Unlocking Potential: The Role of Skills and Training in Workplace Wellbeing

A study into the relationships between skills match, overskilling, underskilling, and workplace wellbeing, and the role of training importance

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Abstract

The topic of workplace wellbeing has gained significance in organization studies over the last decades. In previous studies several determinants of workplace wellbeing have been identified. However, to date, no research has been conducted into the relationship between skills match, overskilling, underskilling, training importance and workplace wellbeing. The aim of this study is to investigate these relationships using the job demands-resources (JD-R) model. Additionally, the moderating role of training importance in the relationship between underskilling and workplace wellbeing is examined. Existing data from a sample of 20254 managers working in organizations across the EU27 countries and the United Kingdom are used. Results of the study show that skills match, compared to underskilling, is significantly positively related to workplace wellbeing. Overskilling, in comparison to underskilling and skills match, is significantly positively related to workplace wellbeing. Conversely, compared to skills match and overskilling, underskilling turns out to be significantly negatively related to workplace wellbeing. Training importance is significantly positively related to workplace wellbeing. No evidence is found for the moderating role of training importance in the relationship between underskilling and workplace wellbeing. The limitations and implications of this study are discussed, as well as directions for future research.

Keywords: overskilling, skills match, training importance, underskilling, workplace wellbeing

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In today's world, advanced technologies and new ways of working are disrupting established ideas about work, organizations and society (Litchfield, 2020). In this context workplace wellbeing, which is defined as a feeling of prosperity attained from work (Aryanti et al., 2020), gains significance. Although workplace wellbeing is a noble objective in itself, this is often an insufficient motivation for organizations to invest in it in a sustainable manner. However, research has shown that workplace wellbeing also effectuates benefits for organizations, such as higher business-unit level profitability (Krekel et al., 2019). It is therefore valuable to gain insight into the factors that might improve or reduce workplace wellbeing in organizations.

One such factor is the relationship between skills match, overskilling, underskilling and workplace wellbeing. When employees' skills align with the requirements of the job, there is a skills match. In this situation, employees can utilize their skills sufficiently and their skills level is adequate to meet the job requirements. According to the JD-R model (Bakker & Demerouti, 2003b) skills match can be seen as a job resource, because it implies that employees can effectively use their skills in their jobs. Job resources are those physical, psychological, social, or organizational facets of the job that help achieve work goals, that minimize job demands and their associated costs, and that encourage personal growth (Bakker & Demerouti, 2007). As opposed to skills match, skills mismatch implies that an employee's skills level does not align with the required skills level for a job. Overskilling is a situation in which an employee's skills level is above the required level for the job, which means that their skills are underutilized. Conversely, when the requirements of the job ask for higher-level skills than the employee currently possesses, there is a situation of underskilling (Santiago-Vela & Hall, 2023). In this situation the employee has to put in sustained effort to comply with the requirements of the job, even though they do not have the skills for it. In their JD-R model, Bakker and Demerouti (2007) call this a job demand: an aspect of the job that requires continuous effort from an employee, which is associated with certain physiological and/or psychological costs. According to the JD-R model, job demands are negatively related to wellbeing (Bakker & Demerouti, 2003b). Findings of Arboh et al. (2025) provided

evidence for the positive relationship between job resources and workplace wellbeing outcomes. On the contrary, the relationship between job demands and workplace wellbeing outcomes was found to be negative (Bakker et al., 2003a).

Beyond these direct relationships, the JD-R model also proposes that job resources can moderate the negative relationship between job demands and wellbeing outcomes (Bakker & Demerouti, 2003b). Bakker et al. (2005) and by Xanthopoulou et al. (2006) found general evidence for the proposed moderating role of job resources. In the context of this study, the potential moderating role of training importance is examined. Landy (1985) defined job training as a bundle of organized activities initiated by an organization to increase employees' job knowledge and skills, or to alter their attitudes and social behavior in a way that is in line with the organizational goals and job requirements. Training importance specifically focuses on the priority training has in organizations, and the motives organizations have to provide training to their employees.

Previous research has already examined some relationships between skills match, overskilling, underskilling, and workplace wellbeing. Overskilling was found to be positively related to intention to quit (McGuinnes & Wooden, 2009), and negatively related to job satisfaction (McGuinness & Sloane, 2011; Santiago-Vela & Hall, 2023). Underskilling has been studied in relation to work-related outcomes like job satisfaction (Sánchez-Sánchez & McGuinness, 2015) and workplace discrimination (Rafferty, 2020). However, up to this point both overskilling and underskilling are not yet studied in relation to dimensions of workplace wellbeing like motivation, retention, absenteeism and manager-employee relationships. Another addition of this study is the moderating role of training importance in the relationship between underskilling and workplace wellbeing. Evidence for this moderating role could give insight in the way training importance might contribute to mitigate the negative relationship between underskilling and workplace wellbeing.

The JD-R model was initially conceptualized as an individual-level theory. Torrente et al. (2012) have successfully extended the individual level approach to a higher aggregation level, the team level, by employing a referent shift in the operationalization of constructs. This approach aligns with the

compatibility principle, allowing for the use of collective measures that reflect the shared perceptions and experiences of organizational members (Schaufeli & Taris, 2013). In line with the approach of Torrente et al. (2013), this study applies the JD-R model on an organizational level. Deviating from the common practice of collecting self-reported data directly from individual employees (e.g., Jourdain & Chênevert, 2010; Fernet et al., 2012), this study used data gathered from organizational informants, namely human resource managers and employee representatives. This methodological choice enables a more holistic and potentially more objective estimation of the relationships under investigation. The organizational-level approach offers several advantages. First, it may reduce subjectivity biases often associated with self-reports, such as affectivity and transient mood states (Podsakoff et al., 2003). Second, organizational informants might be able to incorporate broader structural and contextual factors in their assessments. By measuring all constructs at the organizational level, this study aims to capture the collective dynamics that influence job demands and job resources across entire organizations.

Another advantage of this study is the large population of interest. The data for this study came from organizations in all EU27 countries (Appendix A) and the United Kingdom. This allows to draw conclusions about the relationships under study on a wide scale.

