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Effects of job satisfaction, affective commitment and job involvement on job skill ratings

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Abstract In this study, we surveyed 272 post-holders from four different occupations, namely, public servants in charge of HR administration, software engineers, web editors, and newspaper advertisement salesperson. We found that the three job attitude variables of job satisfaction, affective commitment and job involvement all have significant effects upon job skill importance ratings and skill level ratings after controlling for occupational and demographic variables. Further comparison revealed that job satisfaction has a greater influence upon the above two ratings than affective commitment and job involvement. Also, we studied several occupations comprehensively in the present article, which is beneficial to a deeper understanding of factors influencing job analysis ratings and is thus of great importance to future job analysis research and practice.

Keywords job analysis, job satisfaction, affective commitment, job involvement

摘要 通过对从事人力资源管理工作的公务员、软件工程师、网络编辑和报纸广告销售人员四个职业的272名任职者调查数据的层次回归分析,并控制了职业和人口统计学变量的影响,发现工作满意度、情感承诺和工作投入3个工作态度变量对工作技

Translated from *Xinli xuebao* 心理学报 (Acta Psychological Sinica), 2007, 39(1): 146–154

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能的重要性和水平评价结果有显著影响。进一步对比发现,工作满意度对技能的重要性和水平评价结果的影响效应较大。该研究对多个职业的分析结果拓展了人们对工作分析结果影响因素的认识,并对未来工作分析研究和实践有重要的启示作用。

关键词 工作分析,工作满意度,情感承诺,工作投入

1 Introduction

As a process of job-related information collecting and analyzing (including information of job task and qualifications for post-holders), job analysis is generally regarded as a foundation for human resource management (McCormick, 1976). In HR practices (such as recruitment, training or appraisal, etc.), inaccurate job analysis affects other HR activities based on it (Sanchez and Levine, 2000). Studies focusing on factors influencing job analysis ratings are, therefore, of basic significance to HR management practices. As a matter of fact, relevant studies have drawn increasingly more attention from researchers and practitioners alike (McCormick et al., 1972; Harvey and Lozada-Larsen, 1988; Landy and Vasey, 1991; Morgeson and Campion, 1997; Morgeson et al., 2004; Conte et al., 2005).

In a job analysis, subject matter experts, including post-holder, the superior of the post-holder and HR experts, etc. evaluate specific task and the post-holder's job-related knowledge, skills, abilities and other characteristics (KSAOs). For a certain job, however, different people (such as different post-holders) usually provide diverse information, resulting in different job analysis ratings. Past experiences show that these differences in job analysis are inevitable (Harvey, 1991). Most of earliest studies on job analysis only focused on the effect of demographic variables, such as gender, age, nationality, academic degree, etc. upon job analysis ratings (Mullins and Kimbrough, 1988; Avolio and Waldman, 1989; Schmitt and Cohen, 1989; Landy and Vasey, 1991). However, scholars soon found that even for the same job, different post-holders tend to have diverse job analysis ratings. To address the problem, researchers developed two schools of theories. The first school stresses the influencing factors during the process of job analysis, treating the diverseness in different groups' job analysis ratings for the same job as evaluation errors. Among the theories in this school, Morgeson and Campion's social and cognitive factor theoretical framework is by far the most representative one (Morgeson and Campion, 1997). The second school regards the disparity in job analysis ratings as a positive difference. Scholars in this school argue that even for the same job, different post-holders would have different tasks or work differently in real life. Thus the disparity in job analysis ratings reflects the actually existing differences. Performance level is a key factor

in the second school. Scholars in this school explain the effect of different post-holders' performance levels of the same job upon job analysis ratings from the perspective of different-performed post-holders' unique way of doing jobs (Borman et al., 1992; Sanchez et al., 1998; Li et al., 2006). Taken together, we can attribute the disparity in different people's job analysis ratings for the same job to cognitive differences or differences in real jobs. Recently, a growing number of researchers have realized that we need to further study factors influencing the disparity in different people's job analysis ratings for the same job and to explain theoretically this disparity (Harvey, 1991; Morgeson and Campion, 1997; Morgeson et al., 2004; Conte, Dean and Ringenbach, 2005). As relevant research progresses, job attitude becomes one of the key variables influencing job analysis ratings (Conte et al., 2005).

