additional variables. The model consisting only of job aspects has an R^2 of 0.65, and thus shows only a slightly lower degree of explanation than the model that includes additional personal features and structural variables for each job and the company ($R^2=0.69$).

In the regression analysis the job attribute 11b good future prospects shows the highest impact on job satisfaction, followed by 3e work-home conflict. Other attributes such as 8a pleasant environment, 10b supportive supervision, and 4a range of different tasks also show a significant effect on subjective job satisfaction.

4.5 Comparison of influence of job aspects on job satisfaction and preferences

In Figure 5, the preference measures and the impact of each job aspect on job satisfaction are juxtaposed (importance grid). Special attention should be paid to the job aspects in the top right field (do first). This is where both a high influence of the aspect on job satisfaction and a high preference of employees regarding this aspect come together.

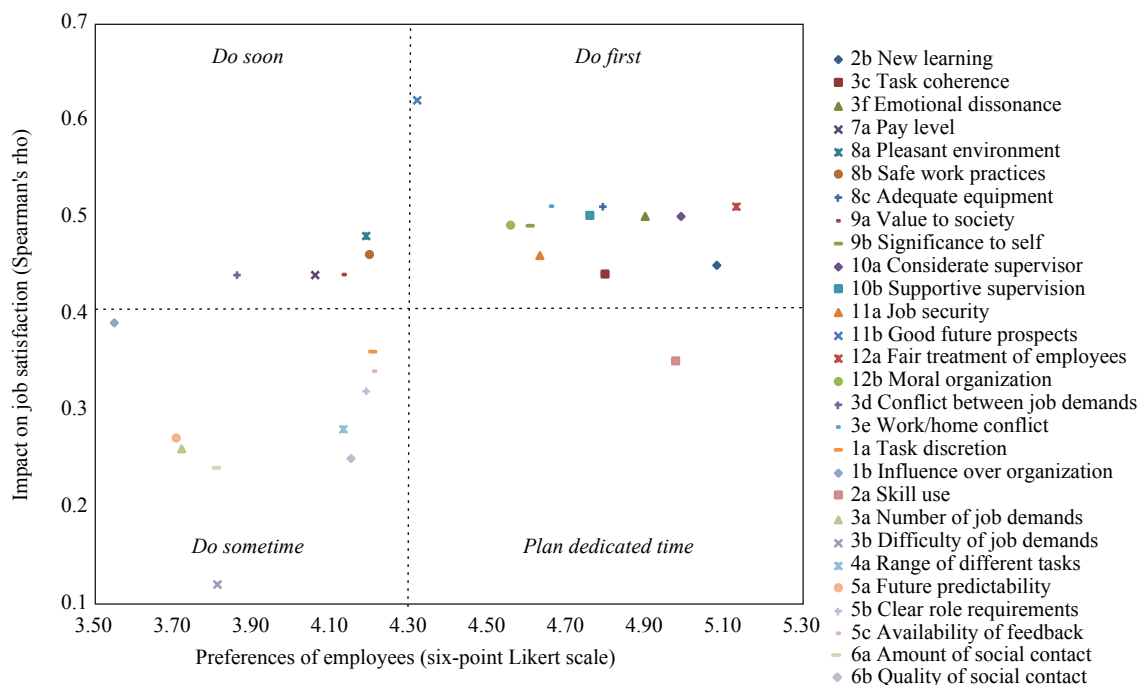


Figure 5. Importance grid. Cf. Reiche and Sparke, 2012.

Table 5. Results of linear regressions.

