Challenge at work: a matter of give and take
Preenen, P. T. Y.

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (http://dare.uva.nl)
CHAPTER FIVE
JOB CHALLENGE: A BOTTOM-UP CONCEPTUALIZATION

Organizations often try to attract employees by offering challenging jobs. Moreover, they try to retain their valuable employees by creating challenging jobs for them (Loquercio, 2006; Salopek, 2000). But how can one create these jobs? What makes a job more challenging than another one? What are the characteristics of a challenging job? And, what do people precisely mean with a “challenging” job? Unfortunately, the conceptualization and operationalization of job challenge in organizational research is far from coherent and consistent. For example, job challenge has been defined in terms of “difficulty and stimulation” (Taylor, 1981, p. 255), as “being in dynamic settings with problems to solve and choices to make under conditions of risk and uncertainty” (McCauley, Ohlott, & Ruderman, 1999, p. 4), and as being “faced with an activity that is new, exciting, stimulating, and demanding and calls on their ability and determination” (De Pater, Van Vianen, Humphrey et al., 2009, p. 565).

Remarkably, no research has actually examined what it is that individuals consider challenging in a job. To date, definitions of job challenge seem to be mainly based on the (different) opinions of researchers. As a consequence, no clear, consistent, and empirically grounded conceptualization of job challenge yet exists. This is an unfortunate state of affairs, not only from the practical perspective of organizations, but also from a scientific perspective. If the conceptual grounding of job challenge is unclear, the content domain of scales aimed to measure this concept may not accurately reflect the phenomenon under study (Rosas & Camphausen, 2007), which in turn may result in inconsistencies and misinterpretation of research findings.

In the current study, we therefore aim to reach a grounded understanding and conceptualization of job challenge by exploring and categorizing the aspects that people consider to be challenging in a job. Specifically, we asked our study participants to describe an assignment they recently performed and experienced as challenging. We then asked them to describe why they considered this task to be challenging. We used concept mapping to analyze and categorize participants’ responses. Concept mapping is a technique that is widely used for specifying conceptual frameworks (Trochim, 1989) and coding qualitative data aimed at scale development (Jackson & Trochim, 2002).

As an overview of the things to come, we will first review existing theory and research on job challenge. Thereafter, we will explain the steps we have taken in our investigation, and present the results of our study. Finally, we will propose a categorization of challenging job aspects, and provide a conceptualization of job challenge.
Theoretical Overview of Job Challenge

As we observed above, job challenge has been extensively studied, but has often been conceptualized in different ways (e.g., McCaulley et al., 1999; Taylor, 1981; Walsh, Taber, & Beehr, 1980). Some researchers used the term job challenge, but did not provide a definition of the construct in their studies (e.g., Bandura, 1986; Csikszentmihalyi, 1997; Maurer & Tarulli, 1994). Other researchers have referred to job challenge as being a work characteristic (e.g., De Pater, Van Vianen, Bechtoldt et al., 2009; McCauley et al., 1999; McCauley et al., 1994), a cognitive appraisal (e.g., Cuneen & Sidwell, 1994; Walsh et al., 1980), and a (physiological) mood state (e.g., Meyer & Allen, 1988; Taylor, 1981).

Job Challenge as a Work Characteristic

Several organizational theories have conceptualized job challenge as a work characteristic. For instance, goal-setting theory (e.g., Locke & Latham, 1990) proposes that goals should be both specific and challenging in order to increase employees’ performance on the task. From this theoretical perspective, a challenging goal is defined as being difficult but obtainable. This conceptualization corroborates Berlew and Hall’s (1966) definition of job challenge: “having to meet performance expectations that are reasonably high” (p. 209).

The Job Demands Model (Karasek, 1979) also considers job challenge to be a characteristic of the job. This model defines job challenge in terms of quantitative (i.e., the degree to which employees are required to work fast and have a lot of work to do in a short time) and qualitative (i.e., having to deal with role ambiguity and/or with conflicting roles) role demands (Janssen, 2001).

Flow theory (Csikszentmihalyi, 1997) considers challenge to be one of the most important situational conditions of flow, but it does not provide a clear definition of this condition. Flow is described as a state of consciousness where people become totally immersed in an activity and enjoy it intensely. The occurrence of flow is most likely when people perceive a balance between the challenge of a situation and their own skills to deal with this challenge (e.g., Clarke & Haworth, 1994).

