Determinants of job satisfaction in four age groups; university employees' point of view

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Samenvatting

Doel: Een onderzoek naar verschillen tussen vier verschillende leeftijdsgroepen ten aanzien van verklarende factoren voor werktevredenheid.

Methoden: Een vragenlijst werd ingevuld door 1112 medewerkers van een universiteit. De samenhang tussen enerzijds werktevredenheid en anderzijds verschillende werkeisen en hulpbronnen werd doormiddel van regressieanalyse bepaald.

Resultaten: Vaardigheidsbenutting en Relaties met collega-'s zijn belangrijke determinanten van tevredenheid in alle leeftijdsgroepen. Daarnaast werd bij de jongste werknemers een negatieve samenhang gevonden met Conflicten op het werk, terwijl bij de oudste werknemers Steun van leidinggevende en Mogelijkheden voor opleiding positief geassocieerd waren met werktevredenheid.

Conclusies: Er werden verschillen gevonden tussen leeftijdsgroepen ten aanzien van determinanten van werktevredenheid. Maar de werkfactoren die het sterkst geassocieerd waren met werktevredenheid kwamen overeen in alle leeftijdsgroepen.

Trefwoorden:
Werktevredenheid, Werkkenmerken, Determinanten, Leeftijdsgroepen, Job Demands-Resources model

Summary

Purpose: We investigated differences in determinants of job satisfaction among employees in four different age groups.

Methods: A cross-sectional questionnaire was filled in by 1112 university employees. Job satisfaction was regressed against various job demands and job resources.

Results: Skill discretion and relations with colleagues are major determinants of job satisfaction in all age groups. Moreover, conflicts at work were negatively associated among the youngest workers, while support from supervisor and opportunities for further education were positively associated among the oldest workers.

Conclusions: Differences concerning determinants of job satisfaction between age groups were present, but most influential work factors were equal between the age groups.

Keywords:
Job Satisfaction, Work characteristics, Determinants, Age groups, Job Demands-Resources model

Introduction

In many Western countries, the mean age of workers increases as a result of demographic and social trends (Keese et al., 2006). Birth cohorts since the sixties are smaller than previous ones, and nowadays a large proportion of the youngest age group (15-25 years) in the labour force is still in education. Therefore, the number of available workers will diminish in the next decades. Participation of a larger part of the people who potentially are able to work is necessary to prevent scarcity on the labour market. The European Council in Lisbon (in 2000) and Stockholm (in 2001) have set ambitious targets to be reached by 2010: the general employment rate should be increased to 70% and the employment rate of older workers (55 and older) should be increased to 50% (Hutsebaut, 2005). Many governments have enacted, among others, measures to discourage early retirement in order to increase labour force participation (Hutsebaut, 2005). In the Netherlands these measures are rather successful: over the past 15 years, the participation of older workers (aged between 55 and 64) has increased from of 24% in 1993 (Wilthagen, 2004) to 47% in 2008 (Janssen and Souren, 2009).

Consequently, a larger number of employees will be of 55 up to 65 years. For a good HRM and occupational health policy it is important to evaluate what contributes to their job satisfaction as compared to employees in younger age groups. This is also important because low job satisfaction is one of the factors that affect the intention to leave (Irvine and Evans, 1995; Karatepe, 2007; McCarthy, 2007) and to early retirement (Sibbald et al., 2003). Moreover, from a meta-analysis, Faragher et.al. (2005) concluded that job satisfaction influences the health and well-being of workers.

This article addresses the relationships between work characteristics and job satisfaction in four different age groups. Univariate and multivariate analyses were performed on data sampled in an online survey on employability and workability among the employees at a Dutch university (both staff and faculty). Insight into age group differences concerning the appreciation of work characteristics may contribute to the understanding of the results from multivariate analyses. These results are presented elsewhere (see Bos et al., 2009). We expect to find differences in determi-

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nants of job satisfaction due to differences in career, position, work-life balance et cetera (Donders et al., 2007).