	Model job aspects ($R^2=0.65$)				Model job aspects + personal characteristics and structural variables ($R^2=0.69$)			
	B	S	Beta	Sig.	B	S	Beta	Sig.
(constant)	-1.515	0.526		0.004	-1.231	1.536		0.425
2b New learning	0.062	0.070	0.058	0.381	0.106	0.105	0.100	0.317
3c Task coherence	0.013	0.072	0.012	0.857	0.088	0.125	0.080	0.484
3f Emotional dissonance	0.103	0.066	0.105	0.120	0.006	0.134	0.006	0.962
7a Pay level	0.081	0.055	0.081	0.143	0.061	0.093	0.058	0.515
8a Pleasant environment	0.126	0.067	0.116	0.062	0.163	0.116	0.147	0.162
8b Safe work practices	-0.070	0.076	-0.064	0.353	-0.204	0.152	-0.173	0.183
8c Adequate equipment	0.057	0.068	0.059	0.400	0.083	0.109	0.083	0.447
9a Value to society	-0.017	0.066	-0.016	0.801	-0.048	0.112	-0.042	0.671
9b Significance to self	-0.103	0.083	-0.092	0.216	-0.040	0.156	-0.032	0.798
10a Considerate supervisor	0.014	0.084	0.016	0.865	0.025	0.136	0.027	0.852
10b Supportive supervision	0.125	0.075	0.151	0.096	0.139	0.123	0.152	0.265
11a Job security	0.032	0.056	0.033	0.568	0.131	0.118	0.122	0.271
11b Good future prospects	0.316	0.059	0.331	0.000	0.363	0.121	0.355	0.004
12a Fair treatment of employees	-0.054	0.076	-0.064	0.478	-0.102	0.116	-0.119	0.383
12b Moral organization	0.072	0.072	0.075	0.320	0.021	0.128	0.020	0.868
3d Conflict between job demands	0.028	0.068	0.024	0.683	0.124	0.120	0.105	0.306
3e Work/home conflict	0.196	0.060	0.198	0.001	0.180	0.100	0.177	0.074
1a Task discretion	-0.096	0.115	-0.051	0.403	0.054	0.213	0.026	0.801
1b Influence over organization	0.026	0.091	0.017	0.776	0.166	0.184	0.108	0.370
2a Skill use	0.125	0.104	0.069	0.232	-0.030	0.189	-0.015	0.875
3a Number of job demands	0.032	0.111	0.017	0.774	-0.079	0.186	-0.042	0.674
3b Difficulty of job demands	-0.097	0.122	-0.049	0.429	-0.091	0.213	-0.044	0.671
4a Range of different tasks	0.252	0.131	0.113	0.056	0.166	0.214	0.071	0.442
5a Future predictability	-0.050	0.095	-0.029	0.600	-0.185	0.183	-0.096	0.317
5b Clear role requirements	0.164	0.112	0.083	0.143	-0.000	0.208	0.000	1.000
5c Availability of feedback	0.009	0.092	0.005	0.926	0.143	0.165	0.090	0.390
6a Amount of social contact	0.090	0.122	0.041	0.464	0.140	0.241	0.063	0.564
6b Quality of social contact	0.061	0.120	0.030	0.613	0.027	0.236	0.012	0.908
Number of employees					-0.009	0.083	-0.009	0.910
Number of seasonal workers					0.066	0.102	0.052	0.519
Gender (w=0, m=1)					-0.096	0.244	-0.031	0.695
Fulltime employees (no=0, yes=1)					-0.224	0.398	-0.046	0.576
Fix contract (no=0, yes=1)					0.582	0.373	0.165	0.122
Sesonal employee (no=0, yes=1)					-0.859	0.559	-0.141	0.128
Education level					-0.061	0.093	-0.060	0.509
Managerial responsibility (no=0, yes=1)					0.218	0.256	0.070	0.396
Age					0.018	0.013	0.129	0.172

¹ Dependent variable: job satisfaction.

In Figure 6, the mean values of the characteristics investigated are presented.

The CE aspects were rated by the study participants on a seven-point Kunin scale, from 1=extremely low to 7=highly acceptable. On average, the aspects of task integrity (5.21), emotional dissonance (5.21), importance of the work to oneself, and the company (5.17) and the employer's fair treatment of employees (5.10) were