Although a number of studies have found that attitude variables, namely, job satisfaction, organizational commitment and job involvement have important effects upon job results variables, such as work performance, organizational citizenship behavior and absence from duty, etc. (Mathieu and Zajac, 1990; Shore et al., 1990; Brown, 1996; Judge et al., 2001; Kinicki et al., 2002), there has been little research studied directly the effect of job attitude variables upon job analysis ratings. Yet such studies are very necessary (Conte et al., 2005). Morgeson and Campion (1997) pointed out, when probing into the influence of social and cognitive factors upon job analysis ratings, that the social factor of lacking of stimulation will affect job analysis ratings. Thus post-holders with high job satisfaction and a higher level of psychological commitment to his organization tend to regard his job to be more important than others. Sanchez et al. (1998) found that emotional changes or tiredness of an evaluator will affect his job analysis ratings. Sackett and Laczko's (2003) review also revealed that job satisfaction may affect job analysis ratings. Taken together, extant literature shows that job satisfaction and organizational commitment may positively affect a post-holder's job analysis ratings.

In addition, the assumption that job attitude variables will affect job analysis ratings is also supported by studies of Job Characteristics Model. In studies of job characteristics (e.g. skill diversity, task importance, autonomy and feedback, etc.) and job attitude variables, Loher et al. (1985) pointed out that job satisfaction affects the way post-holders describe their jobs. Compared with those who are not satisfied with their current jobs, satisfied post-holders tend to believe that their jobs are more important. As reflected in job analysis ratings, we can predict that post-holders satisfied with their jobs will give higher job importance ratings. The meta-analysis of Mathieu and Zajac (1990) showed that there is a significant correlation (0.50) between organizational commitment and job scope. The same analysis conducted by Brown also found that there are significantly positive relations among job involvement, task importance, autonomy and skill

diversity. These conclusions reveal a possibly positive effect of job involvement upon job importance ratings. Meanwhile, numerous studies found that demographic variables have a significant impact upon job analysis ratings (Mullins and Kimbrough, 1988; Avolio and Waldman, 1989; Schmitt and Cohen, 1989). We therefore need to control for demographic variables when probing into the possible functions of job attitude attitudes. Drawing on the above analysis, we propose hypotheses (H) as below.

H1: After controlling for demographic variables, job satisfaction has a significant positive effect upon job skill importance ratings.

H2: After controlling for demographic variables, organizational commitment has a significant positive effect upon job skill importance ratings.

H3: After controlling for demographic variables, job involvement has a significant positive effect upon job skill importance ratings.

Besides the skill importance ratings, the present study also discussed the effects of job satisfaction, affective commitment and job involvement upon job skill level ratings. Conte et al.(2005) studied the effect of job attitude variables of travel agents upon task importance and frequency ratings. To further extend their study, we will conduct our research from the following aspects. First, drawing on Conte et al's suggestions, we will include job attitude variables of post-holders from four different occupations, which shall be of more generalizability in comparison with only one occupation in Conte's research. Second, the research of Sanchez and Fraser(1992) showed that different job analysis ratings reflect different information in jobs. Thus they argued that the differences in job analysis ratings may have been caused by various reasons. Based on their assumption and in contrast to Conte's study, we will try to find out the influence of attitude variables upon job skill importance and skill level ratings. Finally, we also want to rank the effects of job satisfaction, affective commitment and job involvement upon job skill ratings in the order of influence greatness. Since no researchers have explored the effect of job attitude upon job skill level ratings and have ranked the above three attitude variables in the order of influence greatness, both two problems we were about to study in this article are explanatory ones, for which we have proposed no concrete hypotheses.

2 Methods and procedures

2.1 Samples

We sampled 272 post-holders from four different occupations, including 50 public servants in charge of HR administration, 54 software engineers, 100 web editors and 68 newspaper advertisement salespersons. All respondents were

required to fill in corresponding job attitude questionnaires. Respondents from the same occupation were from the same industry: newspaper ads salespersons and software engineers were from a newspaper publishing house and software company respectively; web editors from six big dotcoms in a Chinese city; and public servants from several tens of public service units and governmental departments. Most data were obtained when the authors conducted job analyses to confirm post-holding qualifications for these companies or units. In the sample 54.3 was male and the average age of the sample was 30.15 ($SD = 8.15$); 89.90 of the sample had a three-year college degree or above and the average working years were 3.74 ($SD = 3.42$).