Theoretical background

A great deal of research has been done into the determinants of job satisfaction already (Oshagbemi, 2003; Lu et al., 2005; Chen et al., 2006; Horton, 2006); however, so far less attention has been paid to differences between age groups. The Job Demands-Resources Model (JD-R model) (Demerouti et al., 2001) is a theoretical model that attempts to provide insight into the relationships between psychosocial work characteristics and well-being. According to the JD-R model, the characteristics of work environment can be classified in two general categories: job demands and job resources. Job demands are those physical, social, or organizational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with physical and/or psychological costs. Job resources are those physical, social or organizational aspects of the job that (a) are functional in achieving work-related goals, (b) reduce job demands and the associated physical and/or psychological effects, and (c) stimulate personal growth and development (Demerouti et al., 2001). The JD-R model may incorporate different demands and resources, depending on the context under study. Robustness of the model was ascertained (Llorens et al., 2006).

The JD-R model predicts that when high job demands are experienced, emotional exhaustion increases and job satisfaction will decrease. Job resources, however, are associated with a reduction in emotional exhaustion and an increase in job satisfaction (Demerouti et al., 2001; Van Ruysseveldt, 2006). So we expect that especially job resources will correlate with job satisfaction in the multivariate models.

On theoretical grounds (Van Ruysseveldt, 2006), four job demands and five job resources were selected for the multivariate analyses. The job demands included problems with workload, conflicts at work, work-home facilitation and "Able to relax sufficiently at home from job demands". (Kossek and Ozeki, 1998; Quine, 1999; Van der Doef and Maes, 2000; Biron et al., 2008). We considered the extent to which someone can relax sufficiently at home from job demands a job demands measure, but has not been subject to research yet.

Five job resources were included: skill discretion, autonomy, support from supervisor, relation with colleagues and opportunities for further education (Iiacqua et al., 1995; Van der Doef and Maes, 2000; Van Ruysseveldt, 2006; Bilimoria et al., 2006). Skill discretion refers to the breadth of skills used by the employee on the job. Autonomy refers to the employees' authority to make decisions regarding one's tasks.

Methods

Respondents
An invitation to participate in an online survey was emailed to all 2995 employees at a Dutch university. They all had the Dutch nationality and had been employed for at least one year. Each respondent was given a personal number which enabled them to fill in the questionnaire online. The 142 employees who did not have a personal e-mail address received a paper version at their home address, but it was also made possible for them to respond online. One reminder was sent (by e-mail or in writing) after 10 days. A total of 1297 respondents returned the questionnaire (43%). Age had been filled in by 1112 respondents, which resulted in 37% usable questionnaires. Comparison with the total population showed that the sample gave a fair reflection with respect to age, unit and 'job classification' (faculty versus staff). Differences were present especially among faculty. Slightly more women (37% compared to 33%) and older respondents (≤ 55 years) (23% compared to 18%) returned the questionnaire. Thus, (older) lectures were overrepresented (33% compared to 26%), while (younger) PhD students (20% compared to 25%) and faculty with temporary contracts of employment (34% compared to 43%) were underrepresented.

Questionnaire
The questionnaire was based on preliminary research in which interviews were held with stakeholders and two rounds of focus groups to inquire about barriers and factors to support work ability in (older) workers. Subsequently, relevant scales were selected from the questionnaire that is used extensively by "IVA Policy research and advice" in their employee studies (Thunissen and Van der Hoek, 2001). Confirmatory factor analyses showed an almost similar classification as can be expected on theoretical grounds (data available on request), with satisfactory reliability which will be presented in the next paragraph. The questionnaire contained scales and items measuring work characteristics (i.e. job demands and job resources) and other relevant scales and items.