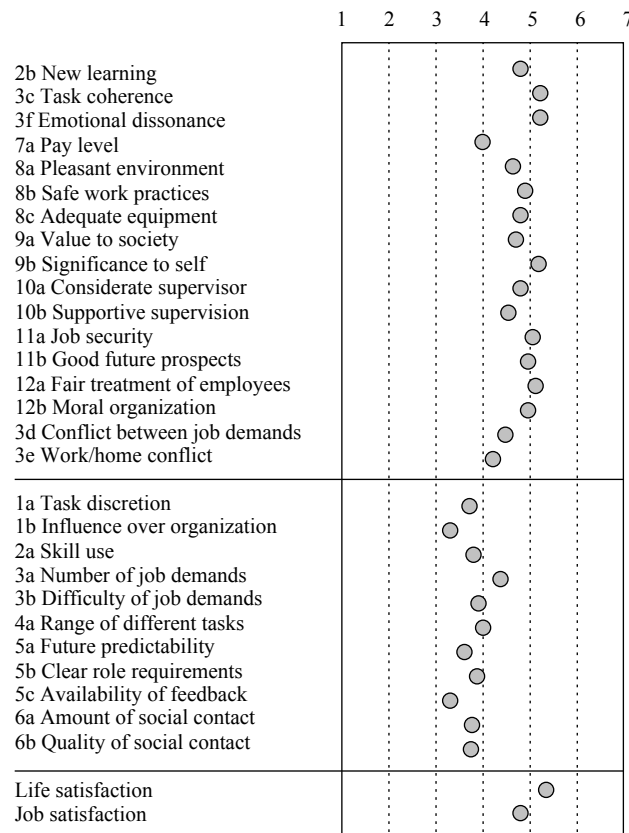


Figure 6. Average values of job features.

rated most positively. In the lowest positions are pleasant working environment (buildings, rooms, noise, temperature, etc.) at 4.66, supportive leadership (4.53), conflict between different tasks (4.48), conflict between work and family life (4.21), and finally, salary level (3.96).

For the AD aspects, transformed variables were used; therefore, the averages reported are not comparable to those of the CE aspects. The aspects number of tasks (4.36), variety (4.00), difficulty of tasks (3.90), and role clarity (3.89) were assessed most positively by the study participants. In the lowest positions are job autonomy (3.72), the predictability of the future with respect to the job (without career prospects; I know what will happen in the near future) at 3.62, the impact on the company as a whole (also through trade unions and works councils) at 3.34, and the availability of feedback at 3.30.

4.6 Comparison of different groups

In this study, employees of horticultural companies were analyzed. In another study by Meyerding (2016) vocational and master craftsmen scholars, as well as horticulture science students were investigated. The groups are, distinguished based on their different living circumstances, but also by characteristics such as age, level of education, and professional experience. For each group, the results of the preference measurement and the influence of the different job aspects on job and life satisfaction were examined. To gain a complete picture of the situation in German horticulture, the results of the three groups need to be compared. For this purpose, Table 6 compares the results of the various satisfaction and preference measurements.

All three groups show the strongest preference for the job feature that concerns an employer's fair treatment of employees. In second place, employees rank the opportunity to learn new skills, followed by considerate leadership, the use of their own abilities, and low emotional dissonance.

Table 6. Comparison of the results for the three different groups.

Group	Employees	Vocational and master craftsman scholars ^a	Students ¹
Average age	35 years	24 years	25 years
Sample size	229	205	204
Preferences top five	12a Fair treatment of employees (5.13) 2b New learning (5.08) 10a Considerate supervisor (4.99) 2a Skill use (4.98) 3f Emotional dissonance (4.90)	12a Fair treatment of employees (5.21) 3f Emotional dissonance (5.11) 2b New learning (5.07) 8c Adequate equipment (4.98) 3e Work/home conflict (4.91)	12a Fair treatment of employees (5.32) 3e Work/home conflict (5.13) 3f Emotional dissonance (5.05) 10a Considerate supervisor (5.02) 10b Supportive supervision (4.70)
Effect on job satisfaction top five	11b Good future prospects (0.62**) 8c Adequate equipment, 12a Fair treatment of employees, and 3e Work/home conflict (0.51**) 10b Supportive supervision (0.50**) 9b Significance to self, and 12b Moral organization (0.49**) 3f Emotional dissonance, and 10a Supervision behaves considerably (0.50**)	3f Emotional dissonance (0.52**) 10a Considerate supervisor (0.50**) 10b Supportive supervision (0.49**) 12a Fair treatment of employees (0.48**) 12b Moral organization (0.45**)	N/A. N/A. N/A. N/A. N/A.

¹ Adapted from Meyerding (2016).

For the vocational and master craftsman scholars, learning new skills and emotional dissonance are in second and third place, respectively. In fourth place is the provision of suitable equipment and in fifth is conflict between job and family.

In the student sample (Meyerding, 2016), conflict between job and family is the second most important job feature, followed by emotional dissonance, i.e. being completely oneself at work. In fourth and fifth place are considerate and supportive leadership, respectively.

5. Discussion

When it comes to employees preferences, the amount of salary (7a) is in the middle and is of moderately minor importance. This is remarkable as one would have expected that in a low-wage industry, such as horticulture, available income should have a higher priority (Diener and Biswas-Diener, 2009).