The management development literature views challenging jobs in terms of a set of developmental job aspects (e.g., DeRue & Wellman, 2009; McCauley et al., 1994; McCauley, et al., 1999). McCauley and colleagues identified five clusters of job components that represent challenging aspects of work: (a) job transitions, with individuals being confronted with new tasks and situations in which existing tactics and routines are inadequate, (b) creating change, with individuals having a clear goal to change a situation, but a loosely defined role that gives them the freedom to determine how to accomplish the goal, (c) managing at high levels of responsibility, characterized by increased visibility, the opportunity to make a significant impact, dealing with broader and more complex problems, and higher stakes, (d) managing boundaries, in which case employees have to work with people over whom they have no direct authority and have to develop strategies for influencing
them and gaining their cooperation, and (e) dealing with diversity, that is, working with people who are different from themselves regarding their values, backgrounds, experiences, and needs.

**Job Challenge as a Cognitive Appraisal or Mood State**

Literature on work (re-)design often describes job challenge in terms of the use and development of skills, talents, or capacities. Hackman and Oldham (1976, p. 257), for example, defined job challenge as “the degree to which a job requires a variety of different activities in carrying out the work, which involves the use of a number of different skills and talents of the person”. In concordance with this conceptualization of job challenge, several researchers conceptualized job challenge as the appraisal of skill use, skill variety, or learning. For instance, Cuneen and Sidwell (1994) defined job challenge as “an opportunity to learn new skills and apply theoretical concepts to the work world”. Walsh and colleagues (1980) defined job challenge as “the degree to which the knowledge, skills, and abilities of the role incumbent are engaged or enlarged by the job” (p. 255), and Jones and James (1979) described job challenge as “the extent to which a job gives the individual a chance to use his skills or abilities” (p. 212).

Literature on work stress also considers job challenge to be a cognitive appraisal of the situation. For instance, the challenge-threat literature conceptualizes challenge as “appraising a situation as having the potential for growth, mastery, or gain” (Folkman & Lazarus, 1985, p. 152). In addition, this research domain has associated job challenge with pleasurable activated emotions such as eagerness, excitement, and exhilaration (e.g., Lazarus & Folkman, 1984). For example, Meyer and Allen (1988) defined job challenge as “the extent to which the job is challenging and exciting” (p. 198).

Altogether, job challenge can be considered a characteristic of the job, a cognitive appraisal, and an affective response. These different conceptualizations of job challenge do not necessarily contradict each other but may complement each other. The conceptualizations clearly differ with respect to the chosen perspective (job challenge as being a work characteristic, cognitive appraisal, or mood state). However, they all seem to fit into a work characteristic-psychological state model of job challenge. To clarify, a specific work characteristic, such as for example task variety, can be seen as an antecedent that induces psychological states, such as the appraisal of a situation as being developmental (cognitive appraisal), and/or a state of excitement (physiological arousal). Thus, the different viewpoints of job challenge may well coexist together.

The diverse operationalizations of job challenge are mainly based on the opinions of researchers. As a consequence, definitions and measures of job challenge lack empirical grounding in the discourse of “ordinary” people. What types of meanings do individuals associate with job challenge? Do they think of specific combinations of task characteristics, skills, or emotions? This study employs a concept mapping approach to examine the job
challenge construct. Concept mapping is a suitable method to investigate the mental schemes that people have about the concepts they use in daily life (Jackson & Trochim, 2002). We particularly aim to examine people’s mental schemes about the task characteristics that constitute a challenging job and the cognitive and affective responses they associate with these types of jobs.

**Method**

**Participants**

The survey sample consisted of 132 students of a Dutch university. The students (59% women, 41% men) had an average age of 21.73 years and were in the third year of their study. Participants received either a monetary reward (7 Euro’s) or partial credit for fulfillment of a course requirement.

**Procedure**

Upon arrival at the laboratory, each participant was seated in a separate room. Participants were given the following instructions: “Please describe in detail a task you recently performed and that you considered to be challenging. This task or assignment can be related to your (part-time) job, volunteer work, or study”. Participants subsequently wrote down why they considered this task to be challenging, and they indicated how many weeks ago they performed this task ($M = 26.71$, $SD = 46.21$). Finally, participants indicated their age, gender, and study year. We instructed participants to take their time to vividly remember a challenging task. They had a maximum of 1 hour to complete the survey. The qualitative data were analyzed both by students and academic experts depending on the step in the data analysis process.