The outcome measure *job satisfaction* was assessed using a 7-item scale (α = .87) with questions such as "I am satisfied with my job at the moment", "I enjoy my work" and "I would choose exactly the same job again". *Workload* was obtained by measuring the extent to which the respondents agreed with "All in all, I have problems with workload". *Conflicts at work* was assessed with four items (α =.79); e.g. "Conflicts are solved easily" (reverse scoring) and "I have conflicts with my colleagues". *Work-home facilitation* was assessed with one single item "I can adjust my working hours well in my private life". *"Able to relax sufficiently at home from job demands"* was measured with one single item. *Skill discretion* was analysed with 5 items (α = .85), e.g. "I have enough opportunities within my current job to take on challenging new tasks" and "I can fully use my knowledge and skills during work". *Autonomy* was measu-

red with 4 items (α = .81), e.g. "I can determine how to organize my work" and "I can determine my own work pace". *Relation with colleagues* was assessed with 2 items (α = .63): "The contact with my colleagues is good" and "I feel respected by my colleagues"). The *support from supervisor* scale contained 16 items (α = .96), e.g. "My supervisor inspires and motivates me" and "My supervisor regularly discusses opportunities for my personal development". *Opportunities for further education* were assessed with 3 items (α =.63): "I receive sufficient opportunities for retraining", "It is my own responsibility to update the knowledge and skills necessary for my further development" and "The university attaches importance to retraining employees".

Control variables included into the multivariate models are *"Presence of chronic disease", "Normal job performance is impeded by poor health", sex* and *job classification* ("faculty" [professors, lectures and researchers] versus "staff" [all other employees]). The first two variables are included since the prevalence of chronic disease and poor health increases with age. The personal characteristics (see Table I) were all assessed with one single item.

Most items were scored on a 5-point scale either to indicate the level of agreement with a statement (1=completely disagree, 5=completely agree) or to measure the extent to which a statement applied to the respondent (1=not at all, 5=to a large extent). An exception was *"Normal job performance is impeded by poor health",* which was assessed with a 4-point answering scale (1=not/hardly, 4=greatly). Furthermore, a few items simply required a yes or no. For all scales, a scale score was calculated by averaging the item scores. In all scales and items, higher scores mean more agreement with the proposition. Thus, higher scores for skill discretion means that the respondents experience more skill discretion (desirable), whereas higher scores for conflicts at work means that the respondents are confronted with more conflicts at work (which is undesirable). In the statements with a positive formulation, mean scores higher than 3.5 were considered to be satisfactory, because this level suggested that the relevant work conditions were solid. In the negative formulations, this applied to mean scores of 2.5 and lower.

Analyses
Analyses were conducted on four age groups: <35, 35–44, 45–54 and ≤55 years. This choice of classification was based on the probable major differences in home situation (e.g. younger versus older children at home) and work experience (e.g. duration of professional tenure) between the age groups that were likely to interfere with work characteristics and job satisfaction (Lynn et al., 1996). Data were analysed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA).

Differences in personal characteristics were analyzed with χ^2-tests (Table 1). "Normal job performance is impeded by poor health" was dichotomized: Impediment was assumed when the respondents indicated to agree 'slightly', 'moderately' or 'greatly' with the proposition. Blockwise linear regression analyses were used in each age group separately to investigate variables associated with job satisfaction (Table 2). Firstly, before including into the regression analyses, the answers of four items were dichotomized; normal job performance is impeded by poor health, problems with workload, work-home facilitation, "able to relax sufficiently at home from job demands". Agreement with the statement (completely agree, agree and neither agree, nor disagree) was appointed a one, while disagreement (disagree and completely disagree) was appointed a zero. In normal job performance is impeded due to poor health, one was assigned to agreement (slightly, moderately and greatly) and zero to disagreement (not/hardly). Secondly, we checked multicollinearity by computing tolerances and variance inflation factors (VIFs). Following the guidelines (Bowerman and O'Connell, 1990; Menard, 1995) we concluded that there was no reason for concern (adapted from Field, 2002) (but available on request). The regression model with the independent variable 'job satisfaction' comprised three blocks. First the control variables (presence of chronic disease, normal job performance is impeded by poor health, sex and job classification) were entered. Next, into the second block, job demands (problems with workload, conflicts at work, work-home facilitation and "able to relax sufficiently at home from job demands") were entered. Finally, into the third block, job resources (skill discretion, autonomy, support from supervisor, relation with colleagues and opportunities for further education) were entered. Statistical significance was set at $\alpha \leq 0.05$.