The strongest connection with job satisfaction is observed for future prospects (11b), i.e. feeling that one is moving in a positive direction. This aspect is affected by the subjective perceptions of the employee more strongly than others. The employer can influence this aspect positively through positive communication, the demonstration of prospects, and active staff development.

Following closely in second place comes the conflict between work and family life (3e), followed by the employer's fair treatment of employees (12a) and appropriate equipment (8c) with the same correlation

coefficient. Having adequate equipment available in horticulture, with its primary physical work, is more important than in other industries, in which the influence of this aspect on job satisfaction is lower (Salvendy, 2012).

The results show that, the leadership style and the possibility of being oneself at work without having to make too great an adjustment show a strong influence on employee satisfaction in German horticulture.

The sustainability of the horticultural company has a strong relationship with employee satisfaction. Employees in horticulture want to work for the 'good,' because this increases one's social position (9a; value of the job for society) and the personal value of the work (9b).

Safe working processes (8b) have a stronger impact on job satisfaction in German horticulture, as in other industries (Barling *et al.*, 2003). This is partly due to the predominantly physical work, but also the handling of hazardous materials, such as chemical pesticides.

That salary can be found in the middle of the influence on job satisfaction in horticulture seems surprising because in a low-wage sector such as horticulture, it could be assumed that the influence of the amount of salary, especially for low-income people, has a relatively high impact on job satisfaction (Lazarus, 2006: 165).

The difficulty of tasks (3b) shows no significant relationship with job satisfaction in the sample. Few employees in German horticulture seem to be underutilized or overburdened with respect to this aspect.

The results show a familiar pattern, according to which the correlation coefficients between the job aspects and context-bound satisfaction (job satisfaction) are higher than for the context-free satisfaction (life satisfaction; Faragher *et al.*, 2005).

Older employees in German horticulture are more frequently dissatisfied with their working lives and their lives in general than younger employees. Here, horticulture is different to other industries; on average, satisfaction increases with age (until 65; Mroczek and Spiro, 2005). The different values in horticulture could be due to physical stress, which leads to difficulties with age. Thus, a negative correlation between age and job aspect (8a) pleasant working environment (buildings, rooms, noise, temperature, etc.) can be observed. The same applies to considerate leadership (10a), working safety (8b), and own future prospects (11b, Table 3).

Employees with a higher level of education put astonishingly less emphasis on the compatibility between work and family life (3e), adequate equipment (8c), and own job security (11a), probably because their chances in the labor market can be assessed more positively (Häublein 2014; Piopiunik and Wößmann, 2011).

As Figure 6 shows, the average values of the subjective job attributes evaluations are within a narrow range and there is little differentiation between the individual aspects, so that meaningfulness is very limited. This phenomenon is frequently observed in the measurement of satisfaction (Warr, 2012).

For the vocational and master craftsman scholars from the study by Meyerding (2016), learning new skills and emotional dissonance are in second and third place for preferences, respectively. In fourth place is the provision of suitable equipment and in fifth is conflict between job and family. At this point, it is clear that job aspects such as emotional dissonance and conflict between work and family life, reflecting an altered job setting and a preference structure that requires a cultural change within the company, become more important. The younger generation, with a higher formal education level (Piopiunik and Wößmann, 2011), exhibits a change in work attitude and favors work aspects accompanied by an increased work-life balance.

The trend described is also reflected in the students' results. Here, conflict between job and family is the second most important job feature, followed by emotional dissonance, i.e. being completely oneself at work. In fourth and fifth place are considerate and supportive leadership, respectively.

From the results, it can be deduced that for well-trained young professionals, the work-life balance and transformational employee-oriented leadership are particularly important, and that horticultural companies need to change these aspects – in particular their management culture – to ensure they are attractive employers for the new (Y) generation.

Overall, for all the groups, it is particularly important that the employer deals fairly with employees and maintains supportive, considerate behavior, that they do not have to adjust too greatly at work (emotional dissonance), that they have opportunities to develop and use their skills, that adequate equipment is available, and that the conflict between work and family is as low as possible. It is interesting that the provision of appropriate equipment is given such high priority. This result has not commonly been observed in other industries (Salvendy, 2012) and indicates the high physical stress in horticulture.

The twelve job characteristics could affect not only the satisfaction of employees, but also their ability to provide high performance. For example, supportive leadership (job characteristic 10) increases the satisfaction of employees and at the same time creates the conditions for high performance. In this case, higher values for supportive leadership lead to increased job satisfaction and performance (Lyubomirsky *et al.*, 2005).

