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Article

Multi-specialization: The concept, motivations and impact on individuals

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Review article

Multi-specialization: The concept, motivations and impact on individuals



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ABSTRACT

We present the concept of multi-specialization for those building careers, which refers to workers becoming very familiar with two or three fields of knowledge. This requires a compromise between individual capacity and individual learning needs and also means that workers will need to maintain or achieve higher levels of productivity, ensuring or enhancing social welfare. Taking into account the differences between this concept and the traditional concepts of single-field specialization, we were able to uncover and highlight several positive possible results that many workers expect to experience when adopting this work perspective and, at the same time, to hear their concerns. A questionnaire and a set of interviews allow us to understand the individual experiences of those studied in this context.

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1. Introduction

The objective of this study is to present the concept of multi-specialization and its motivations and to reflect on its impact on the behaviours of individuals. This concept is multi-dimensional, corresponding to a compromise between individual capacity and individual learning needs, also correlated with a desire to maintain or reach higher levels of productivity, ensuring and enhancing social welfare. At the same time, the objective is to compare the concept with the traditional concept of specialization as defined by Adam Smith (1776) and later debated by Mill (1848), Taylor (1911), Boh, Slaughter, and Espinosa (2007), and Carvalho (2008). The interest of this study comes from the fact that we live in a time when people, regardless of their education level, suffer with the absence of a job or with a type of work that doesn't meet their expectations regarding the level of assigned responsibilities or wages.

The concept of multi-specialization is original because it tries to reconcile, as a precise model, the specialization level of a person with his/her deepest professional goals. In other words, it tries to accomplish both the satisfaction of the employers' and the community's needs for qualified workers to fill available jobs with the freedom of each individual to learn and pursue self-chosen goals and at the same time contribute to a universally better social outcome. The classical approach would defend full specialization regardless of the individuals' learning aspirations and the new work and social realities people experience today.

The multi-skilled individual can master two fields of knowledge at a high level of complexity. Not with knowledge as vast as that of a classical expert, just enough skill to allow him or her an occupation that makes possible an acceptable standard of living. This individual has more extensive capabilities that allow him or her to function at work in different ways (Staats & Gino, 2011). Given the organization of working time, the multi-skilled person can have multiple job responsibilities corresponding to different fields of training in the course of a single day, or a mixture of part-time occupations, such as working shorter contracts or gig jobs, which can last for days, weeks or months. The major contribution of this paper is to present the new concept of multi-specialization as an attempt to find a solution for some of the problems workers find today in the job market. For example, lacking job security despite having a high-end specialization or lacking time for new training when integrated in the job market. The main point of this paper is to present a new way to organize the labour market that takes into account individual needs with a creative approach towards developing a new vision to increase productivity levels and facilitate multidisciplinary innovation in a social context with global interconnections and changing dynamics. As a consequence, multi-specialization can possibly also be seen as a new tool to create new jobs in complex markets. Traditionally, specialization implies a very specific knowledge base and limited activities that a worker must master; with this research we break this assumption in a way that does not seem obvious because we assume the same worker can perform multiple distinct tasks at a high level. For example, one person could be both a movie director and a lawyer or an economist and an electronic engineer or a shoe maker and chef, etc. Multi-specialization possibly permits a new world of opportunities in human resources management (Cable, Gino, & Staats, 2013).

The first person who considered something similar to the concept we present in this paper was John Ruskin, the 19th century artist (Carvalho, 2008). He was concerned with all aspects of human nature and due to his artistic work was aware of the importance of having diversified knowledge and experiences (Galenson, 2004c) for a successful creative process. This means that a change to the traditional concept of specialization is not a new idea. Already by the 19th century it was obvious that people might have very distinct psychological characteristics and thus some people more than others might lack the ability to cope with the stress of certain tasks and be unable to develop certain capabilities essential to their happiness (Hardy & Barkham, 1994; Harpaz & Fu, 2002; Jaffee, 2001; Kahn, 1992, 1995; Rousseau, 2011; Wayne & Green, 1993; Wrzesniewski et al., 1997). Work stress can be a risk factor for disease and therefore must be studied (Narayanan, Menon, & Spector, 1999). Today, additionally, the increased number of degreed workers goes hand in hand with higher unemployment levels, especially for younger graduates in Europe, possibly meaning that traditional single-field specialization can no longer guarantee a job and good working conditions (EU, 2017a, 2017b).

Nevertheless, this concept of multi-specialization as a specific and well defined tool remains mainly original and, as a consequence, there are no previous studies trying to operationalize it. This study is a first step towards the complete definition of this new labour market tool and we had to find the first real data to prove its interest and usefulness. The main original idea of this paper is the new concept of multi-specialization.

As main results of this study we found that: (i) many people find benefits from this new labour market approach. 61.2% of the people we surveyed would like to have two distinct jobs; also, (ii) in looking at the interviews we conducted with different employees in a variety of fields, we find that to a certain degree markets might be already pushing people to a multi-specialized economy or at least an economy where job shifting can be a way to improve results at one's next job.

