Proceedings of the British Psychological Society's 2005 Occupational Psychology Conference, Glasgow, Scotland.

Are you career competent? The development of an indicator to measure career competencies

Sandra Haase and Jan Francis-Smythe, University of Worcester

The first stage of the design of a Career Competencies Indicator (CCI) is reported. Taking a theory-driven approach, the paper highlights the importance of competencies in the context of careers and introduces a combination of the two concepts in the form of career competencies. Building on the suggested three-domain structure (knowing-why, knowing-how and knowing-whom) of career competencies (Arthur, Claman & DeFillipi, 1995) the present study aimed to fill these content areas with readily measurable and trainable items and to reassess its three-fold structure. The study was conducted in three phases, culminating in an online questionnaire that was completed by 632 individuals employed in various work settings. Contrary to the predefined three content domains, a principal factor analysis using oblique rotation produced a 7-factor structure: career planning and goal setting, self-knowledge, job-related performance effectiveness, career-related skills, knowledge of (office) politics, networking and mentoring, and feedback seeking and self-presentation. Coefficient alpha reliabilities of the seven dimensions ranged from .93 to .81. The findings are discussed with respect to the operationalisation of career competencies and future research.

Introduction

Career, career management and competencies

There have been dramatic transformations in the last decades in work organizations due to profound changes in the context of employment (Arnold, 1997), creating new 'career realities' (Kidd, 1996). Fixed lattices of job positions and stable career paths are now less likely to be encountered. One important development is the growingly 'hands-off' approach of organizations to career management (Arnold, 1997). Because of the increased responsibility placed on individuals, career interventions offered by organizations are beginning to not only focus on organizational concerns but also on helping the individuals to manage their own careers (Kidd, 1996). One effective way of supporting individuals in their career development is through career guidance, emphasising competencies.

There is no general agreement with regard to the definition of competencies. Kurz and Bartram (2002) suggest that "a competency is not the behaviour or performance itself but the repertoire of capabilities, activities, processes and responses available that enable a range of work demands to be met more effectively by some people than by others" (p 230). Mirabile (1998) also discusses the issue of defining competencies and concludes that competencies need to comply with four questions if to be of use and relevance: Can you **D**escribe the competency in terms that others understand and agree with? Can you **O**bserve it being demonstrated or failing to be demonstrated? Can you **M**easure it? Can you **I**nfluence it in some way, e.g. train, coach, develop, etc.? He emphasises that this so-called DOMI rule should be taken into consideration when defining competencies, especially if they are going to be used as the basis of development interventions.

Competencies continue to be enthusiastically used by employers to structure processes and standardize human resource functions (CIPD, 2001). Organisations have been producing and implementing competency models to plan, organise and improve aspects of their human resource management systems with the overall aim to improve individual performance (Rothwell & Lindholm, 1999).

Many authors describe the benefits that competencies can bring to career development, such as a method for assessment of personal strengths and a focus on aspirations of the individual and expectations of the organisation (Craig, 1992; Rothwell & Lindholm, 1999).

Career competencies – A new approach

The intelligent career model by Arthur, Claman & DeFillipi (1995) introduced the concept of competencies to the career context on a theoretical level. Focussing on the subjective side of individuals' careers, the authors suggest the existence of three inter-related career competencies: knowing-why (why we work), knowing-how (how we work) and knowing-whom (with whom we work). They perceive these as personal competencies that are put at the employing organisation's disposal and whose benefits often outlast the employment relationship. The prevalence of dispositional traits that is suggested by this definition has formed the basis of recent operationalisations of the model, e.g. Eby, Butts and Lockwood (2003), and also underlies the Intelligent Career Card Sort (ICCS), the practical translation of the model. The ICCS provides individuals with valuable insight about their subjective career investments. However, it is not an empirically validated instrument. Furthermore, because of the ambiguity of its items and the resulting subjectivity of

the item selection, the ICCS requires extensive exploration and does not lend itself to use as a basis for immediate recommendations on career development.