6. Conclusions

For employees in German horticulture, the strongest influence on job satisfaction is exerted by good future prospects. In second place, are three aspects: suitable equipment, the employer's fairness toward employees, and conflict between work and family life. In third place is supportive leadership and in fourth place the personal value of work and the fairness of the employer towards society. Emotional dissonance and considerate leadership are in fifth place. In this group, the aspect that stands out especially is the availability of good future prospects, underlining the importance of the employee's feeling that he/she is moving in a positive direction (toward fulfillment of personal goals). Also, as with other groups, the provision of appropriate equipment plays a strong role, seeming to be a special feature of the industry.

The results show that the sustainability of the horticultural company positively affects employee satisfaction (and/or vice versa). Furthermore, they provide an indication that 'soft' job aspects, which include a special form of corporate and leadership culture, show the greatest effect on employee satisfaction, particularly among the younger, highly educated employees. The results also show that the influence of 'hard' job aspects, such as salary, difficulty of tasks, variety, and job security, are not as highly valued.

In establishing the relationships between job characteristics, job satisfaction, and work performance, the employees' satisfaction survey could be a tool both for improving employee satisfaction and optimizing the use of human capital, thus serving company profitability. For horticultural companies, in which staff costs account for 40% of the overall costs, this potential for optimizing human resource management and personnel management is particularly interesting, especially as its importance has thus far received insufficient emphasis. There is a possibility that the utility functions of the job characteristics apply equally to the employees' performance as well as to their levels of satisfaction, so that optimal values for satisfaction are close to the optimum long-term utilization of the performance potential of each employee. For example, underload and overload both lead to dissatisfaction and in the long-term, to suboptimal performance. This possibility of using the vitamin model has not yet been studied empirically.

References

- Adams, J.S. 1963. Towards an understanding of inequity. *The Journal of Abnormal and Social Psychology* 67(5): 422-436.
- Barling, J., E.K. Kelloway and R.D. Iverson. 2003. Accidental outcomes: attitudinal consequences of workplace injuries. *Journal of Occupational Health Psychology* 8(1): 74-85.
- Bitsch, V. and M. Hogberg. 2005. Exploring horticultural employees' attitudes toward their jobs: a qualitative analysis based on Herzberg's theory of job satisfaction. *Journal of Agricultural and Applied Economics* 37(3): 659-671.
- Bradburn, N.M. and D. Caplovitz. 1965. *Reports on happiness: a pilot study of behavior related to mental health*. Aldine Pub. Co, Chicago, IL, USA.
- Brayfield, A.H. and H.F. Rothe. 1951. An index of job satisfaction. *Journal of Applied Psychology* 35(5): 307-311.
- Busemann, K. 2013. Wer nutzt was im Social Web?: Ergebnisse der ARD/ZDF-Onlinestudie 2013. [Who uses what in the social web?: Results of the ARD/ZDF-Onlinestudie 2013]. *Media Perspektiven*, (7-8): 391-399.
- Caplan, R.D. 1975. *Job demands and worker health: main effects and occupational differences*. U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, Washington, WA, USA.
- Claßen, M. and F. von Kyaw. 2007. *Change Management-Studie 2008: Business Transformation – Veränderungen erfolgreich gestalten*. [Change management study 2008: business transformation – making changes successful]. Capgemini, Berlin, Germany.
- Cummins, R.A. 2000. Objective and subjective quality of life: an interactive model. *Social Indicators Research* 52(1): 55-72.
- De Jong, J., M. Mulder and J. Nijhus. 1999. The incorporation of different demand concepts in the job demand control model: effects on health care professionals. *Social Science and Medicine* 63: 193-210.
- De Jong, J. and W.B. Schafeli. 1998. Job characteristics and well-being: a test of Warr's vitamin model in health care workers using structural equation modelling. *Journal of Organizational Behavior* 19: 387-407.
- Diener, E. and R. Biswas-Diener. 2009. Will money increase subjective well-being?: a literature review and guide to needed research. In: *Social indicators research series*, edited by A.C. Michalos and E. Diener. Springer, Dordrecht, the Netherlands, pp. 119-154.
- Eid, M. and R.J. Larsen. 2008. *The science of subjective well-being*. Guilford Press, New York, NY, USA.
- Faragher, E.B., M. Cass and C.L. Cooper. 2005. The relationship between job satisfaction and health: a meta-analysis. *Occupational and Environmental Medicine* 62(2): 105-112.
- Field, A.P. 2009. *Discovering statistics using SPSS: (and sex and drugs and rock 'n' roll) (3rd ed.)*. *Introducing statistical methods*. Sage Publications, Thousand Oaks, CA, USA.
- Ganzach, Y. 1998. Intelligence and job satisfaction. *The Academy of Management Journal* 41(5): 526-539.
- Ganzach, Y. 2003. Intelligence, education, and facets of job satisfaction. *Work and Occupations* 30(1): 97-122.
- Glazer, S. and T.A. Beehr. 2005. Consistency of implications of three role stressors across four countries. *Journal of Organizational Behavior* 26(5): 467-487.
- Glomb, T.M., J.D. Kammeyer-Mueller and M. Rotundo. 2004. Emotional labor demands and compensating wage differentials. *Journal of Applied Psychology* 89(4): 700-714.
- Grandey, A., B. Cordeiro and A. Crouter. 2005. A longitudinal and multi-source test of the work-family conflict and job satisfaction relationship. *Journal of Occupational and Organizational Psychology* 78(3): 305-323.
- Greenhaus, J.H. and N.J. Beutell. 1985. Sources of conflict between work and family roles. *Academy of Management Review* 10(1): 76-88.
- Hackman, R.J. and G.R. Oldham. 1975. Development of the job diagnostic survey. *Journal of Applied Psychology* 60(2): 159-170.
- Häder, M. 2015. *Empirische Sozialforschung: Eine Einführung* (3. Aufl. 2015). [Empirical social research: an introduction]. Springer Fachmedien Wiesbaden, Wiesbaden, Germany.