The next section shows the background theory, then the methodology, followed by the results and data obtained and the discussion of that data. The conclusion sums up the main findings and expectations and suggests questions for future research.

2. Background theory

Background theories show us that there is extensive evidence that the traditional concept of specialization has implications for many dimensions of our lives, namely: (i) at the level of the firm (Chang, Khamkaew, McAleer, & Tansuchat, 2010; Eastaugh, 2001; Munch & Skaksen, 2009); (ii) at the level of the immediate social environment (Goodman, Krockenberger, & Schwarzkopf, 2007; Quental, Manus, Paten, & Pierce, 2007); (iii) at the level of recreation (Galloway, 2012; Ohl, Lyul, & Hammitt, 2012; Scott, 2012; Stebbins, 2012); (iv) at the level of IT sciences (Martinsons & Chong, 1999; Nienhuys-Cheng & Wolf, 1996; Silva, 2013); (v) at the macro level of the economy (Di Maio & Valente, 2006; Kalemli-Ozcan, Sorensen, & Yosha, 2003; Krieger-Boden, 2000; Picci & Savorelli, 2013; Phillips, 2012; Richter & Rosenmüller, 2010; Zhang, 2013); (vi) at the level of training (Roberts, 2006); (vii) at the level of society (Kahanec, 2007), and (viii) finally, rarely, at the level of the individual, just for certain classes of professionals (Moorhead, 2010).

2.1. High unemployment

There is a global crisis of unemployment for many people, even those who have high academic qualifications. In Portugal, 17.5% of the total 15.6% unemployed were professionals with higher education in 2013 (INE, 2013), despite the high emigration (Ramos, V., 4 July 2013). This means that total specialization does not guarantee well-being for the specialized worker; not only not providing the material conditions for daily needs but also contributing to extreme stress and health problems. Additionally, there is also the possibility of shifting to an economy of part-time jobs, meaning partial unemployment or, on the other extreme, having many part-time positions simultaneously and working many more hours in order to maintain a basic standard of living. All this points to problems with work-life balance. We believe that always having at least one part-time job is possibly, one of the best solutions to avoid the bad consequences of total unemployment, because it has several advantages. For example: (i) breaking from the traditional concept of the social contract (Conway, 2002b, 2004; Conway & Briner, 2002; Coyle-Shapiro & Parzefall, 2008; Guest & Conway, 2002; Rousseau, 1989, 1990, 1995; Herriot & Pemberton, 1997; Robinson & Morrison, 2000; Rousseau & McLean Parks, 1993; Turnley & Feldman, 1999), (ii) the possibility of increasing the individual autonomy that higher levels of education supposedly allow and facilitating lifelong learning (Palma, 2008; Palma & Cunha, 2006; Spector, 2002; Spector et al., 2002; Wiersma, 2007), (iii) recognizing and permitting higher quality of life for the specific personalities that adapt well to the new concept or to which the new concept allows higher levels of well-being (Huckman & Ton, 2008; Pierce, 1961), and (vi) avoiding the damage resulting from an increase in unemployment (Kokko, Pulkkinen, & Puustinen, 2000; Kuhnert, 2001; Perlovsky, 2005).

2.2. A human being is not a machine

Work stress and problems with work-life balance can also exist due to bad communication in the office or unpleasant or repetitive tasks at work (Seiger & Wiese, 2009). We believe that the physical and psychological aspects of work cannot be ignored because work is one of the main activities a human being engages in during the day, and is central to individual identity and individual perception of social roles and socioeconomic status. On the other hand, depressive symptoms and anxiety frequently result when an individual does not have work for a long time (Kokko et al., 2000) despite the fact that those feelings are also linked to the personality of the individual. As a consequence, some authors' research is focused on the desire to achieve higher levels of productivity with one's individual personality and skills (Holland, 1959b; Holland, Gottfredson, & Power, 1980), and others focus their work on identifying ways to avoid significant levels of conflict, accidents or damage at work, ensuring higher levels of health (Beehr & McGrath, 1992; Farrell, Bobrowski, & Bobrowski, 2006; Findorff, McGovern, Wall, & Gerberich, 2005; Flannery, 1996; Hughes & Dodge, 1997; Narayanan et al., 1999).