2.2 Scales

2.2.1 Job skill scale

We adopted the latest job skill questionnaire in the Occupational Information Network (O*NET) of US Labor Department. The O*NET is developed against the background of accelerating changes in job contents in the modern era. It is a product of a combination of research fruits on job analysis for many years and has replaced the Dictionary of Occupational Titles and has become a widely used job analysis tool in America (Peterson et al., 2001). During the course of our questionnaire compiling, we used the procedure of “translation-back translation” to ensure the equivalence of different questionnaire editions. In addition, the credibility and validity of our questionnaires have been verified in explanatory factor analyses and confirmatory factor analyses conducted by other researchers (Li et al., 2006).

In the present study, we used Likert-type scale to doubly evaluate: first, post-holders needed to evaluate the importance of a certain skill, such as “social contact insight”. Anchor points range from “1” (not important) to “5” (very important). Then respondents needed to rate the job skill level, which is the qualifications needed for the job, on a seven-point Likert-type scale. Each item has three anchor points, indicating representatively three different levels. For example, for the above mentioned item of “social contact insight”, the three anchor points are “2” (notice that customers are getting angry for being waited too long), “4” (notice how a colleague’s recent promotion affects the whole team) and “6” (tutor patients with depression).

Thus we used two types of job analysis questionnaires in the present study: one for skill importance ratings and the other for skill level ratings. Both questionnaires consist of three identical dimensions, namely, technological skill dimension (nine items), organizational skills dimension (five items) and cognitive skill dimension (six items).

2.2.2 Job attitude scale

The measuring of job satisfaction, affective commitment or job involvement all used seven-point Likert scales, with “1” standing for “strongly disagree” and “7” standing for “strongly agree”. Thus the higher the scores, the higher levels of job satisfaction, affective commitment or job involvement are. Specifically, job satisfaction scale adopted Anderson et al. (2002)’s five-item questionnaire (e.g. “I like to stay with my co-workers,” “I feel respected in the company I work for,” etc.). Chinese edition of the above three questionnaires all went through the procedure of “translation-back translation”. Explanatory factor analysis results showed that the five items of job satisfaction questionnaire jointly measured one common factor (61.03% of variation explained and $\alpha=0.84$), the six items of affective commitment questionnaire jointly measured one common factor (59.34% of variation explained and $\alpha=0.90$), and the ten items of job involvement jointly measured one common factor (55.81 of variation explained and $\alpha=0.80$). Thus we used the average scores of the above three questionnaires as the scores of job satisfaction, affective commitment and job involvement respectively.

2.3 Data

We first of all used confirmatory factor analysis to test the structure of the two job skill ratings questionnaires. Then after controlling for occupational and demographic variables, the method of hierarchical regression analysis was adopted to explore the effects of the three attitude variables upon job skill ratings and the influence greatness of each attitude variable respectively.

3 Results

3.1 Confirmatory factor analysis of the structure of skill ratings scale

To better verify the structure of the skill ratings scale we adopted in the present study, we put together the skill ratings data of the four occupations in our study and data of another five occupations in relevant studies(including book editors, newspaper editors, HR managers from enterprises, designers from power plant and doctors) to conduct confirmatory factor analysis($N = 680$). The result is shown in Table 1.

As showed in Table 1, the fitness parameters of both tri-factor models of skill

scale met requirements, indicating good structure validity. We therefore can use them in our study.

Table 1 Confirmatory factor analysis results of skill importance scale and skill level scale

Model	<i>df</i>	α^2	<i>RMSEA</i>	<i>GFI</i>	<i>CFI</i>	<i>NFI</i>	<i>TLI</i>	<i>IFI</i>
Tri-factor model for job importance scale	167	713.06	0.069	0.904	0.890	0.862	0.875	0.891
Tri-factor model for skill level scale	167	680.88	0.067	0.902	0.903	0.876	0.890	0.903

Note: The above analyses were made on the basis of data from the nine occupations, $p = 680$.

2.2 Correlation between job attitude variables and dimensions of skill ratings scale

The mean, standard deviation and correlation among demographic variables, three job attitude variables and dimensions of the two job skill ratings scales are presented in Table 2.