Besides a theoretical contribution this study could provide valuable insights in the practical work context. Firstly, by providing evidence for the positive relationship between skills match, training importance and workplace wellbeing and the negative relationship between overskilling, underskilling and workplace wellbeing, this study provides an argument for managers to invest in the skills level and training of their workforce. By improving skills match and reducing overskilling and underskilling, organizations can improve workplace wellbeing by improving retention rates and lowering absenteeism rates. In 2021, the total organizational costs for absent employees in The Netherlands were 17 billion euros (Van der Noordt et al., 2022). This amount shows that it could be beneficial for organizations to reduce their absenteeism rates. Secondly, by providing evidence for the moderating role of training

importance in the negative relationship between underskilling and workplace wellbeing, this study can encourage organizations to prioritize training in their organizational policies.

Based on abovementioned theories and previously conducted research, the following research question is formulated: *To what extent are skills match, overskilling, underskilling, training and workplace wellbeing related and how can these relationships be explained with the job demands-resources model?*

Theoretical Framework

JD-R Model and Direct Relationships

This section discusses the direct relationship between skills match, overskilling, underskilling, training importance and workplace wellbeing, based on the JD-R model.

Demerouti et al. (2001) introduced the JD-R model, at the centre of which lies the assumption that every job has its own demands and resources associated with it, which, in turn, influence wellbeing. The second assumption of the JD-R model is that there are two processes underlying the relationship between job demands, job resources and employee wellbeing. This is called the 'dual process' premise. The first process, the health impairment process, is one in which chronic job demands or badly designed jobs deplete employees' physical and psychological resources. This is devastating for their wellbeing, as it leads to low motivation and high strain in the form of exhaustion and health problems. The second process, the motivational process, assumes that job resources have the potential to induce low strain, high motivation, high engagement, and high performance of employees (Bakker & Demerouti, 2007). Arboh et al. (2025) successfully applied the JD-R model to the relationship between several job resources and workplace wellbeing, thereby providing evidence for the motivational nature of job resources. In the following, the job demands, job resources and wellbeing outcomes that are used in this study will be introduced and defined. These are workplace wellbeing, skills match, overskilling, underskilling, and training importance.

Ryan and Deci (2008, p. 1) refer to wellbeing as "optimal psychological experience and functioning". Aryanti et al. (2020) define workplace wellbeing as a feeling of success attained from

work, that is related to employees' general affection and their intrinsic and extrinsic work values. Literature provides several other definitions in which workplace wellbeing is approached from a bio-psycho-social perspective or from a management perspective (Wallace, 2022). Within workplace wellbeing, Van de Voorde et al. (2012) distinguish three dimensions. The first one is happiness, which describes an employee's subjective experiences and performance at work. The second dimension is health-related and focuses on stressors and strain. Stressors are circumstances or events that cause stress, such as a heavy workload. Strain refers to the resulting response, such as burnout. The third dimension is social wellbeing, which concerns the interactions and relationships between employees, supervisors and the organization as a whole (Van de Voorde et al., 2012). Previous research has used different definitions and measurement indicators of workplace wellbeing. In this study four indicators are integrated into one workplace wellbeing scale. These indicators are motivation, employee retention, absenteeism, and management-employee relationships. The added value of this integrated approach is that the interplay between different dimensions of workplace wellbeing can be measured. In other words, this study examines whether any definition of workplace wellbeing can be accurately conceptualized and measured with these four indicators. In the following, the separate indicators will be explained in more detail.

Firstly, motivation can be defined as "those psychological processes that cause the arousal, direction, and persistence of voluntary actions that are goal directed" (Mitchell, 1982, p. 81). It is the internal drive to achieve a certain objective or stimulate a performance set by a particular goal (Dobre, 2008). Niks et al. (2022) identified motivation to meet job demands as a key factor in determining workplace wellbeing.

The second dimension, retention, refers to an organization's ability to encourage employees to remain in the organization for a prolonged period of time (Das & Baruah, 2013). Employee retention is crucial for organizations, as the departure of employees comes with costs due to productivity loss and recruitment efforts (Tracey & Hinkin, 2008).

Thirdly, absenteeism concerns the nonappearance of employees for scheduled work (Gibson, 1966). Absenteeism is a common indicator for workplace wellbeing, as is concluded by Brown et al. (2011). Absence from work can either stem from inability, inappropriateness or unwillingness to work. Regarding inability, some judgment is necessary about the point at which an employee is not able to perform their work duties. This judgment is used to determine whether absence is legitimate. Some situations of absence are considered appropriate, and therefore legitimate, for example to attend generally accepted civic responsibilities or to deal with emergencies. Then there is absence for the sole reason of unwillingness to work, which is considered to be illegitimate (Gibson, 1966). Duchemin et al. (2019) used sick leave, a form of absenteeism, as an indicator of wellbeing at the individual level. This study will use absenteeism, specifically in the form of sick leave, as an indicator of workplace wellbeing at the organizational level.

Finally, the relationships between managers and employees are a significant aspect of the psychosocial work environment (Clausen et al., 2014). Summers et al. (2020) identified aspects of the manager-employee relationship, like managerial support, as indicators of workplace wellbeing.

Job resources are those physical, psychological, social, or organizational facets of the job that are useful in attaining work goals, that minimize job demands and their related costs, or that encourage personal growth (Bakker & Demerouti, 2007). As opposed to job resources, job demands are “those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs” (Bakker & Demerouti, 2007, p. 312). Job demands are not essentially negative in themselves, but they can turn into job stressors when the employee needs to put a lot of energy into meeting the demands and cannot sufficiently recover from that effort (Meijman & Mulder, 1998). Herein the JD-R model does not limit itself to particular job demands and job resources, but instead it assumes that any demand and any resource can affect wellbeing outcomes (Schaufeli & Taris, 2013).

One such job resource is skill utilization (Schaufeli & Taris, 2013. Skill utilization is defined as an employee's opportunity to use particular job skills in the working process (Häusser et al., 2010). In a situation where employees can use their skills successfully in their jobs, and the job requirements align with their skills, there is a skills match. Skill utilization is seen as motivating and is positively related to workplace wellbeing outcomes (Van den Broeck et al., 2015). Additionally, Van Ruysseveldt et al. (2011) found that skill utilization was negatively related to emotional exhaustion.