2.3. Unbalanced relationship between workers and firms;

The unequal relationship between firms and their workers is very well documented. This power relationship is important in order to understand the ways in which a worker can try to preserve his or her mental health, avoid stress and possible harm from colleagues, such as sabotage and interpersonal aggression (Spector & Chen, 1992). Nevertheless, it is a reality that the strong availability of specialized workers in one field of knowledge can create a downtrend for wages and stricter work requirements, especially when the labour market is very rigid. For example, a firm might assign an employee a very rigid work schedule (Munch & Skaksen, 2009) so they are unable to take time to improve their skills. As a consequence, when the worker loses his or her job when the market demand for his or her skills eventually goes down, he or she probably will not be able to

find a job at the same level in the same field. Possibly also there may be a mismatch of cultural values between workers and firms when workers expect more training and firms do not deliver that “output,” reflecting a new psychological social contract that workers in a more unstable labour market expect to have with their employers. Culture is paramount for healthy working relations (Ashkanasy & Jackson, 2001; Bell, der Geer, Hanraads, & Lupton, 2012; Bickford, 2005; Casey, 1999; Gaglio & Katz, 2001; Macarov, 2000; Martin, 2002; Pierce, 1991; Spector, 1975; Spector et al., 2000; Storey, Salaman, & Platman, 2005; Teece, 2000; Thau, Crossley, Bennett, & Sczesny, 2007; Tulgan, 2004; Yammarino, 1992; Yoon, Baker, & Ko, 1994). Also, culture is also fundamental to explaining certain good work relations and to the identity of workers in the firm where they work (Baumeister & Leary, 1995; Cohen, 2000; Cunningham & MacGregor, 2000; Diamond, Allcorn, & Stein, 2004; Davenport, 2000).

When work-life balance is at risk it is possible to identify several consequences for the individual and those who live with him or her (Bakker, Dollard, & Demerouti, 2008). Some of these are the following: (i) inter-role conflict, in which the role pressures from the work and family domains are mutually incompatible in some respect; (ii) socially detrimental behaviours among dual-earner parents (for example, coming home angry or upset due to a stressful day at work); (iii) those with high job demands become unable to relax and recover from their work and to take care of family responsibilities; (iv) high job demands usually coincide with an increased probability of having to take work home, which may result in higher levels of exhaustion. Both men and women face these issues (Bakker et al., 2008) and some workers try flexible job schedules (Institute for Workplace Innovation, 2010; Tausig & Fenwick, 2001), and sometimes face negative consequences for requesting flexibility (Zeytinoglu & Lillevik, 2005).

Actually, it is the managerial and professional workers who tend to have more access to scheduling flexibility, as they are already a class of workers who tend to have better working conditions. Employers create different levels of scheduling flexibility for workers in different occupations, or with certain personality characteristics (such as gender and race), but that usually does not take into account the stress or health circumstances of workers.

Having too much work or difficulties balancing work and life responsibilities can be a problem but, nevertheless, not having work also has important consequences for an individual's life (Kokko et al., 2000; Kuhnert, 2001). This fact can be easily understood when we recognize that employment is generally the most important means of obtaining adequate economic resources and, in societies where employment is the norm, work meets important psychological needs. Additionally, work can be central to individual identity, social roles and status and employment and socioeconomic status are possibly the main drivers of social gradients in physical and mental health and mortality. Finally, many physical and psychological aspects of lack of work can also cause problems and pose a risk to health (Waddell & Burton, 2006). One of the fundamental negative consequences of not having a job for a long time is the presence of depressive symptoms and anxiety (Kokko et al., 2000). This is especially true when jobs are lost involuntarily (Kuhnert, 2001) and individuals with different personalities react differently to this situation. For example, individuals with lower ability to regulate their emotions (Kokko et al., 2000) are likely to be worse at handling long-term unemployment. In the future, we believe, looking into ameliorating the negative consequences of unemployment may be even more relevant, due to the possible increase of the natural rates of unemployment as a consequence of technological development.

2.4. Adaptation and firms' market difficulties

The capability of firms to adapt to changing market conditions is also a consequence of the skills and capacities they possess (Paulos & Moniz, 2013), as a result we believe that schools have a central role in this process as promoters of firms' adaptation capacity. Today, the shifting boundaries between people and technology (Golden, 2007; Vickers, 2003) are also a research topic and possibly technology can be helpful to allow workers become more capable of doing quality work in a multi-specialized context. When we compare multi-specialization with the traditional specialization concept we find that the new concept can possibly permit: (i) for some individuals, more possibilities for self-improvement as a person and as a professional; (ii) more possible opportunities to gain expertise in different fields of knowledge (Charness & Copland, 1992) and to experience less fragmentation of knowledge together with higher ability to contribute to interdisciplinary dialogue between academic disciplines (Craig, 2008); (iii) providing workers with more negotiating power, and greater ability to adapt and innovate when seeking future employment. And leaving workers more prepared to start ‘a conscious and prepared process of creative destruction’ as Schumpeter (1961) proposed; (iv) lower levels of total unemployment because the new concept of specialization permits one person to simultaneously hold a part-time job for an employer together with part-time highly skilled self-employment; (v) higher levels of control over one's employment, which may permit lower stress levels and uncertainty when facing firm instability (Cooper, Dewe, & O'Driscoll, 2001), as ‘firm instability’ presented as an objective example of stress important for research (Frese & Zapf, 1999); (vi) better individual social interactions; (vii) maintenance of economies of scale because the firm maintains its identity as an autonomous economic agent; (viii) making possible more opportunities to improve individual income; (ix) making possible a better work-life balance (Rebello, 2003), (x) for individuals not prepared with multiple skills, these new self-promotion and job management needs can create stress but learning new skills can lessen that stress (Cooper & Payne, 1992).