**Qualitative Data Analysis**

We used concept mapping to analyze and categorize the written responses. Concept mapping is widely used for specifying conceptual frameworks (e.g., Behfar, Peterson, Mannix, & Trochim, 2008; Trochim, 1989) and coding qualitative data aimed at, for example, scale development (Jackson & Trochim, 2002). Concept mapping as applied to qualitative data analysis combines exploratory statistical analyses with participants’ judgments to create clusters of similar thematic categories (Jackson & Trochim, 2002). We chose this method because it allowed us to understand how individuals describe and characterize job challenge. The concept mapping process consists of five steps. First, researchers create units of analysis (i.e., words or sentences) from participants’ statements. Second, at least 10 individuals sort these units into piles of similar concepts. As a third and fourth step, researchers run a multiple dimensional scaling analysis and a subsequent hierarchical cluster analysis to decide on cluster solutions. Finally, the researchers label and interpret the clusters (Jackson & Trochim, 2002). Below, we will describe in detail the different steps that were taken.
Step one: determining units of analysis. Units of analysis were created from the keywords and statements generated by the question: “Why did you consider this task to be challenging?” The answers were typically displayed in a list of words and sentences. The length of the answers was on average half a page long. The sentences were broken down into single statements that contained only one concept. Exact descriptions of the concrete task at hand were filtered out. For example, a participant’s statement was: “Playing the piano at this concert was challenging for me because it was difficult and my performance was visible to others.” This sentence was broken down into the following two statements: “difficult”, and “performance is visible to others”. Another example is the sentence: “It was challenging because I was insecure whether I would be able to prepare this dinner.”. This sentence was shortened into the following statement: “I was insecure if I could make it.”. Three researchers were involved in the sentence decomposition process, which resulted in 473 statements and keywords related to job challenge. Because having to accurately sort 473 statements seemed impossible (Jackson & Trochim, 2002), we had to remove statements that were given more than once. For example, 2 participants mentioned their task to be “stimulating”, but we only once used this keyword in the sorting task. We did not remove synonyms or closely related words such as: “energizing” and “encouraging.” In a similar vein, statements such as: “The performance is visible to others.” and “being visible to important others” were both included. A majority of the statements was phrased in the exact same way more than once. We were therefore able to reduce the total amount of statements to 233. Hence, we had an average of 1.73 unique statements per participant. Each statement (i.e., unit of analysis) was given a random number to ensure that each statement would be considered to be independent from the others and placed on a 2-inch by 4-inch card.

Step two: sorting of units of analysis. To avoid introducing researcher bias in the actual sorting, 12 students (5 female, 7 male) who were unaware of the goal of our study participated as decision makers in the sorting process. The average age of these students was 23.2 years (SD = 3.08) and they were in the fourth year of their studies. Students with virtually the same demographics as the initial respondents were chosen so that they would be a close proxy of the respondent group. We gave each student a shuffled set of cards with the statements on them, and instructed them to sort the cards containing similar concepts together into one pile (cf., Jackson & Trochim, 2002). The students worked independently. They could make as many piles as they wanted with the restriction that they could not create a miscellaneous pile. In the end they were asked to give every pile a name that best fitted the combination of statements. On average it took the sorters two hours to categorize the statements, for which they were paid 14 Euros. On average, students created 28.17 piles (SD = 7.43) with on average 8.27 statements per pile (SD = 3.55).

Step three: multidimensional scaling analysis. We created a 233 x 233 binary square matrix (rows and columns represent statements) for every sorter. Cell values represented whether or not a particular student sorted a pair of statements into the same pile
Challenge at Work

(i.e., yes vs. no; 1 vs. 0 coding). These individual matrices were then aggregated by adding them together. We conducted a multidimensional scaling analysis from the aggregated matrix in order to create a map of conceptual similarity between the statements that visually displayed the similarity judgments of the sorters. This map can help to interpret the subsequent cluster analysis. The multidimensional scaling (MDS) created a two-dimensional map of distances between the statements based on the aggregated sorts of the 12 students. We chose for a two-dimensional solution because this provides the most useful foundation for a cluster analysis (Kruskal & Wish, 1978).

**Step four: cluster analysis.** We subsequently performed a hierarchical cluster analysis using Ward’s method on the aggregated matrix to create a dendogram, which visually displays the possible cluster solutions. This dendogram is used as a judgment tool in the decision process related to the number of clusters that can be distinguished. The dendogram is used because there is no sensible mathematical criterion that can be used to select the optimal number of clusters. The optimal number of clusters depends on the level of specificity and the context at hand, and can only be judged subjectively (Jackson & Trochim, 2002). Therefore, three researchers first independently chose a cluster solution, and then worked together to choose the final cluster solution that most accurately represented the structure of the data. They made their final decisions by looking at the MDS map and the cluster dendogram, and discussing the conceptual similarity of the contents of clusters merging at each solution.