- Häublein, A. 2014. *Arbeitsmarkt 2013: Arbeitsmarktanalyse für Deutschland, West- und Ostdeutschland*. [Labor market 2013: labor market analysis for Germany, West and East Germany.]. Bundesagentur für Arbeit, Nürnberg, Germany.
- Headey, B. and A.J. Wearing. 1992. *Understanding happiness: a theory of subjective well-being*. Longman Cheshire, Melbourne, Australia.
- Herzberg, F. 1966. *Work and the nature of man*. Thomas Y. Crowell, New York, NY, USA.
- Herzberg, F., B. Mausner and B.B. Synderman. 1959. *The motivation to work* (2nd ed.). Wiley, New York, NY, USA.
- Jeurissen, T. and I. Nyklicek. 2001. Testing the vitamin model of job stress in Dutch health care workers. *Work and Stress* 15(3): 254-264.
- Karasek jr, R.A. 1979. Job demands, job decision latitude, and mental strain: implications for job redesign. *Administrative Science Quarterly* 24(2): 285-308.
- Kornhauser, A. 1962. Toward an assessment of the mental health of factory workers: a Detroit study. *Human Organization* 21(1): 43-46.
- Kornhauser, A.W. 1965. *Mental health of the industrial worker: a Detroit study*. Wiley, New York, NY, USA.
- Kunin, T. 1955. The construction of a new type of attitude measure. *Personnel Psychology* 8: 65-77.
- Lacy, P., T. Cooper, R. Hayward and L. Neuberger. 2010. *A New era of sustainability: CEO reflections on progress to date, challenges ahead and the impact of the journey toward a sustainable economy*. Accenture, Dublin, Ireland.
- Lazarus, R.S. 2006. *Stress and emotion: a new synthesis*. Springer, New York, NY, USA.
- Lewin, K., T. Dembo, L. Festinger and P.S. Sears. 1944. Level of aspiration. In: *Personality and behavior disorders*, edited by J.M. Hunt. Roland Press, New York, NY, USA, pp. 333-378.
- Lyubomirsky, S., L. King and E. Diener. 2005. The benefits of frequent positive affect: does happiness lead to success? *Psychological Bulletin* 131(6): 803-855.
- MacDonald, L.A., R.A. Karasek, L. Punnett and T. Scharf. 2001. Covariation between workplace physical and psychosocial stressors: evidence and implications for occupational health research and prevention. *Ergonomics* 44(7): 696-718.
- Meyerding, S.G.H. 2015. Job characteristics and job satisfaction: a test of Warr's vitamin model in German horticulture. *The Psychologist-Manager Journal* 18(2): 86-107.
- Meyerding, S.G.H. 2016. Job satisfaction and preferences regarding job characteristics of vocational and master craftsman scholars and horticulture students in Germany. *Review of Agricultural and Applied Economics* 19(1): 30-49.
- Mroczek, D.K. and A. Spiro III. 2005. Change in life satisfaction during adulthood: findings from the veterans affairs normative aging study. *Journal of Personality and Social Psychology* 88(1): 189-202.
- Patterson, M., P. Warr and M.A. West. 2004. *Organizational climate and company productivity: the role of employee affect and employee level*. CEP discussion paper: Vol. 626. Centre for Economic Performance, London, UK.
- Piopiunik, M. and L. Wößmann. 2011. Humankapital in Deutschland: Verschwendung geistiger Ressourcen. [Human capital in Germany: waste of intellectual resources]. In: *Der ifo Wirtschaftskompass. Zahlen – Fakten – Hintergründe* [The Ifo Economic Compass. Figures – Facts – Backgrounds], edited by G. Milbradt, G. Nerb, W. Ochel, and H.-W. Sinn. Hanser, Carl., München, Germany, pp. 100-101.
- Reiche, S. and K. Sparke. 2012. Managing job commitment of young professionals in Germany's green industry. *DGG-Proceedings* 2(3): 1-5.
- Ronan, W.W. 1970. Relative importance of job characteristics. *Journal of Applied Psychology* 54(2): 192-200.
- Salvendy, G. 2012. *Handbook of human factors and ergonomics* (4th ed.). John Wiley and Sons, Hoboken, NJ, USA.
- Schreiner, M., M. Altmann, M. Stenger, M. Korn, W. Dirksmeyer, S. Ludwig-Ohm, U. Gossen, J. Graf. 2013. *Zukunftsstrategie Gartenbau: Abschlussbericht zum Zukunftskongress Gartenbau am 11./12. September 2013 in Berlin* [Future strategy horticulture: final report on the future conference on horticulture on 11/12. September 2013 in Berlin]. Bundesministerium für Ernährung und Landwirtschaft, Bonn, Germany.