Additionally, different job functions have different characteristics that can require different adaptation strategies. For example, in health-care services, it is possible that transmission of infections from worker to patient poses enough of a danger that the industry may need to avoid having many part-time workers, due to the increased probability of infection per worker. Also, these workers experience many types of stress, including role ambiguity, role conflict, heavy workload, pressure, and physical discomforts, who might influence the satisfaction, safety, and quality of care for patients (Lundstrom, Pugliese, Bartley, Cox, & Gutter, 2002).

2.5. Innovation's connection to communication

Autonomy is also linked with learning, innovation and firms' success (Barringer, Jones, & Neubaum, 2005; Baruch & Peiperl, 2000; Baum & Locke, 2004; Bird, 1988; Cromie, 2000; Deakins, 1996; Drucker, 1985; Shane & Venkataraman, 2000; Wiersma, 2007). For example, an artist can be seen as an innovator (Galenson, 2004a, 2004b). This leads us to the possibility of seeing creativity as one of the possible tools to achieve better productivity and healthier human relations. In fact, some authors consider creativity and innovation as major tools in order to create a better work place regarding productivity and human relations (Moeran, 2009; McLeod, O'Donohoe, & Townley, 2009; Spender & Kessler, 1995).

The capacity to communicate is important in group contexts and the ability to understand the ideas of others is also paramount for adapting, increasing productivity levels and innovating (Beard, Woodman, & Moesel, 1998; Biggio et al., 2013; ILO, 28 April 2016; Smit & Wandel, 2006). We believe that multi-specialization might increase the communication capabilities among individuals with different professional backgrounds, because they will share some common professional terminology. Better communication can also imply improved involvement of employees in an organization and this can become a very good way to manage stress at the work place (Bunce & West, 1996; Daniels, 2006; Harrison, Laplante, & St-Cyr, 2001; Mackie, Holahan, & Gottlieb, 2001; Murphy, Wayne, Liden, & Erdogan, 2003; Niepce & Molleman, 1998).

3. Methods

In order to fully understand the new concept of multi-specialization and its possible implications for workers we use two types of research methods: (i) identifying the main motivations behind the new concept of multi-specialization, using a vast literature review, and (ii) collecting new data by sending out a survey questionnaire to workers in different countries. We also conducted in-depth interviews with five Portuguese professionals, because we would better understand their mindset, as we are Portuguese researchers ourselves. Also, Portugal is a small open economy, and many of these professionals' problems and aspirations are likely to be similar to those of others elsewhere. The sample contains answers from workers all around the globe because, with globalization, the concept of specialization was adopted in many countries, also producing some examples of regional specialization (Krieger-Boden, 2000) and determining the dynamics of the labour market, as shown in recent research (McLaren, 2016). Also, we consider the fact that in different countries the costs to workers to switch sectors and occupations are higher, as that fact is crucial in computing the effects of globalization on the welfare of workers. At Annex A we present the questionnaire we used and, at Annex B, a typical interview.

4. Results

4.1. Questionnaire

Brief analysis of the questionnaire answers reveals that employees may welcome how the labour market might be re-organized according to the multi-specialization concept, or, at least, not see it as a potential problem. We received a total of 139 answers, 84 from Brazil, 44 from Portugal, 2 from Holland, 1 from Denmark, 1 from Spain, 1 from Angola, 1 from Canada, 1 from Italy, 1 from Luxembourg, 1 from Switzerland, 1 from USA and 1 from Japan. This sample is not representative of the universe of workers in the world but it does give us a good insight into professionals' thoughts, as far as this subject is considered.

If a person were to have two part-time jobs, the commute between them would be a major preoccupation for 56.7% of the interviewed workers and 59% of them would feel themselves as potentially overloaded with work. 41% of the respondents believe they wouldn't feel more psychologically healthy with two part-time jobs. Nevertheless, new IT technologies are creating new work and social contexts, a new 'cyber-humanity', and this technology could provide new tools to help people master at least pieces of different sets of knowledge (Vickers, 2003). Financial security would be a possible worry for 45.5%; a value very proximate to the percentage of those who don't believe that would be a problem (54.5%). Nevertheless, when the workers interviewed think about the possibility of having two part-time jobs, one which gives them the sense that they are helping to improve the world and another which is more of a regular job, 61.2% say "Yes" to having two part-time jobs, despite the fact that only 38.8% consider that they

Table 1 – Main results of the questionnaire.