With the focus of organizational responsibility changing, there comes a need for employees to redefine themselves in terms of the competencies that they will need to achieve the goal of career success (Carson & Carson, 1998). To support the individual in this challenge, this research aims to develop a theory-driven and empirically sound measure of career competencies. Building on the intelligent career model and its assumptions, the study adopts the competency definition from Kurz and Bartram (2002) to take a new approach to career competencies. Career competencies are here perceived as learned capabilities that result in successful performance in individual career management and defined as behavioural repertoires and knowledge that are instrumental in the delivery of desired career-related outcomes.

Hypothesis 1 proposes that three areas of career competencies are relevant to an employed adult population: (1) knowing-why, (2) knowing-how and (3) knowing-whom. These areas as introduced by Arthur et al. (1995) form the basic structure of career competencies and have been supported by various studies e.g. Eby et al. (2003).

Method

Measure Construction

In Phase 1 of the indicator construction the main focus lay on item selection and refinement. Arthur and colleagues' (Arthur, Claman, & DeFillippi, 1995) career competency model served as the conceptual framework for the initial item generation. A thorough literature review was conducted on the basis of which 10 concepts were selected to represent the three areas of knowing. Taking into account the discussion on the definition of competencies, only concepts that met the following criteria were selected:

- Reflecting one of the three areas of knowing
- Being important for/significantly related to career outcomes
- Being formulated as behavioural repertoires, skills, knowledge or activities
- Being observable
- Being trainable or influenceable by conscious behaviour

Subsequently, items reflecting these concepts were chosen from already existing scales. Some items were also generated from information gained through preliminary studies, i.e. input from 28 experts in the field of career development and

competencies on factors they perceived to be important for successful individual career development. Attention was directed at delineating each of the three areas of knowing, avoiding overlap between dimensions. 90 items were selected.

Four knowledgeable experts served as review panel to assess items for clarity and meaningfulness. This resulted in the rewriting of some items, deletion of others and inclusion of a few new items. In addition, one of the selected concepts was split into two sub-concepts.

In Phase 2, a pilot study was conducted. 31 individuals completed a questionnaire, rating themselves on the 90 items retained from Phase one. Their additional comments were also used to further refine the items. As a result, some of the items were slightly reformulated, others were excluded and categories were reorganised. The final version of the survey contained a total of 89 items.

In Phase 3 a survey study was conducted with a larger sample employed in various work settings to determine the factor structure of the item pool and the reliabilities (Cronbach α) of the intended indicator.

Sample and Procedure

The survey was presented in an online format. An email including the link to the survey was sent out to over 1000 individuals working in various organisations in the UK inviting them to participate in the study. Individuals were given a 3-week deadline for completion of the survey. A reminder email was sent out a week before the set deadline. 632 responses were received. Sample characteristics are shown in Table 1. There are some missing values with regard to the demographic questions.

Table 1. Sample characteristics: frequencies

Variable	Frequency
Gender	
Male	316
Female	304
Age	
16 - 25 years	82
26 - 35 years	184
36 – 45 years	208
46 – 55 years	120
56 – 65+ years	26
Educational level	
GCSE Level	209
A-Level	125
Degree Level	129
Postgraduate Level	114
Doctorate Level	28
Years of work experience	

Under 1 year	7
1-5 years	101
6-10 years	89
11-15 years	65
16-20 years	92
21-25 years	110
26-30 years	86
Over 30 years	71
Organisation	
Private sector	58
University	73
Police	447
Other public sector	38
Other	9
Industry	
Administration and Support Services	13
Accommodation and Food Services	1
Arts, Entertainment and Recreation	3
Computer and Information Systems	3
Construction	2
Education	59
Finance and Insurance	8
Fire, Police and Protective Services	439
Health, Care and Social Assistance	13
Human Resources and Employment	18
Manufacturing and Processing	13
Media and Publishing	2
Professional and Technical Services	14
Public Administration	2
Real Estate	1
Sales, Retail and Buying	1
Telecommunication	1
Transport and Warehousing	2
Wholesale Trade	1
Other	31

Concepts

Knowing-why

Goal setting and career planning was measured using 8 items adapted from the career insight measures by Noe, Noe & Bachhuber (1990) and London (1993) as well as the measures of career planning by Gould (1979) and Claes and Ruiz-Quintanilla (1998).