- Spreitzer, G., K. Sutcliffe, J. Dutton, S. Sonenshein and A.M. Grant. 2005. A socially embedded model of thriving at work. *Organization Science* 16(5): 537-549.
- Srivastava, A., E.A. Locke and K.M. Bartol. 2001. Money and subjective well-being: it's not the money, it's the motives. *Journal of Personality and Social Psychology* 80(6): 959-971.
- Statistisches Bundesamt. 2006. *Land und Forstwirtschaft, Fischerei: Gartenbauerhebung 2005* (Fachserie 3). Statistisches Bundesamt, Wiesbaden, Germany.
- Trzeinski, E. and E. Holst. 2003. *Wochenbericht des DIW Berlin 35/03: Hohe Lebenszufriedenheit teilzeitbeschäftigter Mütter* (Wochenbericht des DIW Berlin No. 35/03). [Weekly report of DIW Berlin 35/03: high quality of life of part-time mothers]. DWI, Berlin, Germany.
- Von Rosenstiel, L., H.M. Kehr and G.W. Maier. 2000. Motivation and volition in pursuing personal work goals. In: *Motivational psychology of human development. developing motivation and motivating development*, edited by J. Heckhausen. Amsterdam, the Netherlands, pp. 287-305.
- Warr, P. 1987. *Work, unemployment and mental health*. Oxford Science Publications. Oxford University Press, Oxford, UK.
- Warr, P. 1990. The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology* 63: 193-210.
- Warr, P. 2007. *Work, happiness, and unhappiness*. Lawrence Erlbaum Associates, Mahwah, NJ, USA.
- Warr, P. 2012. *How to think about and measure psychological well-being*. University of Sheffield, Sheffield, UK.
- Warr, P. 2013. Jobs and job-holders: two sources of happiness and unhappiness. In: *Oxford library of psychology. the Oxford handbook of happiness*, edited by S.A. David. Oxford University Press, Oxford, UK, pp. 733-750.
- Weiss, D.J., R.V. Dawis, G.W. England and L.H. Lofquist. 1967. *Manual for the Minnesota satisfaction questionnaire*. University of Minnesota. Industrial Relations Center. Bulletin 45: Vol. 22. Work Adjustment Project Industrial Relations Center University of Minnesota, Minneapolis, MN, USA.