Santiago-Vela and Hall (2023) studied de relationship between skills mismatch and job satisfaction. They define skills mismatch as a situation in which the skills supplied by an employee do not align with the required skills for a job. This mismatch can be horizontal as well as vertical. Horizontal mismatch focuses on the difference between the content of the skills an employee has and the content of the skills that are required for the job. This study focuses on vertical mismatch, which concerns the discrepancy between an employee's skills level and the skills level that is required to meet the job demands. There are two types of vertical skills mismatch, namely overskilling and underskilling. In a situation of overskilling the employee's skills level is above the required skills level for the job. This implies that the employee's skills are underutilized in the job. Santiago-Vela and Hall (2023) found that overskilling is negatively related to job satisfaction. Job satisfaction can be identified as one aspect of wellbeing (Nielsen et al., 2011). From a theoretical point of view, Abubakar et al. (2022) propose that the JD-R model can be used to explain the relationship between low job demands and diminished wellbeing. In a situation of overskilling, the job demands are lower than the employee should be able to manage with their skills level. Therefore, based on the JD-R model and the proposition of Abubakar et al. (2022), overskilling is expected to be negatively related to workplace wellbeing. As opposed to overskilling, underskilling is defined as a situation in which jobs are demanding and call for higher-level skills than the employee currently has (Santiago-Vela & Hall, 2023). In a situation of underskilling the employee is essentially asked to perform tasks that are too demanding for them, in which case their skills are being overutilized (Allen et al., 2013). Following the premise of the health impairment process (Demerouti et al., 2001) job demands that are chronically too high exhaust employees' resources, as

they have to put in sustained effort to cope with these demands. Therefore, underskilling will lead to reduced workplace wellbeing outcomes. Bakker et al. (2003a) found evidence for the negative relationship between job demands and several indicators of workplace wellbeing.

Based on the abovementioned JD-R model (Demerouti et al., 2001) and empirical evidence, the following hypotheses are formulated:

Hypothesis 1a: compared to overskilling, skills match is positively related to workplace wellbeing.

Hypothesis 1b: compared to underskilling, skills match is positively related to workplace wellbeing.

Hypothesis 2: compared to skills match, overskilling is negatively related to workplace wellbeing.

Hypothesis 3: compared to skills match, underskilling is negatively related to workplace wellbeing.

Another job resource in the JD-R model is training (Bakker & Demerouti, 2007). Landy (1985) defined training in the workplace as a bundle of organized activities initiated by an organization to increase employees' job knowledge and skills or to alter their attitudes and social behavior, in a way that is compatible with the organizational goals and job requirements. Organizations also differ in how they prioritize training goals, which influences their decision to offer training opportunities. Koster and Benda (2020) found, for instance, that organizations are more inclined to provide employees training to develop their firm-specific skills, rather than more general skills. Other reasons to provide training could be to improve employee morale or to increase employees' capacity to articulate ideas about improvements to the organization (Eurofound & Cedefop, 2020).

This study proposes that the importance an organization finds in training is positively related to workplace wellbeing. Hence, the following hypothesis is formulated:

Hypothesis 4: training importance is positively related to workplace wellbeing.

Moderating Role of Training Importance

The JD-R model proposes, in addition to the abovementioned motivational and health impairment processes, a moderating role of job resources on the relationship between job demands and wellbeing outcomes (Bakker et al., 2003b). Herein job resources can buffer the effects of several different job demands on wellbeing outcomes (Bakker & Demerouti, 2007). Following Bakker and Demerouti (2007) who describe job resources as aspects of work that encourage personal growth and development, training can be seen as a job resource. Therefore, according to the JD-R model training can buffer the negative relationship between underskilling and wellbeing outcomes. The JD-R interaction hypothesis was tested by Bakker et al. (2005) and by Xanthopoulou et al. (2006) who both found evidence for the credibility of the proposed moderating role of job resources on the relationship between job demands and wellbeing outcomes. The newness of this study in comparison to previous studies is that it specifically focuses on the moderating role of training importance on the hypothesized negative relationship between underskilling and workplace wellbeing. The rationale behind this is that the more value organizations attach to training their workforce, the more perspective there is for currently underskilled employees that they can achieve a skills match. Therefore, training importance can diminish the negative relationship between underskilling and workplace wellbeing in the organization.

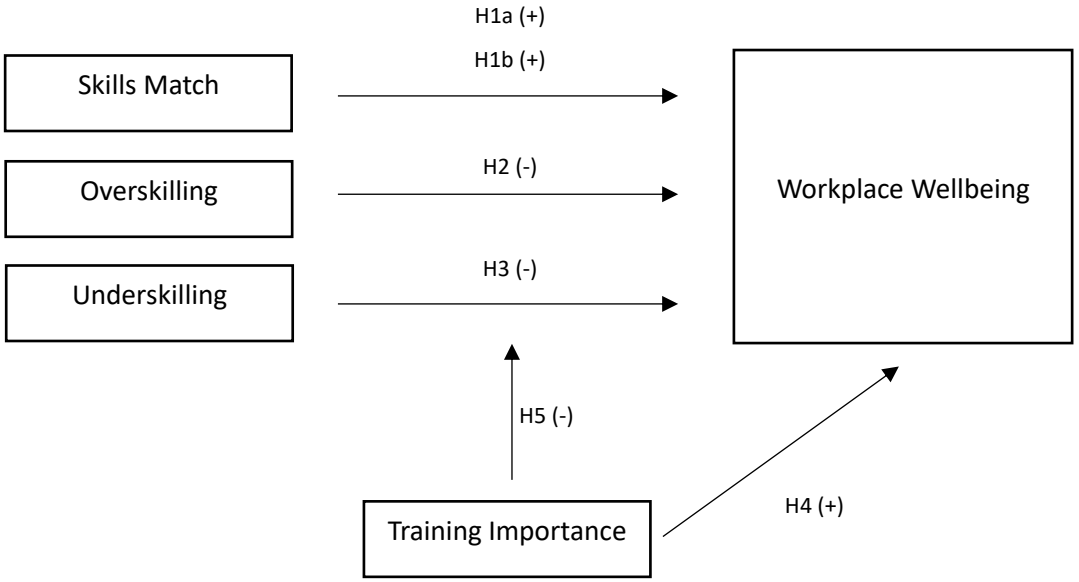
Building on the abovementioned theory and empirical evidence, the following hypothesis is formulated:

Hypothesis 5: training importance moderates the negative relationship between underskilling and workplace wellbeing, such that the higher the training importance, the less negative this relationship.

The proposed relationships and hypotheses are represented in the conceptual model in Figure 1.