As shown in Table 2, both job satisfaction and job involvement are significantly correlated with all six dimensions of job skill ratings scale, while affective commitment only significantly correlated with only three dimensions in the scale. In addition, among the demographic variables, gender age and working years are all related to three job attitude variables and dimensions in job skill ratings scale to a certain degree. Thus in the following discussion of the effect of job attitude variables upon job skill ratings, we need to control for both occupational variables and demographic variables.

2.3 Testing of the stand-alone influence of job attitude variables

The three hypotheses in our study presume that the three job attitude variables have great influences upon job importance ratings. Meanwhile, we also want to find out how do these job attitude variables affect skill level ratings. Thus we adopted the hierarchical regression analysis method. To begin with, we recoded occupational variables and set three dummy variables. In the hierarchical regression equation, we used the skill factor ratings as dependent variables. In step one, the three dummy occupational variables and four demographic variables (namely gender, age, working years and education level) were entered into the equation as control variables. Then we entered the three job attitude variables (job satisfaction, affective commitment and job involvement) one by one to see how much explanatory power of the equation has increased. Suppose

Table 2 Mean, standard deviation and correlation among demographic variables, job attitude variables, dimensions of skill importance scale and dimensions of skill level scale

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Job satisfaction	5.24	1.00	(0.84)											
2. Affective commitment	4.78	1.10	0.57**	(0.90)										
3. Job involvement	4.61	0.90	0.27**	0.42**	(0.80)									
4. ITS	2.29	0.88	0.26**	0.08	0.18**	(0.89)								
5. IOS	2.79	0.77	0.15**	0.14**	0.23**	0.29**	(0.66)							
6. ICS	3.69	0.55	0.19**	0.14**	0.23**	0.28**	0.44**	(0.64)						
7. LTS	2.38	1.59	0.29**	0.11	0.21**	0.96**	0.31**	0.29**	(0.90)					
8. LOS	3.32	1.24	0.16**	0.17**	0.20**	0.31**	0.87**	0.39**	0.38**	(0.65)				
9. LCS	4.43	0.91	0.24**	0.10	0.22**	0.30**	0.35**	0.71**	0.38**	0.46**	(0.74)			
10. Gender ^{a)}	54.30 ^{a)}	45.70 ^{b)}	-0.03	0.01	-0.16*	-0.19**	-0.08	-0.10	-0.18**	-0.02	-0.13*			
11. Age	30.15	8.15	0.27**	0.28**	0.06	0.08	0.10	-0.21**	0.09	0.14*	-0.12*	0.12		
12. Education level	4.81	1.27	0.02	-0.11	0.01	0.03	-0.12*	0.18**	0.03	-0.18**	-0.21**	-0.15*	-0.31**	
13. Working years	3.74	3.42	0.17**	0.14*	0.01	0.12	0.08	-0.11	0.11	0.09	-0.02	-0.04	0.60**	-0.24**

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; $N = 272$.

Numbers on the diagonal stand for the credibility coefficient (Cronbach's α) of the table.

ITS=importance of technological skills; IOS=importance of organizational skills; ICS=importance of cognitive skills; LTS=level of technological skills; LOS=level of organizational skills; LCS=level of cognitive skills.

^{a)}In the variable of gender, 1=male, 2=female; ^{b)}the percentage of male; and ^{c)}the percentage of female.

Table 3 Hierarchical regression results of the effect of job satisfaction upon skill ratings