Self-knowledge was represented by 10 items adapted from London's (1993) measure of career insight, Callanan and Greenhaus' (1990) lack of self-information measure and Stumpf, Colarelli & Hartman (1983) measure of self-exploration.

Career resilience was represented by 9 items adapted from Noe et al.'s (1990) as well as London's (1993) measures of career resilience.

Knowing-how

Job-related performance effectiveness consisted of 7 items, two of which were developed for the study while the rest was adapted from Williams and Anderson's (1991) measure of performance effectiveness.

Career-related skills were represented by 3 items especially developed for this study and an adaptation of 8 items from Gould and Penley's (1984) career strategies measure of creating opportunities, Noe et al.'s (1990) measure of career identity and Eby et al.'s (2003) scale of career related skills.

5 items, 3 of which were developed especially for this study, and 2 were adapted from Stumpf et al.'s (1983) career exploration survey represented the concept of keeping informed.

Knowledge of (office) politics included 8 items, one of which was developed for this study while the others were adapted from Podsakoff and McKenzie's (1989 in Niehoff, 1993) measure of organisational citizenship behaviour, Chao et al.'s (1994) organisational socialisation sub-scale of knowledge of politics and Treadway et al.'s (2005) scale on political behaviour.

Knowing-whom

The concept of establishment of mentoring relationship was represented by 8 items. 3 items were especially developed for this study while the others were adapted from Turban and Dougherty's (1994) initiation of mentoring relationship measure and Noe's (1996) seeking career guidance scale.

Networking consisted of 11 items of which 1 was developed and 10 were adapted from the following measures: Claes and Ruiz-Quintanilla's (1998) proactive behaviours networking sub-scale, Bozionelos' (2003) inter-organisational networking scale, and Gould and Penley's (1984) networking scale.

Feedback seeking included 6 items, all of which were adapted from Kossek et al.'s (1998) self-initiated feedback seeking measure.

Self-presentation was represented by 4 items adapted from the self-nomination measure by Gould and Penley (1984).

All items were measured using a five-point Likert-type scale (1=strongly agree to 5=strongly disagree or 1=to a very great extent to 5=to a very small extent).

In addition to the career competencies items, biographical data was also collected.

Data analysis

The majority of participants worked in the police force. To ensure that differences in the responses between police and non-police participants would not lead to bias in

the resulting factor structure a preliminary factor analysis using Direct Oblimin rotation looking at both groups separately was conducted. Identical factor structures were found.

In the case of a large enough development sample, DeVellis (1991) suggests to split the sample into two sub-samples, using one as the primary development sample to conduct factor analysis, compute alphas, evaluate items and arrive at a final version of the scale that appears optimal and the other to cross-validate the findings. He also points out that if the alpha values remain fairly constant across the two sub-samples, it can be assumed that these values are not distorted by chance, i.e. that the scales are relatively stable (DeVellis, 1991).

With reference to the above, the sample of 632 was split randomly into two groups, G1 and G2. This allowed for a good sample size of 316 subjects (Guadagnoli & Velicer, 1988 in (Osborne & Costello, 2004)) and an acceptable subject-item ratio of 3:1. Chi-square tests were carried out to establish that there were no significant differences between G1 and G2 with regard to the demographic data collected. Independent-sample t-tests were also carried out on all 89 items to assess if there were differences in responses to the items between the two groups. Only 6 items showed statistically significant differences across groups (p<0.05). It was therefore concluded that the sample had been split in a random yet un-biased way.

On the basis of the above, first the data for G1 was subjected to Principal Axis Factoring. The Bartlett test of sphericity was significant (p=.000) and the KMO measure of sampling adequacy was .919, suggesting that the data was suitable for factor analysis. Taking into consideration that the three career competency areas are claimed to be theoretically correlated, oblique rotation was chosen as rotation method. The factors were extracted using Direct Oblimin rotation.

The subsequent scale development followed an iterative process. First, the coefficient alpha of each sub-scale was calculated including all the items loading above .30 on the factor. Then, the standard deviation of each item was assessed and the item dropped if it exhibited little variance (SD below .50). Subsequently, the reliability of the scales was computed again in tandem with item removal until an acceptable trade-off between coefficient alpha and scale length was achieved.