If I had two jobs . . .	True	False
I would feel more free	36.6%	63.4%
I would choose two jobs: one for money and another to save the world	61.2%	38.8%
I would feel more secure financially	45.5%	54.5%
I would feel more healthy	41%	59%
I would feel more tired	59%	41%
I would feel more preoccupied with the commute between jobs	56.7%	43.3%

would feel more free if they were to have two part-time jobs with very distinct characteristics. [Table 1](#), on next page, presents the main results of the questionnaire.

Looking into this table it is possible to acknowledge that there are no extremes when we compare the number of “True” and “False” options for each answer. This might mean that possibly there is a general social acceptance of this style of labour market organization, taking into account the values of democracy and tolerance commonly accepted in western societies.

4.2. Interviews

Together with the questionnaire we presented to some workers, we also conducted four interviews with professionals who worked in different fields: (i) Mr. Nuno Ribeiro, from an IT company (www.blendstone.pt); (ii) Professor Eugénio Lisboa at Universidade de Aveiro/Portugal (www.ua.pt); (iii) Mr. Fernando Marques, manager at a non-profit organization (www.adfp.pt); and (iv) Mr. Gonçalo Cadilhe, travelling writer (www.goncalocadilhe.com).

All these professionals agree that employment is not just a matter of money, but also a contributor to personal satisfaction and happiness. From these individuals, Mr. Gonçalo Cadilhe is the most specialized but, all of them consider the possibility of making changes in order to gain experience or simply recharge their batteries. Except for Mr. Cadilhe, who mentioned the Hebraic saying that “man makes plans and God laughs out loud”, and felt he lacked any control over his working life, all the other professionals considered that they controlled their working life. None of them consider their success as the direct result of their specialization in a single area.

To Mr. Nuno Ribeiro, our dreams are the most important asset we have and engaging in different activities at the same time should be seen as a stimulus that gets us to overcome the inevitable adversities we encounter in the labour market. Furthermore, people are all different, as people’s impulses to engage in varied activities outside of work demonstrate, and accepting this implies the need to be open-minded.

To Professor Eugénio Lisboa, the diversity of his working experiences, some of them concurrent, during his life, was something that made him happy. He tries to teach his students the ability to learn and adapt quickly and there is nothing wrong with having more part-time activities, even if they are different: diversity is wealth and improves results at one’s next job.

To Mr. Fernando Marques, diversity in his career is something very positive and enriching. This is very welcomed because, today, flexibility and versatility are essential at the work place. Taking into account unemployment and lack of job security, the possibility to pursue different career paths at the same time can be a road map for young people to follow, but if, and only if, the rights of workers are guaranteed.

To Mr. Gonçalo Cadilhe, engaging in several activities at the same time is completely possible and one activity can even improve the results of the others. This is something he already experiences as a writer.

This diversification can be very positive if we take into account: (a) the specialization level; (b) the intellectual capabilities of the individual, and (c) the time allocated between activities. Summing up, each person is a unique case.

For these four professionals, we found that they believe the actual working context already resembles what they’d expect with multi-specialization, although at the same time totally specialized workers continue to exist and probably will always exist in certain jobs in certain economic sectors.

4.3. One case study: Grupo José Avillez, Lda

The firm Grupo José Avillez, Lda. (www.joseavillez.pt) is a culinary firm managed by the young chef and entrepreneur Mr. José Avillez. The firm has about 170 workers, seven restaurants, and three brands of wine. The chef also participates in several TV and radio shows in Portugal and this, together with having won several internationally awarded prizes, including the restaurant Belcanto’s two Michelin stars, defines and justifies the extreme competitive advantage of this firm but also the high performance expectations among the high level management. Certainly, this demand for high level performance influences the answers we got from 10 questionnaires given to employees and from the interview with to Mr. José Avillez.

The chef mentions that he works about 16h per day, eight hours as a chef and eight hours as a manager. Despite this fact, he achieves high levels of quality in both dimensions of his working activities. Furthermore, he also writes and even helps craft ceramics, something that is an artistic hobby. For him, his work is far more than a means to obtain money. It is a mission, a way to be happy, and the two very distinct skill sets he must employ on a daily basis are a path to happiness. He understands this and, probably due to this insight, in his firm there are people who work part time.

Looking to the answers of his 10 employees, half of them with higher education, we find that, for this sample: (i) the main reasons to have two part-time jobs are for financial and professional development; (ii) the sample is divided when taking into account the impact on an employee’s personal life; (iii) the possibility of overwork, stress, and wasting time commuting between jobs are the major concerns; (iv) the workers with no higher education are the ones preoccupied with commuting times between jobs and also those who believe they can financially benefit the most, probably as a result of the different skills and interests these workers have. This is not a representative sample for the entire firm but we conclude that, at least for these workers, part-time work options have potential benefits for them despite their concerns. These workers gave these answers despite the fact that they said they are happy with their jobs, especially if we take into account that 10 out of 10 people were happy to share about their working experience; probably suggesting that they do not feel an extreme need to change their work life.