**Step five: labeling and categorizing the clusters.** After reaching agreement on the final cluster solution, the researchers re-examined the statements in each cluster together with the names the sorters had given to their piles (in Step 2) to determine a label that best represented the statements in each cluster. The researchers then chose how to label each cluster, and how each cluster should be described. Labels were chosen from the cluster statements and names provided by the sorters, or newly formed. Occasionally, in a cluster there were one or two statements that were found to be conceptually different from the others. In that case the cluster label was based on the majority of the statements that was found to be conceptually the same.

The researchers categorized the clusters as follows: (a) task characteristics that induce the experience of job challenge (task characteristics), (b) contextual or social characteristics that induce the experience of job challenge (context characteristics), (c) the cognitive experience of job challenge or the appraisal of a situation as being challenging (cognitive appraisals), and (d) mood states of job challenge, that is feelings, emotions and attitudes that are associated with the experience of job challenge (mood states). Of notice is that work characteristics, as mentioned in the literature review, could be divided in (a) task and (b) contextual characteristics.
Results

Figure 5.1. Multidimensional scaling point map of statements

Note. 1 Similar statements are closer together.

The Multidimensional Scaling Map

The map from the multidimensional scaling analysis of the statements related to job challenge is presented in Figure 5.1. When interpreting the map, note that each statement generated by the respondents is represented as a point on the map. The position on the map of each statement is not meaningful, only the distance or spatial relationship between them is relevant. The proximity of the statements to each other represents how similar the sorters judged the statements that were sorted together. Statement 164 (the point at the bottom of Figure 5.1) for example, was never sorted with statement 100 (the point at the top of Figure 5.1), and is thus viewed conceptually different. The multidimensional scaling map helps to make decisions on the final cluster solution. However, as can be seen in Figure 5.1, it is difficult to directly distinguish separate clusters from this plot because of the large number of statements. To further examine which points really cluster together we looked at the output of the cluster analysis (dendogram).
Cluster Solution

The analysis of the statements resulted in 37 clusters of statements about what people consider to be challenging in a task. We did not graphically display the clusters in the multi-dimensional scaling map as the large amount of clusters could not be orderly displayed. However, the cluster labels, a label description and their representative statements are displayed in Appendix C. We distinguished the following clusters: (1) facilities and guidance, (2) self-knowledge and self-esteem, (3) opportunity for learning and development, (4) feedback on task, (5) time pressure, (6) task significance, (7) proving yourself, (8) high stakes and goals, (9) creativity and improvisation, (10) dynamic work conditions, (11) test of abilities, (12) stretching yourself, (13) task absorption, (14) concentration, (15) overcoming obstacles, (16) fear of failure, (17) task importance, (18) evaluation and visibility, (19) being heard, (20) personally rewarding, (21) decision latitude, (22) personal and unique contribution, (23) personal responsibility and autonomy, (24) attractive, (25) stimulating, (26) demanding and effortful, (27) additional tasks and jobs, (28) variety and change, (29) difficulty (30) multiple skills, (31) organizing and structuring, (32) room for trying out new things, (33) problem solving and strategic thinking, (34) novel situations and experiences, (35) task ambiguity, (36) inspiring colleagues, and (37) working together.

Categorizing Clusters

In Appendix D, we categorized the clusters in (a) ‘objective’ task characteristics that induce the experience of job challenge (task characteristics, \( N = 17 \)), (b) contextual work characteristics that induce the experience of job challenge (context characteristics, \( N = 4 \)), (c) the cognitive experience of job challenge or the appraisal of a situation as being challenging (cognitive appraisals, \( N = 12 \)), and (d) mood states of job challenge, that is feelings, emotions and attitudes that are associated with the experience of challenge (mood states, \( N = 4 \)).

Discussion

In this paper, we sought to develop a comprehensive conceptualization of the job challenge construct. Our study was motivated by the wide variety of conceptualizations and operationalizations of job challenge in extant research, which may result in inconsistent research findings and misinterpretations of the results. We collected qualitative data on what individuals consider as a challenge and used concept mapping to explore the mental schemata that individuals have about this concept.