Figure 1

Conceptual Model



Method

Study design

This study used a quantitative research method based on cross-sectional data from the European Company Survey (ECS) 2019. The data were collected at one point in time and data collection took place at the organizational level (Eurofound & Cedefop, 2020).

Procedure

The fieldwork for the ECS 2019 was done by Ipsos from January to July 2019. The survey targeted establishments across the 27 European Union member states (Appendix A) and the United Kingdom. The term 'establishment' refers to the local site of a business, but most businesses included in the survey had only one establishment (Eurofound & Cedefop, 2020). From each establishment a human resource manager and an employee representative were identified. The sampling strategy consisted of a multistage random sampling approach stratified by establishment/company size and the broad sector of activity. Establishments were contacted by telephone to collect the data. Interviewers were put in contact with the human resource manager, whom they asked a series of questions, based

on which an employee representative was selected for the survey. Another attempt to identify an employee representative was made at the end of the management questionnaire, where the manager was asked again to give the contact information of an employee representative. This way the interviewer identified a human resource manager, and, if feasible, an employee representative. Respondents were asked to fill out an online questionnaire about various workplace practices. These work practices included, among others, work organization, personnel management, skill use, and skill strategies. There were two unique questionnaires, namely one for human resource managers, and another for employee representatives. The questionnaires were translated in the languages of the participating countries (Eurofound & Cedefop, 2020).

Ethics

Ipsos, the organization responsible for the fieldwork for the ECS 2019, followed the ethical principles of informed consent, confidentiality, and privacy protections for participants in surveys. Survey responses were confidential, and information that could reveal the identity of a participant was never released to external parties. Also, participants were informed about the voluntary character of participating in the survey (Ipsos, 2019). An ethical checklist (Appendix B) was provided by the Department of Public Administration and Sociology (DPAS) at Erasmus University, to ensure the ethical guidelines were followed in conducting this study, and in the use and storage of data.

Sample

In the EU27 countries, in 16% of the targeted establishments a human resource manager agreed to participate in the survey. Of these managers, 35% completed the survey. This gives an overall response rate of 5% among the managers (Eurofound & Cedefop, 2020). The final sample size of management respondents among EU27 countries and the United Kingdom was 21869. In 29% of the approached establishments an employee representative was identified. 45% of the employee representatives completed the questionnaire, which gives a response rate of 15% among establishments where an employee representative was identified. A total of 3073 employee representatives filled out the questionnaire. In 1835 establishments both management respondent and

employee representative completed their respective questionnaires (Eurofound & Cedefop, 2020). The final sample consisted of 20254 respondents.

Measures

To measure the constructs in the conceptual model, data from the ECS 2019 were used. The data that were extracted from the questionnaire included items that together formed the measurement scales. The proposed scales of workplace wellbeing and training importance were tested for their validity using principal component analysis (PCA), in which an OBLIMIN rotation was applied (Abdi & Williams, 2010). To assess the applicability of PCA, three assumptions were examined. Firstly, the Kaiser-Meyer-Olkin (KMO) index had to be at least 0.6. Secondly, the Bartlett's test of sphericity needed to be significant ($p < .05$). Thirdly, the sample size had to be sufficiently large. The analyses showed that these assumptions were met. The results of the PCA are shown in Table 1.

Table 1

Results PCA

Item	Component	
	1	2
Sick leave		.474
Motivation		.720
Retention		.627
Manager-employee relations		.727
Skills current job	.649	
Skills other job	.702	
Improvement capacity	.781	
Morale	.765	

Extraction Method: Principal Component Analysis.

Rotation Method: OBLIMIN with Kaiser Normalization.

After performing the PCA, reliability analyses were conducted. The reliability was assessed using COTAN guidelines (Evers et al., 2009). Following the guidelines specified for group level research, a Cronbach's alpha of > .70 was considered good, a Cronbach's alpha of > .60 was sufficient, and a Cronbach's alpha < .60 was insufficient (Evers et al., 2009). After conducting the factor analyses and reliability analyses, the final scales were computed.

Skills Match, Overskilling, and Underskilling

Skills match was measured by asking managers what percentage of employees had matching, overskilled, or underskilled profiles. The managers were allowed to give their answer as an exact number or as a percentage, with the requirement that the percentages added up to 100%. The corresponding questions were: 'What percentage of/how many employees have the skills that are about right to do the job?', 'What percentage of/how many employees have a higher level of skills than is needed in their job?', and 'What percentage of/how many employees have a lower level of skills than is needed in their job?'. Afterwards researchers inspected whether the given percentages indeed added up to 100%. If not, as many cases were retrieved as was feasible. A total amount of 237 cases were retrieved (Eurofound & Cedefop, 2020).

Workplace wellbeing

Workplace wellbeing was measured using four items from the management questionnaire, namely absenteeism, motivation, employee retention and management-employee relationship (Eurofound & Cedefop, 2020). The question regarding absenteeism was 'Do you think the level of sickness leave in this establishment is too high?'. Managers had to indicate 'yes' or 'no'. Furthermore, managers had to indicate how motivated they thought employees in the establishment were, indicating 'not at all motivated', 'not very motivated', 'fairly motivated' or 'very motivated'. The question 'How difficult is it for this establishment to retain employees?' measured employee retention. The answer categories were 'not at all difficult', 'not very difficult', 'fairly difficult' and 'very difficult'. Lastly, the relations between managers and employees in the establishment was assessed as 'very bad', 'bad', 'neither good nor bad', 'good' or 'very good' (Eurofound & Cedefop, 2020).

The results of the PCA with OBLIMIN rotation showed that the four items loaded on one and the same factor, thereby forming one scale (Table 1). The reliability analysis indicated that the Cronbach's alpha of this scale was .545. According to COTAN guidelines (Evers et al., 2009), this is insufficient. However, removing items from this scale did not increase Cronbach's alpha substantially. Moreover, with the available data no other scale for workplace wellbeing could be computed. Therefore, it was decided that the four items were incorporated in one workplace wellbeing scale after all. This implies that the results of this study regarding workplace wellbeing should be interpreted with caution. Because the items had a different amount of response categories, the scores on the items were transformed into z-scores before computing the scale.