Results

Descriptive statistics
Table I shows the personal characteristics per age group. The percentage of women in the oldest age group (26.6%) was significantly smaller than that in the other groups. In the whole study population only 13% reported to have chronic disease. The prevalence differed significantly between the age groups. Occurrence of "normal job performance impeded by poor health" varied (not significantly) from 12.7% in the 35-44 year olds to 20.2% in the oldest age group. Further analysis showed that this impediment had other causes than chronic disease in about 50 to 60 percent of the cases in the three oldest age groups. In the youngest age group, only about one quarter of the cases was attributable to chronic disease. In all the age groups, significantly more men than women had full-time jobs. In Table I, also the job satisfaction mean scores are presented. Job satisfaction had high mean scores in all the age groups. Adjusted for sex and job classification, higher age was associated with more job satisfaction (Anova: F-value 2.95, p=0.032).

Table 1: Personal characteristics per age group

	< 35 years (N=192)	35 – 44 years (N=314)	45 – 54 years (N=354)	≤ 55 years (N=252)
Job satisfaction # mean (sd)	3.7 [.05]	3.8 [.04]	3.8 [.04]	3.9 [.05]
Age (nc) mean (sd)	29.1 (2.9)	39.9 (2.9)	49.6 (2.7)	58.2 (2.4)
Presence of chronic disease *	14 (7.3%)	37 (11.8%)	49 (13.8%)	45 (17.9%)
Normal job performance is impeded by poor health (yes)	26 (13.5%)	40 (12.7%)	64 (18.1%)	51 (20.2%)
Sex (woman) *	107 (55.7%)	159 (50.6%)	163 (46.0%)	67 (26.6%)
Job classification * (faculty)	123 (64.1%)	119 (37.9%)	116 (32.8%)	105 (41.7%)
Working hours per week * < 29 hours	37 (19.7%)	109 (34.8%)	98 (27.8%)	62 (24.8%)
29-35 hours	55 (29.3%)	75 (24.0%)	83 (23.6%)	45 (18.0%)
36 hours	96 (51.1%)	129 (41.2%)	171 (46.8%)	143 (57.2%)
Contract of employment * (temporary)	119 (62.0%)	45 (14.3%)	7 (2.0%)	4 (1.6%)
Term of appointment (years) * mean (sd)	3.9 (2.6)	8.0 (5.2)	14.6 (9.4)	24.8 (10.4)
Number of years in the same position * mean (sd)	3.0 (1.8)	5.6 (4.6)	8.7 (7.5)	14.9 (10.9)
Children at home *	37 (19.3%)	211 (67.2%)	204 (57.6%)	52 (20.7%)

\# Significant difference between age groups; ANOVA p= ≤.05
* Significant difference between age groups; Chi square test p= ≤.05
nc: Difference not calculated

Determinants of job satisfaction
Blockwise multiple regression analyses were performed to identify determinants of job satisfaction in the four age groups separately (see Table 2). The models show a rather good fit: between 53 and 65% of the variance in job satisfaction was explained. The job demands explained about 15% of the variance in job satisfaction in all the age groups. Addition of the job resources yielded an increase of on average 35% of the variance explained.

The second models (control variables and job demands) show that more problems with workload and more conflicts at work were associated with lower job satisfaction in all the age groups. In the final models, 'problems with workload' was no longer associated with job satisfaction. Especially more skill discretion (i.e. the possibility to use all ones knowledge and skills at work) and better relation with colleagues were associated with more job satisfaction. Among 45 to 54 year olds also more autonomy was associated with more job satisfaction, while in the oldest age group also opportunities for further education and support from supervisor showed a significant positive association.