5. Discussion

Data obtained with questionnaires and interviews is not representative of any labour market.

Nevertheless, the questionnaires and interviews, as a case study of a firm, are almost representative of that firm's reality. We might expect that some common elements in people's answers would emerge when speaking to people working in firms with similar characteristics: (i) high competitiveness; (ii) dimension (mean); (iii) sector of activity (food and tourism); and (iv) social context (Portuguese city with many foreign visitors). Furthermore we admit that in similar environments human beings tend to have similar answers, regardless of the country where they live.

All together, all the data collected give us a clue that points to the possible usefulness of our new concept. We found that to many people the reasoning behind multi-specialization makes sense and can be seen as a new possibility. This fact, although not yet significant statistically for all workers, means that our research is important at least to those individuals who have a psychological profile compatible with having more than one professional interest and/or occupation. We were able to give these workers a voice and demonstrate that they exist. As a consequence, since these workers exist, multi-specialization makes sense for some, but also for the firms who will hire them because organizationally it makes sense to "exploit" all their potential in different areas in order to increase the value added to the firm and to society.

Furthermore, if the need to foster multi-specialization exists for a part of the society, the entire society becomes aware of the need to discuss shifting towards a more friendly labour market for those people. With this data we do not yet have a representative sample but have the evidence that there is at least a minority of workers whose unique personalities and talents and needs should be considered.

6. Conclusions

The main contribution of this paper is the presentation of the new concept of multi-specialization and particularly the attempt to create a bridge to the existing literature regarding specialization of labour. Because the concept of multi-specialization is new, there is no background literature about the concept, except the work of John Ruskin that, as explained before, was very preoccupied with the link between human beings and the industrialization process. Our literature review was about the main motivations that, from our standpoint, justify the effort to create this type of innovation in the work market. The existence of research about the implications of specialization and problems at the workplace make us understand that the work market can be improved.

We found that probably this concept is already a reality for many workers, because we had some testimonies about work experiences that could be classified as cases of multi-specialization. Furthermore, the collected data tell us two major aspects of reality: (1st) in the obtained sample, 61.2% of the workers believe that having more than one work activity might be useful for them, especially if one of two activities is a simple job to earn money and the other represents other important personal goals, such as having the chance to improve the world; and, (2nd) in the interviews all the five professionals considered multi-specialization a real possibility, due to economic challenges or as a concept that can be especially suited for certain people, because everyone is different. This is also the standpoint of the workers who answered our questionnaire.

The main limitations of our research are the following: (i) the concept of multi-specialization might not be useful to all groups of professionals, we suspect but at the moment we do not have data to justify this hypothesis; (ii) there is no data comparing the situation of workers in terms of health and productivity, with and without the simple implementation of multi-specialization. Limitation (ii) is a fundamental problem when it comes to measuring the possible productivity gains, health care cost savings and increased social and personal welfare.

Despite these limitations, our research has the following potential implications: (i) the need to consider the psychological characteristics of different individuals because it is well known that boredom at work or overly repetitive activities can create stress for some (Narayanan et al., 1999) but the same might occur for others with multi-specialization; and (ii) the need to provide input into new labour laws to support the rights of people with more than one part-time job because for many people, multi-specialization is already a reality.

Finally, our paper's perspectives are the result of these limitations and implications, and of the need to stress the advantages of the multi-specialization concept: (i) on the one hand, we need to collect new data in order to overcome the limitations of our research design, and, on the other hand, we need to provide a detailed portrait of the legal issues and problems faced by these workers, (ii) because we know, from existing research in psychology, that not regularly using knowledge might mean forgetting it (Cordero, 1989; Nicholson, 1997; Palma & Lopes, 2012), there is a need to distinguish this advantage from the possible advantage of being able to build added value in a context where multi-disciplinary thought and insight are relevant.

Summing up, also knowing that it is true that the learning curve is full of difficulties and it takes time to "travel" across it (Yelle, 1979) and taking into account that specialization is a concept with very well-known drawbacks and advantages (Coates, 2002; Phillips, 2012; Richter & Rosenmüller, 2010), we believe multi-specialization can be viewed as a valuable human resources and organizational asset.

Conflicts of interest

The authors declare that there is no conflicts of interest.

Annex A.

TABLE 1 Paragraphs describing job, career, and calling

Job Mr. A works primary to earn enough money to support his life outside of his job. If he was financially secure, he would no longer continue with his current line of work, but would really rather do something else instead. Mr. A's job is basically a necessity of life, a lot like breathing or sleeping. He often wishes the time would pass more quickly at work. He greatly anticipates weekends and vacations. If Mr. A lived his life over again, he probably would not go into the same line of work. He would not encourage his friends and children to enter his line of work. Mr. A is very eager to retire.