Training importance

To examine training importance, managers were given four different reasons to provide training to employees, and they had to indicate whether those reasons were 'not at all important', 'not very important', 'fairly important' or 'very important'. The first reason was ensuring that employees have the skills they need to do their current job. Another reason was allowing employees to acquire skills they need to do other jobs than their current job (for instance to allow for job rotation or career advancement). The third reason was to increase the capacity of employees to articulate ideas about improvements regarding the establishment. The final reason was to improve employee morale.

The results of the PCA with OBLIMIN rotation revealed that all four items loaded on one factor, thereby forming a scale (Table 1). The reliability analysis showed a Cronbach's alpha of .710, which is considered 'good' (Evers et al., 2009). Because the items had a different amount of response categories, the items in the scale were transformed into z-scores before computing the scale.

Control variables

Control variables were included to isolate the concepts of interest and to reduce the impact of external factors (Bernerth & Aguinis, 2016).

The first control variable was sector. The categories were 'construction', 'production', and 'services'. 'Construction' was used as a reference category. Findings of Van den Broeck et al. (2017)

showed that organizations varied in their scores on wellbeing dimensions depending on the sector they operated in, thereby indicating a relationship between sector and wellbeing.

Secondly, this study controls for variations by country by including the 28 participating countries as dummy variables. 'Austria' was used as reference category.

The third control variable is the extent to which organizations employ people with an open-ended contract. Kompier et al. (2009) found that having an open-ended contract is related to higher wellbeing compared to having a temporary contract. Respondents were asked to indicate the percentage of employees with an open-ended contract. The response categories were 'none at all', 'less than 20%', '20% to 39%', '40% to 59%, '60% to 79%', '80% to 99%', and 'all'. 'None at all' was used as reference category.

Analytic Procedure

To examine whether multiple regression analysis was suitable for this dataset, several assumptions were tested. Firstly it was checked whether all dependent variables were continuous, which was the case. Secondly, the sample size was sufficiently large to conduct the analysis. Thirdly, the assumption of non-multicollinearity was met, as the correlations between predictor variables was below the threshold of .7. The VIF values of the analysed variables were acceptable as well. The fourth assumption, a linear relationship between independent and dependent variables, was not met for all variables. However, linear regression analysis was used after all, because no other regression model captured the data better than the linear regression model. The fifth assumption was that there were no outliers in the data. This assumption was met. The sixth assumption regarded the independence of residuals. The results of the Durbin-Watson test showed that this assumption was met. The seventh assumption, the normality assumption, was also met, as the P-Plot showed that the dots followed the normality line. Finally, the assumption of homoscedasticity was met as well.

A linear regression analysis was conducted to test hypothesis 1a, 1b, 2, 3, and 4. To test for moderation in hypotheses 5, Hayes PROCESS (Hayes, 2012) model 1 was used. The control variables 'country', 'sector', and 'open-ended contract' were included as covariates in all analyses.

Results

Descriptive Statistics

The descriptive statistics of the items in the analyses can be found in Table 2.

Table 2

Descriptive Statistics

Scale					
Variable	N	Range	M	SD	%
Skills match	21229	0-100	71.295	23.626	
Overskilling	21229	0-100	15.551	17.422	
Underskilling	21229	0-100	12.946	15.246	
Workplace wellbeing					
Sick leave	21728	1-2	1.779	0.415	
Motivation	21716	1-4	2.970	0.612	
Retention	21667	1-4	2.845	0.714	
Manager-employee relations	21741	1-5	4.072	0.664	
Training importance					
Skills current job	21250	1-4	3.557	0.579	
Skills other job	21239	1-4	2.917	0.802	
Improvement capacity	21221	1-4	3.079	0.725	
Morale	21232	1-4	3.222	0.727	
Country	21869	1-28			
Austria	1010				4.618
Belgium	1011				4.623
Bulgaria	1024				4.683
Croatia	560				2.561
Cyprus	122				.558
Czechia	904				4.134
Denmark	1011				4.623
Estonia	501				2.291
Finland	1032				4.719
France	1360				6.219
Germany	711				3.251

Greece	501		2.291
Hungary	1087		4.971
Ireland	300		1.372
Italy	1498		6.850
Latvia	514		2.350
Lithuania	510		2.332
Luxembourg	237		1.084
Malta	145		.663
Netherlands	1030		4.710
Poland	842		3.850
Portugal	973		4.449
Romania	815		3.727
Slovakia	361		1.651
Slovenia	556		2.542
Spain	1477		6.754
Sweden	1080		4.938
United Kingdom	697		3.187
Sector	21869	1-3	
Construction	2269		10.375
Production	6000		27.436
Services	13600		62.188
Open-ended contract	21673	1-7	
None at all	655		2.995
Less than 20%	796		3.640
20% to 29%	629		2.876
40% to 59%	833		3.809
60% to 79%	2034		9.301
80% to 99%	7398		33.829
All	9328		42.654

Table 3 shows the correlations between the concepts in the conceptual model. Skills match is significantly negatively correlated with underskilling (r = -.570, p < .01), overskilling (r = -.607, p < .01), and training importance (r = -.029, p < .01), and significantly positively correlated with workplace wellbeing (r = .101, p < .01). Overskilling has a significant positive correlation with underskilling (r =

.030, $p < .01$), and a significant negative correlation with training importance ($r = -.043$, $p < .01$), and workplace wellbeing ($r = -.040$, $p < .01$). Underskilling has a non-significant negative correlation with training importance ($r = -.002$), and a significant negative correlation with workplace wellbeing ($r = -.183$, $p < .01$). Lastly, training importance is significantly positively correlated to workplace wellbeing ($r = .193$, $p < .01$).

Table 3

Correlation Coefficients

	1	2	3	4
1. Skills match				
2. Overskilling	-.607**			
3. Underskilling	-.570**	.030**		
4. Training importance	-.029**	-.043**	-.002	
5. Workplace wellbeing	.101**	-.040**	-.183**	.193**

**. Correlation is significant at the 0.01 level (2-tailed).

Hypothesis Testing

Multiple linear regression analysis was used to test the hypotheses. The results are shown in Table 4.

In Model 1 only the control variables country, sector and open-ended contract were included. These control variables account for 9.1% of the variance in workplace wellbeing. The rest of the analyses reported in Table 4 controlled for these variables.