Discussion

The purpose of the present study was to explore determinants of job satisfaction as job satisfaction is known to be one of the variables associated with early retirement (Sibbald et al., 2003) and intention to drop-out (Irvine and Evans, 1995; Karatepe, 2007; McCarthy, 2007).

Job satisfaction in four age groups
Let us first focus on our outcome measure, job satisfaction. Many research demonstrated the relationship between employee age and job satisfaction. However, the nature of this relationship, whether linear or curvilinear, remained unsettled (Oshagbemi, 2003). In our data we found a significant difference in job satisfaction between the age groups, indicating that job satisfaction increases with age. The fact that the youngest workers had least favourable scores on job satisfaction is remarkable. In fact, they reported most favourable work characteristics (see Bos et al., 2009).

Determinants of job satisfaction in different age groups
Job satisfaction was regressed onto several job demands and job resources in four separate analyses. As - to our knowledge - no research has been conduced into determinants of job satisfaction in different age groups, we can only compare our results to those from research that did not focus on age-related differences.

In analyses including control variables and job demands, conflicts at work was significantly associated with job satisfaction in all the age groups. In the final model this was the case in only the youngest age group. Their inexperience and the fact that relatively many of them are PhD-student may result in more dependency. This may contribute to the stronger correlation between conflicts at work and job satisfaction in the youngest age group than in the other age groups.

Table 2: Summary of linear regression analyses on variables to explain variance in job satisfaction in the four different age groups

Independent variables:	< 35 years (N=192) β			35-44 years (N=314) β			45-54 years (N=354) β			> 55 years (N=252) β		
Model:	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Control variables												
Presence of chronic disease [1]	-.01	-.01	-.05	.02	.03	.05	-.04	-.03	-.01	-.10	-.12	.02
Normal job performance is impeded by poor health [1]	.02	.05	.02	**-.18**	**-.14**	**-.10**	**-.15**	-.06	-.08	**-.29**	**-.18**	**-.14**
Sex (woman)	-.03	-.03	.01	.03	-.01	.02	.07	.05	.06	**.12**	**.12**	**.12**
Job classification (staff)	-.12	-.11	.07	**-.26**	**-.28**	**-.09**	-.09	**-.15**	-.08	-.11	**-.18**	**-.09**
R² first model	.01			**.09**			**.03**			**.14**		
Demands												
Problems with workload [1]		**-.14**	-.09		-.08	-.05		**-.12**	-.08		-.13	-.07
Work-home facilitation		.08	.04		.06	-.03		.08	.01		.02	-.03
Conflicts at work [1]		**-.39**	**-.15**		**-.27**	-.07		**-.34**	-.03		**-.33**	.01
Able to relax sufficiently at home from job demands		.10	.03		.07	.05		**.14**	**.12**		.06	-.03
Δ R² second model		Δ .20			Δ .10			Δ .18			Δ .12	
Resources												
Skill discretion			**.55**			**.60**			**.47**			**.49**
Autonomy			-.03			-.03			**.10**			-.01
Support from supervisor			.09			.07			.07			**.12**
Relation with colleagues			**.14**			.08			**.24**			**.25**
Opportunities for further education			.03			.06			-.04			**.14**
Δ R² final model			Δ .32			Δ .36			Δ .34			Δ.39
R² final model			**.53**			**.55**			**.55**			**.65**

Bolt: significant at <=.05
[1] Here higher scores indicate less favourable scores (range 1-5); mean scores of 2.5 and less were considered satisfactory