Independent variables	ITS	IOS	ICS	LTS	LOS	LCS						
Step 1:												
Controlled variables												
HR public servants	-0.003	-0.015	-0.271*	-0.296**	-0.245*	-0.281*	0.006	-0.011	-0.258*	-0.282*	-0.374***	-0.410***
Soft engineers	0.568***	0.534***	-0.445***	-0.511***	-0.125	-0.220*	0.571***	0.523***	-0.325***	-0.389***	-0.088	-0.192*
Web editors	0.114	0.093	-0.371***	-0.416	-0.206*	-0.269**	0.122	0.092	-0.278**	-0.321***	-0.168	-0.235*
Gender ^{a)}	0.004	0.008	-0.131	-0.125	-0.035	-0.022	0.012	0.018	-0.074	-0.068	-0.031	-0.015
Age	0.150	0.121	0.042	-0.013	-0.179	-0.259*	0.170	0.129	0.107	0.055	0.003	-0.086
Educational level	-0.109	-0.108	-0.031	-0.030	0.107	0.108	-0.110	-0.109	-0.125	-0.124	0.101	0.102
Working years	-0.027	-0.022	0.116	0.126	0.075	0.090	-0.055	-0.047	0.057	0.066	0.097	0.112
Step 2:												
independent variables												
Job satisfaction		0.093		0.178*		0.256***		0.131*		0.171*		0.288***
R^2	0.245	0.253	0.133	0.160	0.118	0.175	0.239	0.254	0.105	0.130	0.114	0.185
Adjusted R^2	0.219	0.223	0.103	0.126	0.008	0.142	0.213	0.224	0.073	0.094	0.084	0.153
F	9.49***	8.58***	4.39***	4.74***	3.90***	5.34***	9.08***	8.55***	3.31**	3.67**	3.73***	5.71***
ΔR^2	0.245***	0.007	0.133***	0.027*	0.118***	0.056***	0.239***	0.015*	0.105	0.025*	0.114***	0.071***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; $N = 272$.

Numbers in the lines of the three occupational variables, four demographic variables and job satisfaction represent respectively the standardized regression coefficients of these variables.

^{a)}In the variable of gender, 1=male, 2=female.

Table 4 Hierarchical regression results of the effect of affective commitment upon skill ratings

Independent variables	ITS	IOS	ICS	LTS	LOS	LCS												
Step 1:																		
Controlled variables																		
HR public servants	-0.014	-0.002	-0.284*	-0.273*	-0.188	-0.147	0.000	0.024	-0.278*	-0.260	-0.287*	-0.244*						
Soft engineers	0.560***	0.564***	-0.443***	-0.439***	-0.060	-0.046	0.567***	0.576***	-0.323***	-0.0316***	-0.010	0.005						
Web editors	0.119	0.130	-0.360***	-0.347***	-0.107	-0.063	0.130	0.153	-0.257	-0.236*	-0.068	-0.022						
Gender ^{a)}	-0.013	-0.012	-0.144	-0.142	-0.044	-0.038	-0.004	0.000	-0.085	-0.083	-0.021	-0.017						
Age	0.123	0.104	0.044	0.025	-0.171	-0.242*	0.139	0.102	0.116	0.086	-0.012	-0.082						
Educational level	-0.102	-0.101	-0.030	-0.029	0.091	0.092	-0.102	-0.101	-0.130	-0.127	0.089	0.091						
Working years	0.001	0.003	0.132	0.134	0.096	0.107	-0.026	-0.023	0.070	0.073	0.116	0.127						
Step 2:																		
independent variables																		
Affective commitment	0.048	0.052	0.184*	0.184*	0.097	0.083	0.251	0.253	0.140	0.142	0.094	0.123	0.244	0.252	0.107	0.113	0.089	0.118
R^2	0.251	0.253	0.140	0.142	0.094	0.123	0.244	0.252	0.107	0.113	0.089	0.118						
Adjusted R^2	0.225	0.223	0.110	0.108	0.062	0.088	0.217	0.222	0.076	0.077	0.057	0.083						
F	9.75***	8.59***	4.63***	4.11***	2.99**	3.53***	9.29***	8.45***	3.38**	3.13**	2.81**	3.36**						
ΔR^2	0.251***	0.002	0.140***	0.002	0.094**	0.029**	0.244***	0.008	0.107**	0.006	0.089**	0.029*						

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; $N=272$.

Numbers in the lines of the three occupational variables, four demographic variables and job satisfaction represent respectively the standardized regression coefficients of these variables.

^{a)}In the variable of gender, 1=male, 2=female.