Subsequently, the factor structure was cross-validated conducting Principal Axis Factoring with Direct Oblimin rotation on the data for G2.

Results

A Principal Axis Analysis of the 89 career competencies items of the data from G1 produced an Eigenvalue distribution of the Scree plot that suggested a 7-factor solution, which accounted for 48% of the common variance. The seven factors are listed below:

Factor 1. Goal setting and career planning (5 items, G1 α = .91, G2 α = .89)

Factor 2: Self-knowledge (5 items, G1 α = .81, G2 α = .86)

Factor 3: Job-related performance effectiveness (5 items, G1 α = .89, G2 α = .90)

Factor 4: Career-related skills (7 items, G1 α = .86, G2 α = .86)

Factor 5: Knowledge of (office) politics (5 items, G1 α = .83, G2 α = .77)

Factor 6: Networking and mentoring (8 items, G1 α = .89, G2 α = .89)

Factor 7: Feedback seeking and self-presentation (8 items, G1 α = .92, G2 α = .91)

The results of the factor analysis did not support Hypothesis 1. Instead of the proposed 3-factor structure a 7-factor structure emerged. While some of the concepts applied appeared as one factor, e.g. establishment of mentoring relationship and networking, others did not emerge at all e.g. career resilience. Factor analysis conducted on the data for G2 yielded similar results, confirming the 7-factor structure. Most of the α coefficients for the sub-scales developed were satisfactory for research purposes. They remained constant across the two sub-samples, indicating that the scales are relatively stable.

Discussion

No support was provided for Hypothesis 1, which predicted a 3-factor structure for career competencies. Instead, a 7-factor structure for career competencies emerged.

Some of the concepts chosen to represent the 3 areas appeared as career competencies in their own right. The selection of the concepts to represent the 3 areas of knowing could provide a possible explanation for this. Concepts such as establishment of mentoring relationship and networking are very similar, both relating to the social interaction with others searching for information and advice to achieve greater career success. This would explain the loading of the respective items onto one factor. Similar to this, feedback seeking and self-presentation are concepts that build on personal assertiveness, which might be the reason for them emerging as one factor. However, the activities underlying these four concepts are different which would explain why they do not emerge as one "knowing-whom" factor.

Concept and/or item selection might also be responsible for the fact that some concepts did not emerge as factors. Career resilience for instance might not be cut

clear enough to be summarised as one factor, i.e. the items might not be inter-related enough.

The resulting 7-factor structure suggests that the concept of career competencies might be too complex to be grouped into three broad areas of knowing only.

Future Direction

The concept of career competencies offers a holistic approach to career management that supports an individualistic perspective on careers. Translated into an instrument, it is expected to be valuable to individuals by assisting them to successfully manage their own careers. However, this assumes that career competencies as defined and operationalised by this study are related to career outcomes. Therefore, in the second stage of indicator construction, research is presently conducted to assess the validity of the career competencies indicator with regard to objective and subjective career success.

In addition, the impact of aspects such as personality e.g. (Bozionelos, 2003) on career success and the importance of career salience (Allen & Ortlepp) with regard to career behaviour has been widely stated. Therefore, it is important to assess the incremental validity of career competencies over and above these concepts. The above-mentioned research also seeks to address this question.

References

Allen, S., & Ortlepp, K. (2002). Conceptualising and Operationalising Work versus Career Salience. *Perspectives in Industrial Psychology, 28*(2).

Arnold, J. (1997). *Managing careers into the 21st century*. London: Paul Chapman Publishing Ltd.

Arthur, M. B., Claman, P. H., & DeFillippi, R. J. (1995). Intelligent enterprise, intelligent careers. *Academy of Management Executive, 9*(4), 7-22.

Bozionelos, N. (2003). Intra-organizational Network Resources: Relation to Career Success and Personality. *The International Journal of Organizational Analysis, 11*(1), 41-66.

Callanan, G. A., & Greenhaus, J. H. (1990). The Career Indecision of Managers and Professionals: Development of a Scale and Test of a Model. *Journal of Vocational Behavior, 37*, 79-103.

Carson, K. D., & Carson, P. P. (1998). Career Commitment, Competencies, and Citizenship. *Journal of Career Assessment, 6*(2), 195-208.