Our analyses revealed that job challenge is a multi-faceted construct that includes: (a) objective task characteristics that induce the experience of job challenge (task characteristics), (b) contextual characteristics that induce the experience of job challenge (context characteristics), (c) the cognitive appraisal of job challenge (cognitive appraisals), and (d) mood states of job challenge, that is feelings, emotions and attitudes that are associated with the experience of challenge (mood states).
These four conceptualizations can be integrated into a comprehensive framework of job challenge, in which the task and contextual characteristics are antecedents of cognitive appraisals and mood states (see Figure 5.2). In other words, the objective characteristics of the work environment (i.e., task and contextual characteristics) induce the cognitive experience of job challenge, or the appraisal of a situation as being challenging (cognitive appraisals), as well as specific feelings and emotional states. We should note, however, that the difference between objective characteristics and cognitive appraisals may be debatable in some occasions. For example, the aspect high stakes and goals (i.e., having to deal with high stakes and high goals) may also be argued to be a general cognitive appraisal of a challenging experience instead of a specific task characteristic. Hence, although our framework merits further discussion, we believe that this framework may encourage researchers to more clearly define the job challenge construct, and to operationalize it in analogous ways. Depending on the study’s focus, researchers may want to measure job challenge as a work characteristic that can be manipulated. Or, researchers may be more interested in individuals’ cognitive and emotional appraisals of job challenge because these subjective experiences are strong predictors of people’s work behaviors.

Figure 5.2. Job challenge model

Limitations

There are several limitations of this study that merit discussion. First, all our participants were students, which may raise concerns regarding the generalizability of our results. However, most of the students in our sample reported having a (part-time) job, volunteer job, or internship and are thus part of the working population. Furthermore, when considering the descriptions of the cognitive and affective appraisals of job challenge, we believe these to be fundamental and applicable to both students and employees. Yet, differences between students and employees may exist with regard to the task and contextual characteristics. Future research could focus on this matter.
Another limitation is that we had to eliminate statements due to the large amount of statements (473) provided (Step 1), as they were otherwise impossible to sort. It might thus be that some eliminated statements should have been weighted more when developing the final cluster labels. However, we only removed statements that were exactly the same, and thus statements such as: “overcoming myself”, and “overcoming my fears”, were both left in. Most important, the amount of deleted statements was fairly equally divided among all statements.

Implications

This study was an initial attempt to provide a grounded, bottom-up conceptualization of job challenge in order to clarify the construct. Our results provide further insight into the core elements that people associate with challenge, that is, the specific task and contextual characteristics, cognitions, and affective responses that are involved.

To begin with, the task characteristics of a challenging job concern task aspects that refer to Hackman & Oldham’s (1980) job characteristics model (JCM), which includes five core job dimensions: skill variety, task identity, task significance, autonomy, and feedback. Hence, a challenging job contains the basic five characteristics that were found to lead to positive outcomes such as increased motivation, higher-quality performance and work satisfaction (Fried & Ferris, 1987). However, a challenging job involves more than only these five core job dimensions. Our findings show that a challenging job includes several of the following characteristics as well: time pressure, high stakes and goals, creativity and improvisation, dynamic work conditions, visibility to evaluators, problem solving, interdependence, and task ambiguity. Future research could examine whether these challenging job aspects are indeed necessary for transforming a “rich” job (according to JCM) into a “challenging” job. Moreover, future research could further explore whether specific contextual characteristics, such as facilities and guidance, response from others, multiple tasks, and inspiring colleagues, contribute to the experience of job challenge.

The cognitive appraisals that are associated with challenging jobs have been measured in prior studies (e.g., Hall & Lawler, 1970; Walsh et al., 1980), but these measures were mostly restricted in their focus. The findings of the current study offer a comprehensive set of cognitions that people have about challenging activities. These cognitions concern self-knowledge, learning and development, proving and stretching oneself, overcoming obstacles, rewarding, attractive, demanding and effortful, difficulty, and novelty. In addition, the experience of challenge is associated with positive as well as negative activating mood states, such as task absorption, concentration, stimulation and excitement, and fear of failure. To date, there is no well established measure of cognitive and affective appraisals of job challenge that incorporates all these responses. Hence, researchers are not yet able to assess optimal levels of challenge, that is, where positive appraisals and moods outweigh the negative ones. We, therefore, want to encourage researchers to further explore the dimensionality of experienced
challenge and to relate these dimensions to important outcomes such as individual well-being and work attitudes.

To conclude, the findings of this study with regard to the task and environmental characteristics of challenging jobs may help organizations to create challenging jobs for their employees. In addition, the information on people’s cognitive and affective appraisals clearly points to the possible beneficial but also detrimental aspects of challenging jobs.