Table 5 Hierarchical regression results of the effect of job involvement upon skill ratings

Independent variables	ITS	LOS	ICS	LTS	LOS	LCS						
Step 1: Controlled Variables												
HR public servants	-0.019	0.010	-0.251*	-0.183	-0.206	-0.131	-0.009	0.030	-0.253*	-0.198	-0.310**	-0.235*
Soft engineers	0.558***	0.556***	-0.426***	-0.432***	-0.082	-0.088	0.562***	0.559***	-0.319***	-0.323***	-0.038	-0.044
Web editors	0.069	0.081	-0.358**	-0.330***	-0.161	-0.131	0.077	0.093	-0.266**	-0.244**	-0.100	-0.070
Gender ^{a)}	0.024	0.035	-0.124	-0.097	-0.041	-0.010	0.029	0.043	-0.083	-0.061	-0.059	-0.032
Age	0.185	0.157	0.052	-0.014	-0.160	-0.235*	0.213*	0.176	0.135	0.081	0.012	-0.059
Educational Level	-0.114	-0.112	-0.016	-0.008	0.102	0.107	-0.110	-0.107	-0.116	-0.109	0.103	0.110
Working years	-0.035	-0.026	0.100	0.123	0.064	-0.088	-0.069	-0.056	0.039	0.059	0.080	0.106
Step 2: independent variables												
Job involvement		0.091	0.225***	0.240***	0.122	0.185**	0.122	0.264	0.104	0.136	0.103	0.152
R^2	0.254	0.261	0.126	0.172	0.101	0.153	0.251	0.234	0.071	0.099	0.070	0.117
Adjusted R^2	0.227	0.231	0.094	0.137	0.069	0.118	0.224	0.234	0.071	0.099	0.070	0.117
F	9.57***	8.66**	3.92***	4.94***	3.13**	4.37***	9.33***	8.72***	3.15**	3.69***	3.18**	4.34***
ΔR^2	0.254***	0.007	0.126***	0.046***	0.101**	0.052**	0.251***	0.013	0.104**	0.031**	0.105**	0.050***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, $N = 272$.

Numbers in the lines of the three occupational variables, four demographic variables, and job satisfaction represent respectively the standardized regression coefficients of these variables.

^{a)}In the variable of gender, 1= male, 2=female.

the increased equation explanatory power as ΔR^2 , that is, the attitude variables' effect size upon a certain skill dimension. If the effect size is significant, it indicates that job attitude variables have a significant effect upon skill ratings. Statistical results are shown in Tables 3, 4, and 5 respectively.

As shown in Tables 3, 4, and 5, after controlling for occupational variables and demographic variables, job satisfaction has a significant and positive effect upon the ratings of IOS, ICS, LOS, LCS and LTS. Thus Hypothesis 1 is supported. Likewise, affective commitment significantly and positively affects ICS and LCS, providing empirical support for Hypothesis 2. In addition, job involvement has a significant and positive influence upon IOS, ICS, LOS and LCS. Hypothesis 3 is also supported.

2.4 Relative greatness of the influence of attitude variables

To distinguish relative influence greatness of different attitude variables, we again used hierarchical regression analysis (set the skill factor ratings as dependent variables). First, we entered the three occupational dummy variables and four demographic variables (namely, gender, age, working years and education level) into the equation, and then we entered simultaneously the variables of job satisfaction, affective commitment and job involvement. By comparing the standardized regression coefficients of the above three attitude variables in the equation, we could find out the relative influence greatness of each of the three variables. The results are showed in Table 6.

Comparing the standardized regression coefficients of the above three variables, we can see that job satisfaction has the greatest influence upon skill importance ratings and skill level ratings, while affective commitment has the least influence.

4 Discussion

By surveying four types of post-holders and controlling for occupational and demographic variables, we discussed the effects of three job attitude variables, namely job satisfaction, affective commitment and job involvement, upon job skill importance ratings and job skill level ratings. The results showed that the job attitude variables do have a significant influence upon the two job skill scales. Comparatively speaking, job satisfaction has the greatest effect upon skill importance ratings and skill level ratings. Specifically, the more satisfied a post-holder is with his/her job, the more important he/she regards the organizational skills and cognitive skills as in the job, and the higher level of technological skills, organizational skills and cognitive skills he/she displays at work. In a

Table 6 Hierarchical regression results of the relative influence greatness of job satisfaction, affective commitment and job involvement