Career Mr. B basically enjoys his work, but does not expect to be in his current job five years from now. Instead, he plans to move on to a better, higher level job. He has several goals for his future pertaining to the positions he would eventually like to hold. Sometimes his work seems a waste of time, but he knows that he must do sufficiently well in his current position in order to move on. Mr. B cannot wait to get a promotion. For him, a promotion means recognition of his good work, and is a sign of his success in competition with his coworkers.

Calling Mr. C's work is one of the most important parts of his life. He is very pleased that he is in this line of work. Because what he does for a living is a vital part of who he is, it is one of the first things he tells people about himself. He tends to take his work home with him and on vacations, too. The majority of his friends are from his place of employment, and he belongs to several organizations and clubs relating to his work. Mr. C feels good about his work because he loves it, and because he thinks it makes the world a better place. He would encourage his friends and children to enter his line of work. Mr. C would be pretty upset if he were forced to stop working, and he is not particularly looking forward to retirement.

18 sentences true or false

I find my work rewarding. (REWARD)

I am eager to retire. (RETIRE)

My work makes the world a better place. (BETTERWORLD)

I am very conscious of what day of the work week it is and I greatly anticipate weekends. I say, "Thank God it's Friday!" (TGIF)

I tend to take my work with me on vacations. (VACATION)

I expect to be in a higher level job in five years. (HIGHERLEVEL)

I would choose my current work life again if I had the opportunity. (CHOOSEAGAIN)

I feel in control of my work life. (INCONTROL)

I enjoy talking about my work to others. (TALKWORK)

I view my job primarily as a stepping stone to other jobs. (STEPPINGSTONE)

My primary reason for working is financial—to support my family and lifestyle. (FINANCIAL)

I expect to be doing the same work in five years. (SAMEWORK)

If I was financially secure, I would continue with my current line of work even if I was no longer paid. (STILLWORK)

When I am not at work, I do not think much about my work. (THINKWORK)

I view my job as just a necessity of life, much like breathing or sleeping. (NECESSITY)

I never take work home with me. (TAKEHOME)

My work is one of the most important things in my life. (WORKIMPORTANT)

I would not encourage young people to pursue my kind of work. (NOTENCOURAGE)

New questions true or false

If you could, you would have two part-time jobs, one that you thought could improve the world and another that you could only see as a job. (WORLDWIDE)

If I had two part-time jobs, I would feel more financially secure, even in the event of being fired from one of those jobs. (SEGURODOISEMPREGOS)

If I had two part-time jobs with very different characteristics, I would feel more professionally fulfilled. (PARTIALLY PROFESSIONAL)

If I had two part-time jobs, with very different characteristics, I would feel freer. (PARTIALLIVRE)

If I had two part-time jobs with very different characteristics, I would feel more psychologically healthy. (PARCIALSAUDAVEL)

If I had two part-time jobs, I would feel more overwhelmed. (PARTIALSOBRECARRAGADO)

If I had two part-time jobs, I'd be worried that I'd spend a lot of time travelling between jobs. (TRAVELING)

If you had two part-time jobs, it would be beneficial to improve financially. (FINANCIALLY PARTIAL)

If I had two part-time jobs with very different characteristics, this could be detrimental to my personal life. (PARTIALPREJUDICIAL)

If I had two part-time jobs with very different characteristics, this could be beneficial to my personal life. (PARTIALBENEFICO)

Closed questions: age, number of jobs you have ever had in your life, type of jobs you have ever experienced (full-time, part-time, student-worker), current job situation (unemployed, worker, student worker, (Primary education, incomplete secondary education, complete secondary education, higher education attendance, completed tertiary education)).

Open Question: Anything you want to say about the possibility of working, by choice, in more than a part-time job.

Annex B.

Questions for the interview

1. Do you consider yourself happier and professionally successful because you have more than one professional career?
2. Do you consider to have the control over your life at the work place?
3. Do you considered work as a way to provide means to guarantee your life and your's style of life?
4. Do you think you have a diversified professional life? If yes, do you feel that makes easier your professional success?
5. Do you consider total specialization essential to your professional success?
6. When you think about the possibility to have more then one task in part-time what do you think? Do you believe in a trade-off between good diversified professional results and personal and financial well-being?