In Model 2a skills match was added as an independent variable to test the relationship between skills match and workplace wellbeing. The results show that this relationship is positive and significant ($b = .003$, $p = < .001$). The way of questioning in the questionnaire forced managers to indicate the percentage of employees that have a skills match, that are overskilled, and that are

underskilled. These percentages had to add up to a total of 100%. Consequently, the regression coefficient of 'skills match' in Model 2a must be interpreted as the difference in workplace wellbeing between organizations, depending on the percentage of employees that have a skills match in comparison to the percentage of employees that are either overskilled or underskilled. This means that for every percentage difference in the percentage of employees with a skills match, workplace wellbeing increases with .003 standard deviations. The interpretation in standard deviations is because workplace wellbeing is a scale that is computed with z-scores. The total variance explained by this model was 13.3%. In model 2b skills match and underskilling were incorporated as independent variables, which made overskilling the reference category. The results show that, compared to the percentage of overskilled employees, the percentage of employees with a skills match is not significantly related to workplace wellbeing (b = .000, p = .144). Based on these results, hypothesis 1a was rejected. The total variance explained by this model was 15.1%. In Model 2c skills match and overskilling were incorporated as independent variables, which made underskilling the reference category. The results show that, compared to the percentage of underskilled employees, the percentage of employees with a skills match is significantly and positively related to workplace wellbeing (b = .005, p = < .001). Based on the results of these analyses, hypothesis 1b was supported. The total variance explained by this model was 14.4%.

In Model 3a overskilling was added as an independent variable to test the relationship between underskilling and workplace wellbeing. The results show that this relationship is positive and significant (b = .001, p = .006). The regression coefficient of overskilling in Model 3a must be interpreted as the difference in workplace wellbeing between organizations, depending on the percentage of employees that are overskilled in comparison to the percentage of employees that either have a skills match or are underskilled. Thus, for every percentage difference in the percentage of overskilled employees, workplace wellbeing increases with .001 standard deviations. Again, the interpretation in standard deviations is due to the fact that the workplace wellbeing scale is computed with z-scores. The total variance explained by this model was 12.3%. In Model 3b

underskilling and overskilling were incorporated as independent variables, which made skills match the reference category. The results show that, compared to the percentage of employees with a skills match, the percentage of employees that are overskilled is significantly and positively related to workplace wellbeing (*b* = .001, *p* = < .001). Based on the results of these analyses, hypothesis 2 was supported. The total variance explained up to this point was 15.2%.

In Model 4 underskilling was added as an independent variable to test the relationship between underskilling and workplace wellbeing. The results show that this relationship is negative and significant (*b* = - .007, *p* = < .001). The regression coefficient of 'underskilling' in Model 4 must be interpreted as the difference in workplace wellbeing between organizations, depending on the percentage of employees that are underskilled in comparison to the percentage of employees that either have a skills match or are overskilled. Thus, for every percentage difference in the percentage of underskilled employees, workplace wellbeing decreases with .007 standard deviations. Here again, the interpretation in standard deviations is due to the fact that the workplace wellbeing scale is computed with z-scores. The total variance explained by this model was 15.1%. In Model 3b underskilling and overskilling were incorporated as independent variables, which made skills match the reference category. The results show that, compared to the percentage of employees with a skills match, the percentage of employees that are underskilled is significantly and negatively related to workplace wellbeing (*b* = -.007, *p* = < .001). Based on the results of these analyses, hypothesis 3 was supported. The total variance explained up to this point was 15.2%.

To test hypothesis 4, training importance was added to the analyses. The results can be found in Model 2a, 2b, 3a, 3b, 4, and 5. The results show that there is a significant positive relationship between training importance and workplace wellbeing (*b* = .161 to .165, *p* = < .001). This means that if training importance increases with one standard deviation, workplace wellbeing increases with .161 to .165 standard deviations. The interpretation in standard deviations is due to the fact that the scales of both training importance and workplace wellbeing contained standardized item scores. The

results vary slightly per model, but the differences are small. Consequently, hypothesis 4 was accepted.

Hypothesis 5 was tested with Hayes PROCESS (Hayes, 2012) analysis. The results of this analysis are shown in Model 5. The moderation effect of training importance on the relationship between underskilling and workplace wellbeing was not significant (b = .000, p = .869). Therefore, hypothesis 5 was rejected. Altogether, the variance explained by the main effects and the interaction effects was 15.3%.

Table 4

Results of Multiple Regression Analysis

Dependent Variable: Workplace Wellbeing												
	Model 1			Model 2a			Model 2b[a]			Model 2c[b]		
	b	SE	Sig.	b	SE	Sig.	b	SE	Sig.	b	SE	Sig.
Constant	.173	.034	< .001	-.028	.036	.433	.239	.038	< .001	-.274	.039	< .001
Skills match				.003	.000	< .001	.000	.000	.144	.005	.000	< .001
Overskilling										.005	.000	< .001
Underskilling							-.007	.000	< .001			
Training importance				.165	.006	< .001	.162	.006	< .001	.162	.006	< .001
Underskilling * Training importance												
Adjusted R^2	.091			.133			.151			.144		

	Model 3a			Model 3b[c]			Model 4			Model 5		
	b	SE	Sig.	b	SE	Sig.	b	SE	Sig.	b	SE	Sig.
Constant	.161	.035	< .001	.249	.034	< .001	.265	.034	< .001	.265	.034	< .001
Skills match												
Overskilling	.001	.000	.006	.001	.000	< .001						
Underskilling				-.007	.000	< .001	-.007	.000	< .001	-.007	.000	< .001
Training importance	.162	.006	< .001	.161	.006	< .001	.162	.006	< .001	.161	.008	< .001
Underskilling * Training importance										.000	.000	.869
Adjusted R^2	.123			.152			.151			.153		

Note. N = 20254

Analysis controlled for country (reference category 'Austria'), sector (reference category 'construction') and open-ended contract (reference category 'none at all').

[a]Reference category 'overskilling'.

[b]Reference category 'underskilling'.

[c]Reference category 'skills match'.

Discussion

This study aimed to explore how skills match, overskilling, underskilling, and training importance are related to workplace wellbeing. Furthermore, the study examined whether training importance moderated the relationship between underskilling and workplace wellbeing. The research question was: *To what extent are skills match, overskilling, underskilling, training and workplace wellbeing related and how can these relationships be explained with the job demands-resources model?* The corresponding hypotheses were based on the JD-R model (Bakker & Demerouti, 2003b). This section provides an interpretation of the results of the study.