Independent variables	ITS	IOS	ICS	LTS	LOS	LCS						
Step 1:												
Controlled variables												
HR public servants	-0.035	-0.058	-0.300*	-0.316*	-0.275*	-0.265*	-0.026	-0.034	-0.283*	-0.300*	-0.372**	-0.375**
Soft engineers	0.563***	0.497***	-0.454***	-0.579***	-0.135	-0.228*	0.567***	0.501***	-0.330**	-0.435***	-0.077	-0.207
Web editors	0.078	0.016	-0.375***	-0.485***	-0.203*	-0.264*	0.083	0.032	-0.263**	-0.354**	-0.132	-0.225*
Gender ^a	0.028	0.044	-0.127	-0.090	-0.044	-0.002	0.037	0.060	-0.080	-0.049	-0.038	0.013
Age	0.166	0.149	0.063	0.008	-0.129	-0.230*	0.192	0.150	0.141	0.089	0.040	-0.071
Education Level	-0.097	-0.095	-0.011	-0.009	0.095	0.095	-0.093	-0.092	-0.110	-0.110	0.097	0.097
Working years	-0.001	0.003	0.112	0.129	0.052	0.073	-0.039	-0.030	0.053	0.068	0.052	0.075
Step 2:												
Independent variables												
Job satisfaction	0.142	0.265**	0.247*	0.158	0.233*	0.334**						
Affective commitment	-0.120	-0.229*	-0.076	-0.090	-0.170	-0.140						
Job involvement	0.076	0.225**	0.168*	0.098	0.166*	0.204**						
R^2	0.260	0.274	0.134	0.205	0.111	0.181	0.253	0.274	0.102	0.149	0.111	0.216
Adjusted R^2	0.233	0.235	0.101	0.161	0.078	0.137	0.225	0.235	0.067	0.102	0.077	0.173
F	9.48***	7.01***	4.08***	4.67***	3.36**	4.08***	9.05***	6.95***	2.95**	3.14**	3.30**	5.04***
ΔR	0.260***	0.014	0.134***	0.071**	0.111**	0.070**	0.253***	0.021	0.102**	0.047*	0.111**	0.105***

Note: The same as Table 5.

similar vein, the higher level of affective commitment a post-holder has to his organization, the more important he/she regards the cognitive skills as in the job, and the higher level of cognitive skills the post-holder exhibits at work. Also, the more involved a post-holder becomes in his/her job, the more important he/she regards the organizational skills and cognitive skills as in the job, and the higher level of the above two skills he/she reveals at work. Explanations for the above findings are twofold: first, based on relevant job analysis theories, differences in job ratings may reflect the real differences existing in these jobs. Concretely speaking, even if doing the same job, post-holders with different job attitudes may exhibit different levels of job skills. When one is satisfied with his/her job, or has a high level of affective commitment to his/her organization, or is very involved in his/her job, he/she tends to display a higher level of job skills. In other words, people will use higher levels of job skills to do the same job. Second, the above phenomenon can also be explained by job characteristics model, which is mainly for illustrating the job characteristics perceived by post-holders. For example, task importance or job autonomy may affect a post-holder's perception of the significance of the job or sense of responsibility, which in turns will influence his/her internal working incentives. Post-holders who regard their own job skills to be more important or believe their jobs requiring a higher level of job skills tend to consider their jobs to be meaningful, resulting in higher levels of internal work incentives, job satisfaction, affective commitment or job involvement. Since we explored only the correlations among different variables in the present study, judging from our study design and results, either job analysis theory or job characteristics model is applicable for our results. There may even be a kind of inter-affecting and inter-promoting relation between the independent variables and dependent variables. However, the causal relation between job attitude and job skill ratings remains unclear. Future research needs to further probe into the problem by adopting better study methods, for instance, tracking research approach. We believe that this may be the direction for future research.

Taken together, our study extended existing research on the effect of job attitude variables upon job analysis ratings. First, in a response to Conte et al.'s suggestions, we collected data from four different occupations to explore the effect of attitude variables upon job analysis ratings. In addition, the four occupations we chose have extensive representativeness as they include a wide range of industries from HR management, R&D to marketing and sales and they contain all the three job skills discussed in the present article, namely technological skills, organizational skills and cognitive skills. Thus in comparison with Conte et al.'s study, our samples are more representative and conclusions are of better generalizability.

Second, past studies on the effect of job attitude variables focused only on task

importance and frequency ratings. But our results revealed that job attitude variables also influence job skill importance ratings and job skill level ratings. Generally speaking, task ratings belong to task-oriented job analysis, while skill ratings belong to post-holder-oriented job analysis (McCormick, 1976). Thus by combining our study and Conte et al.'s study, one may find that job attitude variables affect not only task-oriented job analysis ratings, but also post-holder-oriented job analysis ratings. In addition, job attitude variables also affect the importance ratings and frequency ratings of job analysis, as well as skill importance ratings and skill level ratings.