Factors of major importance to job satisfaction in the final models were the extent to which personal skills could be used at work ('skill discretion') and the relations with colleagues. Skill discretion was often found to be one of the factors most associated with job satisfaction in other studies among highly skilled professionals: i.e. in university faculty (Iiacqua et al., 1995), in health care employees (Van der Doef and Maes, 2000; Pomaki et al., 2004; Akerboom and Maes, 2006) and in general practitioners (McGlone and Chenoweth, 2001; Akerboom and Maes, 2006) , but not always (Smerek and Peterson, 2007). It is remarkable that especially in the oldest employees support from supervisor is correlated with job satisfaction. Older and more experienced workers may be deprived of support from their supervisor since they are expected to work independently, while support from supervisor is important for job satisfaction (Robson et al., 2005; Callister, 2006), apparently irrespective of age. The significant correlation between job satisfaction and opportunities for further education may partly be explained by the perception of the provision of further training by older workers. In a study in New Zealand on skilled workers, older workers perceived the supply of extra training as a signal from the employer that they are still being taken seriously and as valuable employees (Gray and McGregory, 2003). It is alarming that disappointing mean scores were found for support from supervisor and opportunities for education in all age groups (see Bos et al., 2009).

As expected most variance in job satisfaction was explained by job resources (on average 35% unique variance). This finding is consistent with former research using the JD-R model to explain well-being (Demerouti et al., 2001; Van Ruysseveldt, 2006). Well-being factors like job satisfaction are most strongly associated with the availability of positive work characteristics. The job resources included into the model seem to reduce the disadvantageous effects of job demands like workload and conflicts at work. Moreover, in the oldest age group the adverse consequence of chronic disease for job satisfaction has been reduced completely.

Differences found between the age groups may be partly explained by the rather small differences in the mean scores of the work characteristics between the age groups (Bos et al., 2009). We have to consider them in the light of the possible dual selection within the study population. First, in a university setting -especially within the faculty-, only the workers who prove to have sufficient capacities are offered permanent jobs. In addition, only those with a job that suits them, including the necessary job-related adjustments, will stay on during their further career. Second, aging is often accompanied by higher prevalence of chronic disease, which may lead to early drop-out (De Boer et al., 2004) and thereby create a 'healthy worker effect' (Eisen et al., 2006). It is likely that the oldest age group contains a disproportionately high number of healthy and motivated employees with well-suited jobs. However, the total proportion of respondents with chronic diseases in this study (i.e. 13%) was considerably smaller than in the Dutch population aged 15-65 years (namely, 30%) (De Klerk, 2000). In our sample, we found only small differences in the health measures 'presence of chronic disease' and 'normal job performance impeded by poor health' between the four age groups (see Table I). So, predominantly healthy workers were found in all the age groups. In the near future, however, due to public and company measures reducing early retirement and limiting possibilities for entering disability pensions, managers may need to employ more chronically ill people and also retain their less satisfied older employees. Such developments will probably reduce the "healthy worker effect" and increase the differences in health and employability between the age groups.

Methodological considerations
In this study, all the respondents were employees at a university, a work setting with specific characteristics. This has implications for generalization because autonomy is often very broad in university populations and the majority of jobs are "white collar" (Donders et al., 2003).
As in many other research into university personnel, the results of our study concerned faculty and staff together. This was justified because we focused on differences and similarities between age groups. Also, we assumed that job classification (faculty or staff) would add relatively little explanatory information in linear regression analyses beyond perceived work characteristics (Bültmann et al., 2001). Moreover, a large proportion of the university staff were highly educated people with professional job titles (Donders et al., 2003). However, being a faculty employee appeared to be associated with greater job satisfaction in the 35-44 year olds and the oldest age group (see Bos et al., 2009).
According to (Baruch, 1999) our response (37%) can be considered acceptable. However, the proportion of youngest employees was lower than in the university population (17% and 24%, respectively). The same applied to the workers with temporary contracts (16% in the sample and 23% in the population, respectively), who are predominantly found in the youngest age group. We suppose that

younger employees were less motivated to participate in a study on the employability and workability of older workers.
Owing to the cross-sectional design of our study we could not establish causality.

Conclusion

For HRM and occupational health professionals it is of interest to know what contributes most to job satisfaction and in which work characteristics most gain is to be expected when subject to improvement projects. Following our results, skill discretion and relations with colleagues play a major role. Also, attention should be given to support from supervisor and opportunities for further education. In all age groups, the mean scores of these work characteristics were disappointing. Moreover, these factors contribute significantly to the job satisfaction of older workers.

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