Firstly, in organizations with a higher percentage of employees with a skills match (compared to the percentage of employees that are underskilled), workplace wellbeing is higher. Contrary, in organizations with a higher percentage of employees that are underskilled (compared to the percentage of employees with a skills match), workplace wellbeing is lower. This could be interpreted as a confirmation of the JD-R model (Bakker & Demerouti, 2003b) and as an extended application of this model by integrating underskilling as a job demand, skills match as a job resources and workplace wellbeing as a job outcome. This interpretation would be in line with the dual process premise (Bakker & Demerouti, 2007) of the JD-R model, including the motivational process and the health impairment process. In contrast to underskilling, overskilling turned out to be significantly positively related to workplace wellbeing compared to skills match. This could imply that a high percentage of overskilled employees is not a risk for workplace wellbeing, but rather an advantage. This contradicts the premise of the JD-R model (Bakker & Demerouti, 2007) that overskilling, implying skill underutilization, leads to diminished wellbeing outcomes. A conceptual explanation for these unexpected findings could be that overskilling is a substantially different concept than skill underutilization, and, therefore, has a different relationship with workplace wellbeing than is examined in this study. A practical explanation for the positive relationship between overskilling and workplace wellbeing could be provided by the role of playful work design (PWD), which is the process by which employees proactively generate circumstances in their work that stimulate pleasure and

challenge without changing the nature of the job itself (Bakker & Van Woerkom, 2017). By applying novel ways to conduct their work tasks, they optimize their personal work experience. Hereby they can improve their wellbeing, because they make their jobs more fun (Bakker et al., 2020). What should be noted, however, is that de role of PWD is only studied at an individual level, not at the organizational level.

Secondly, training importance turns out to directly contribute to workplace wellbeing. This means that different the reasons to provide training matter to the wellbeing of employees in the workplace. This is another confirmation of the robustness of the JD-R model (Bakker & Demerouti, 2003b).

Furthermore, the moderating role of training importance on the negative relationship between underskilling and workplace wellbeing turned out to be not significant. This means that, based on the results of this study, the proposed interaction hypothesis of the JD-R model (Bakker et al., 2003b) cannot be applied to applied to the role of training as a buffering job resource.

This study used a workplace wellbeing scale containing items that had not been used in this combination before. To examine whether these items could accurately measure workplace wellbeing several analyses were conducted. The results of the PCA with OBLIMIN rotation revealed that the four items loaded on the same factor, which implies that these items together can indeed form a scale. Reliability analysis showed that the scale had a relatively low Cronbach's alpha, and, therefore, a low internal consistency between items. This could mean that the items measured some parts of workplace wellbeing, but that there are other dimensions of workplace wellbeing that are not captured by these items. Thus, the scale might benefit from adding more items to measure workplace wellbeing more comprehensively, thereby possibly increase the reliability of the scale (Tavakol & Dennick, 2011).

Lastly, this study applied the JD-R model at the organizational level rather than the individual level. As mentioned earlier, previous studies found evidence for the relationship between various job demands, job resources and wellbeing outcomes at the individual level (Arboh et al., 2025; Bakker et

al., 2003a; McGuinness & Sloane, 2011; McGuinnes & Wooden, 2009; Santiago-Vela & Hall, 2023). The findings of this study show that these relationships between job demands, job resources and wellbeing outcomes also occur at the organizational level. An interpretation of these findings could be that the JD-R model can also be applied at the organizational level.

Limitations and Future Research

This study has several limitations. Firstly, the data used in this study was cross-sectional. This means the data were collected at one point in time, which means it is not possible to draw causal inferences and to determine whether or not there might be reverse causality (Spector, 2019). Future research could use a longitudinal study design to investigate the effect of a change in the percentage of underskilled employees on workplace wellbeing over time. The added value of such a study is that causal relationships can be established, and, consequently, interventions can be targeted more specifically on the influencing factor. Also, in a longitudinal design the impact of various changing contextual factors can be taken into account. Taken together, these additional insights could create a more comprehensive understanding of the relationship between underskilling and workplace wellbeing. To perform this longitudinal study, the respondents in the current study could be asked to fill out the questionnaire every few years. Researchers can then investigate the changes over time.

Secondly, a limitation of the ECS 2019 is that it only collects quantitative data. This could limit the depth of the study. Future research might add qualitative data collection to gain more insight into the quantitative study results. Also, the ECS 2019 only collected data in the EU27 countries and the United Kingdom. To be able to further generalize the findings of this study, it is recommended to replicate this study in other parts of the world, using data collected in other countries.

A related methodological challenge is that the data collection method on organizational level relies on the capacity of organizational representatives to accurately estimate the level of skills, training importance and workplace wellbeing in the organization. So, although the subjectivity of the data caused by individual data collection biases is countered, the data remain subjective. After all, they capture the perspective of a single informant, rather than a statistical aggregation of multiple

individual responses. Future research might therefore benefit from combining the collection of individual-level data with organizational-level data within the same organizations. Comparing these data could present valuable insights into the validity of the data collected at the organizational level.

A suggestion for future research is introduced by Abubakar et al. (2022), who propose that the relationship between overskilling and workplace wellbeing could be partially mediated by boreout. The results of such a study could provide a further explanation of the relationship between overskilling and workplace wellbeing. Furthermore, training importance turned out not to moderate the relationship between underskilling and workplace wellbeing significantly. Future research might focus on other factors that could moderate this relationship.

In this study, the JD-R model (Bakker & Demerouti, 2003b) was successfully applied at the organizational level to study the relationships between skills match, overskilling, underskilling, training, and workplace wellbeing. Future research could investigate the applicability of the JD-R model in the relationships between other organizational level job demands, job resources and wellbeing outcomes.

Lastly, because skills match was positively related to workplace wellbeing, it is relevant to explore which factors or practices advance skills match. For example, longitudinal research conducted by Zhang et al. (2021) showed a positive effect of training on job match quality, a part of which is skills match quality. Conversely, underskilling is negatively related to workplace wellbeing. Thus, it might be useful to explore what factors contribute to or counter underskilling. For instance, employees may be underskilled because of rapid changes in technologies to which they have little exposure, or which they lack the competencies to work with (Desjardins & Rubenson, 2011). It could be helpful to get insight in how to help employees develop their technological competencies in order to prevent underskilling.