Besides, we also found that, in comparison with the other two job attitude variables, job satisfaction has the greatest effect upon skill importance ratings and skill level ratings. However, because we only explored the affective commitment in organizational commitment, any deduction of our conclusion should be made in a most prudent way. Our results are consistent with the findings of Conte et al. who found that even after controlling for demographic variables, job satisfaction can still explain about 5 of the variation of task importance ratings as well as 3 of the variation of task frequency ratings—more than organizational commitment and job involvement. Taken together, we can draw a conclusion that comparing with organizational commitment and job involvement, job satisfaction has a relatively greater influence upon task importance ratings, task frequency ratings, skill importance ratings and skill level ratings.

Finally, our study is of great applicable significance for HR management practice. As far as data collection of job analysis is concerned, when HR managers in enterprises conduct job analysis and job ratings, they tend to ask employees with high level of job satisfaction, organizational commitment or job involvement to provide information for job analysis. But our study revealed that when implementing job analysis, we need to invite employees at different levels to participate as so to make sure that data obtained from job analysis are accurate and reliable. For those HR managerial activities based on job analysis and job ratings, practitioners also need to take into consideration post-holders with different job attitudes.

Moreover, we need to notice the possible common method variance in the present article. Since we obtained job attitude variables and skill ratings information simultaneously from post-holders by questionnaire method, there seems to have a problem of common method variance to a certain degree. This is may be one of the limitations in our study. However, our study purpose decides that we have to collect data from one common source. As mentioned earlier, we wanted to find out the effect of job attitude variables upon job analysis ratings. As our job attitude data mainly obtained through participants' self-reporting, we had to collect data of job analysis from the same post-holder. More important,

relevant analysis results showed that job attitude variables do not have any significant correlation with all skill dimension ratings (e.g. affective commitment only significantly related to the three skill dimension ratings). Our hierarchical regression analysis also showed that job attitude variables do not significantly influence all dimensions of skill ratings. Thus we can say that the common method variance is quite small in our study and it does not systematically affect our study. This result also consists with Conte et al.'s conclusions.

We also need to explain the occupational variances showed in our results. Table 6 illustrates that the three dummy variables all have significant influences upon skill importance ratings and skill level ratings, implying that skill importance and skill level for different occupations vary. Although we did not mean to discuss the skill importance variance and skill level variance among different occupations, the above finding confirms from another angle the importance of controlling for occupational variables in this study. It also shows that the effect of job attitude upon skill ratings may vary with different occupations. This may also be another direction for future research.

There are several limitations in the present study we should be aware of. For instance, due to space limits in our questionnaires, we just measured the affective commitment, regardless of other dimensions in organizational commitment. Meanwhile, we only measured the correlations among the variables, thus we are unable to deduct the causal relation between attitude variables and skill ratings. Finally, the requirements for the same job may vary in different industries. Since we obtained the data of each occupation from one industry, there may be industrial influence among these occupations.

5 Conclusions and implications

After controlling for occupational variables and demographic variables, we explored in this article the effects of job satisfaction, affective commitment and job involvement upon job skill ratings in job analysis. Main conclusions and implications are as below.

(1) Job satisfaction can significantly affect post-holders' job skill ratings: the higher level of job satisfaction, the higher scores post-holders give to the skill importance of organizational skills and cognitive skills and to the skill level of organizational skills, cognitive skills and technological skills.

(2) Affective commitment can significantly affect post-holders' skill ratings: the higher level of affective commitment, the higher scores post-holders give to the skill importance and skill level of cognitive skills.

(3) Job involvement can significantly affect post-holders' skill ratings: the higher level of job involvement, the higher scores post-holders give to the skill

importance and skill level of organizational skills and cognitive skills.

(4) Comparatively speaking, job satisfaction has a greater effect upon skill importance ratings and skill level ratings. Thus when we conduct job analysis and job ratings in managerial practices, we need to invite post-holders with different job attitudes to participate so as to ensure the accuracy of corresponding data.

Acknowledgements This paper is supported by the National Natural Science Foundation of China (No. 70471060).

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