Chao, G. T., O'Leary-Kelly, A. M., Wolf, S., Klein, H. J., & Gardner, P. D. (1994). Organizational Socialization: Its Content and Consequences. *Journal of Applied Psychology, 79*(5), 730-743.

CIPD. (2001). *Competency frameworks in UK organisations*. London: Chartered Institute of Personnel and Development.

Claes, R., & Ruiz-Quintanilla, S. A. (1998). Influences of Early Career Experiences, Occupational Group, and National Culture on Proactive Career Behavior. *Journal of Vocational Behavior, 52*, 357-378.

Craig, S. (1992). Using competencies in career development. In R. Boam & P. Sparrow (Eds.), *Designing and Achieving Competency: Competency-based Approach to Developing People and Organizations* (pp. 111-127). Berkshire: McGraw-Hill.

DeVellis, R. F. (1991). *Scale Development: Theory and Applications* (Vol. 26). Newbury Park: SAGE.

Eby, L. T., Butts, M., & Lockwood, A. (2003). Predictors of success in the era of the boundaryless career. *Journal of Organizational Behavior, 24*, 689-708.

Gould, S. (1979). Characteristics of Career Planners in Upwardly Mobile Occupations. *Academy of Management Journal, 22*(3), 539-550.

Gould, S., & Penley, L. E. (1984). Career Strategies and Salary Progression: A Study of Their Relationship in a Municipal Bureaucracy. *Organizational Behavior And Human Performance, 34*, 244-265.

Kidd, J. M. (1996). Career planning within work organisations. In A. G. Watts & B. Law & J. Killeen & J. M. Kidd & R. Hawthorn (Eds.), *Rethinking Careers Education and Guidance. Theory, Policy and Practice* (pp. 142-154). London: Routledge.

Kossek, E. E., Roberts, K., Fisher, S., & Demarr, B. (1998). Career Self-Management:a Quasi-Experimental Assessment of the Effects of a Training Intervention. *Personnel Psychology, 51*, 935-962.

Kurz, R., & Bartram, D. (2002). Competency and Individual Performance: Modelling the World of Work. In I. T. Robertson & M. Callinan & D. Bartram (Eds.), *Organizational Effectiveness. The Role of Psychology* (pp. 227-255). Chichester: John Wiley & Sons.

London, M. (1993). Relationships between career motivation, empowerment and support for career development. *Journal of Occupational and Organizational Psychology, 66*, 55-69.

Mirabile, R. J. (1998). Leadership Competency Development. *Management Development Forum, 1*(2).

Niehoff, B. P., & Moorman, R. H. (1993). Justice as a Mediator of the Relationship Between Methods of Monitoring and Organizational Citizenship Behavior. *Academy of Management Journal, 36*(3), 527-556.

Noe, R. A. (1996). Is career management related to employee development and performance? *Journal of Organizational Behavior, 17*(2), 119-133.

Noe, R. A., Noe, A. W., & Bachhuber, J. A. (1990). An investigation of the correlates of career motivation. *Journal of Vocational Behavior, 37*, 340-356.

Osborne, J. A., & Costello, A. B. (2004). Sample Size and Subject to Item Ratio in Principal Components Analysis. *Practical Assessment. Research & Evaluation, 9*(11).

Rothwell, W. J., & Lindholm, J. E. (1999). Competency identification, modelling and assessment in the USA. *International Journal of Training and Development, 3*(2), 90-105.

Stumpf, S. A., Colarelli, S. M., & Hartman, K. (1983). Development of the Career Exploration Survey (CES). *Journal of Vocational Behavior, 22*, 191-226.

Treadway, D. C., Hochwarter, W. A., Kacmar, C. J., & Ferris, G. R. (2005). Political will, political skill, and political behavior. *Journal of Organizational Behavior, 26*, 229-245.

Turban, D. B., & Dougherty, T. W. (1994). Role of Protégé Personality in Receipt of Mentoring and Career Success. *Academy of Management Journal, 37*(3), 688-702.

Williams, L. J., & Anderson, S. E. (1991). Job Satisfaction and Organizational Commitment as Predictors of Organizational Citizenship and In-Role Behavior. *Journal of Management, 17*(3), 601-617.