Practical Implications

This study provided empirical evidence for several direct relationships between skills match, overskilling, underskilling, training importance and workplace wellbeing on an organizational level.

Besides this theoretical contribution, the study could also be relevant for organizations' daily practices in improving workplace wellbeing.

The results of this study show that, compared to skills match, underskilling is negatively related to workplace wellbeing. This implies that organizations should invest in the skills level of employees in order to keep or to get workplace wellbeing at a high level. One way to do this is to apply on-the-job learning. Results from a field experiment among schoolteachers (Papay et al., 2016) showed that the skills of low-performing teachers improved when being paired with a high-performing teacher. A report of Redecker et al. (2010) points out the possibilities of using technology to facilitate on the job training. Advanced learning tools and programmes could be used to train and improve employees' skills. For managers this means they would have to create an infrastructure that facilitates the effective use of these technologies.

The results of this study imply that there should be no fear among managers for negative workplace wellbeing consequences solely because employees are overskilled. On the contrary, it is still beneficial for organizations to invest in employees that already have the skills level to perform their jobs well. It could be useful for managers to start the conversation with these employees to discover in which domain of the job or the organization they can develop themselves further, and what role the organization can play in facilitating this.

Training importance turns out to have a positive relationship with workplace wellbeing. For organizations this means that being transparent about the morale behind training could be valuable. One way to do this is to involve employees in the design process of training policies. A second possibility is to integrate the reasons for and importance of training in the core values of the organization. The third aspect is clear communication about training importance. Organizations might use personnel meetings or technologies like intranet or a company app to stress the importance of training in the organization. By applying one or more of these interventions, organizational workplace wellbeing could be taken to a higher level.

Conclusion

The aim of this study was to answer the following research question: *To what extent are skills match, overskilling, underskilling, training and workplace wellbeing related and how can these relationships be explained with the job demands-resources model?* The results indicated that, compared to underskilling, there is a positive relationship between skills match and workplace wellbeing. Overskilling, compared to skills match, was positively related to workplace wellbeing. Conversely, compared to skills match and overskilling, underskilling was negatively related to workplace wellbeing. Training importance was positively associated with workplace wellbeing. No evidence was found for the moderating role of training importance on the negative relationship between underskilling and workplace wellbeing. The findings of this study could create more understanding among organizations about the role of skills match, overskilling, underskilling and training importance in relation to workplace wellbeing on the organizational level. This awareness could stimulate organizations to provide interventions like on-the-job learning to lower the level of underskilling in the organization and to improve skills match and overskilling. It could also help organizations to create awareness about the importance of training in improving workplace wellbeing. Organizations can do this by involving employees in designing training policies, by integrating training importance in the organization's core values, and by clearly communicating about training importance with employees. A methodological finding of this study was that the JD-R model, which was designed as an individual level model, can also successfully be applied the organizational level.

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Appendix A

Participating EU27 Countries

Austria

Belgium

Bulgaria

Croatia

Cyprus

Czechia

Denmark

Estonia

Finland

France

Germany

Greece

Hungary

Ireland

Italy

Latvia

Lithuania

Luxembourg

Malta

Netherlands

Poland

Portugal

Romania

Slovakia

Slovenia

Spain

Sweden

Appendix B

Checklist Ethical and Privacy Aspects of Research

Instruction

This checklist should be completed for every research study that is conducted at the Department of Public Administration and Sociology (DPAS). This checklist should be completed before commencing with data collection or approaching participants. Students can complete this checklist with help of their supervisor.

This checklist is a mandatory part of the empirical master's thesis and has to be uploaded along with the research proposal.

The guideline for ethical aspects of research of the Dutch Sociological Association (NSV) can be found on their website (http://www.nsv-sociologie.nl/?page_id=17). If you have doubts about ethical or privacy aspects of your research study, discuss and resolve the matter with your EUR supervisor. If needed and if advised to do so by your supervisor, you can also consult Dr. Bonnie French, coordinator of the Sociology Master's Thesis program.

Part l: General Information

Project title:

Unlocking Potential: The Role of Skills and Training in Workplace Wellbeing

Name, email of student:

Anieke Ottevanger, 750535jo@eur.nl

Name, email of supervisor:

Ferry Koster, koster@essb.eur.nl

Start date and duration:

October 2nd, 2024

Eight months

Is the research study conducted within DPAS?

Yes

Part ll: Human Subjects

1. Does your research involve human participants?

   Yes

   If 'YES': does the study involve medical or physical research?

   No

2. Does your research involve field observations without manipulations that will not involve identification of participants?

   No

3. Research involving completely anonymous data files (secondary data that has been anonymized by someone else).

   Yes

Part lV: Sample

Where will you collect or obtain your data?

The data is obtained from the European Company Survey 2019. The data is requested by Erasmus University via the website of Eurofound.

What is the (anticipated) size of your sample?

The total sample consisted of 21.869 managers and 3.073 employee representatives.

What is the size of the population from which you will sample?

The population consists of all establishments with 10 or more employees in economic sectors engaged in market activities in the 27 EU member states and the United Kingdom.

Part V: Data Storage and Backup

Where and when will you store your data in the short term, after acquisition?

After acquisition the data will be stored in my Erasmus University One Drive account for analyses. After finishing the master's thesis the data will be deleted from the One Drive account.

Who is responsible for the immediate day-to-day management, storage and backup of the data arising from your research?

Myself.

How (frequently) will you back-up your research data for short-term data security?

Daily.

In case of collecting personal data how will you anonymize the data?

The data is already anonymized by the researchers before I will download it.

Part VI: Signature

Please note that it is your responsibility to follow the ethical guidelines in the conduct of your study. This includes providing information to participants about the study and ensuring confidentiality in storage and use of personal data. Treat participants respectfully, be on time at appointments, call participants when they have signed up for your study and fulfil promises made to participants.

Furthermore, it is your responsibility that data are authentic, of high quality and properly stored. The principle is always that the supervisor (or strictly speaking the Erasmus University Rotterdam) remains owner of the data, and that the student should therefore hand over all data to the supervisor.

Hereby I declare that the study will be conducted in accordance with the ethical guidelines of the Department of Public Administration and Sociology at Erasmus University Rotterdam. I have answered the questions truthfully.

Name student: Anieke Ottevanger

Date: March 22nd, 2025

Name (EUR) supervisor: Ferry Koster

Date: March 22nd, 2025