REFERENCES

- Ashkanasy, N., & Jackson, C. (2001). Organizational culture and climate. In N. Anderson, D. Ones, H. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial work and organizational psychology: (Vol. 2. pp. 398-415).*
- Bakker, A., Dollard, M., & Demerouti, E. (2008). How job demands affect partners' experience of exhaustion: Integrating work-family conflict and crossover theory. *Journal of Applied Psychology, 93*(4), 901-911.
- Barringer, B., Jones, F., & Neubaum, D. (2005). A quantitative content analysis of the characteristics of rapid-growth firms and their founders. *Journal of Business Venturing, 20*(5), 663-687.
- Baruch, Y., & Peiperl, M. (2000). Career management practices: An empirical survey and theoretical implications. *Human Resource Management, 39*, 347-366.
- Baum, J., & Locke, E. (2004). The relationship of entrepreneurial traits, skill, and motivation to new venture growth. *Journal of Applied Psychology, 89*(4), 587-598.
- Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.
- Beard, J., Woodman, R., & Moesel, D. (1998). Using behavioural modification to change attendance patterns in the high-performance, high-commitment environment. *Research in Organizational Change and Development, 11*, 183-224.
- Beehr, T., & McGrath, J. (1992). Social support, occupational stress and anxiety. *Anxiety, Stress and Coping, 5*, 7-20.
- Bell, A., der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2012). Job stress, wellbeing, work-life balance and work-life conflict among Australian academics. *Electronic Journal of Applied Psychology, 8*(1), 25-37.
- Bickford, M. (2005). Stress in the workplace: A general overview of the causes, the effects, and the solutions. *Canadian Mental Health Association 1-44.*
- Biggio, G., et al., (2013). Well-being in the workplace through interaction between individual characteristics and organizational context. *International Journal of Qualitative Studies in Health Well-being 1-13.*
- Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review, 13*(3), 442-453.
- Boh, W. F., Slaughter, S. A., & Espinosa, J. A. (2007). Learning from experience in software development: A multilevel analysis. *Management Science, 53*(8), 1315-1331.
- Bunce, D., & West, M. A. (1996). Stress management and innovation interventions at work. *Human Relations, 49*(2), 209-232.
- Cable, D. M., Gino, F., & Staats, B. (2013). Breaking them in or revealing their best? Reframing socialization around newcomer self-expression. *Administrative Science Quarterly, 58*(1), 1-36.
- Carvalho, L. F. (2008). Four essays on John Ruskin's economic writings. *Tese de doutoramento em Economia, especialização em Economia Social, Departamento de Economia Política.* Lisbon: ISCTE Instituto Universitário de Lisboa.
- Casey, C. (1999). "Come, join our family": Discipline and integration in corporate organizational culture. *Human Relations, 52*(2), 155-178.
- Chang, C., Khamkaew, T., McAleer, M., & Tansuchat, R. (2010). A panel threshold model of tourism specialization and economic development. *International Journal of Intelligent Technologies and Applied Statistics, 3*(2), 159-186.
- Charness, N., & Copland, S. (1992). The learning perspective: Adulthood. *Intellectual Development.* Cambridge University Press 301-327.
- Coates, J. (2002). Four perspectives on the future of work. *Employment Relations Today, 29*(1), 1-15.
- Cohen, A. (2000). The relationship between commitment forms and work outcomes: A comparison of three models. *Human Relations, 53*(3), 387-417.

- Conway, N. (2002b). Full-time versus part-time employees: Understanding the links between work status, the psychological contract, and attitudes. *Journal of Vocational Behaviour*, 61, 279–301.
- Conway, N. (2004). More hyperbole than metaphor: A critique of the psychological contract. *British Psychological Society Occupational Psychology Conference* (pp. 65–68). Stratford.
- Conway, N., & Briner, R. B. (2002). A daily diary study of affective responses to psychological contract breach and exceeded promises. *Journal of Organizational Behaviour*, 23, 287–302.
- Cooper, C., & Payne, R. (1992). International perspectives on research into work, well-being, and stress management. In J.C. Quick, L.R. Murphy, & J.J. Hurrell (Eds.), *Stress and well-being at work* (pp. 348–368). Washington: American Psychological Association.
- Cooper, C., Dewe, P., & O'Driscoll, M. (2001). *Organizational stress: A review and critique of theory, research and applications*. A Sage Publications Series.
- Cordery, J. (1989). Multi-Skilling: A discussion of proposed benefits of new approaches to labour flexibility within organisations'. *Personnel Review*, 18(3), 13–22.
- Coyle-Shapiro, J. A.-M., & Parzefall, M. (2008). Psychological contracts. In Cary L. Cooper, & Julian Barling (Eds.), *The SAGE handbook of organizational behavior* (pp. 17–34). London, UK: SAGE Publications.
- Craig, R. (2008). Communication in the conversation of disciplines. *Russian Journal of Communication*, 1(1), 7–23.
- Cromie, S. (2000). Assessing entrepreneurial inclinations: Some approaches empirical evidence. *European Journal of Work and Organizational Psychology*, 9(1), 7–30.
- Cunningham, J., & MacGregor, J. (2000). Trust and the design of work: Complementary constructs in satisfaction and performance. *Human Relations*, 53(12), 1575–1591.
- Daniels, K. (2006). Rethinking job characteristics in work stress management. *Employment Relations Today*, 59(3), 263–290.
- Davenport, T. (2000). Workers as assets: A good start but . . . *Employment Relations Today*, 27(1), 1–18.
- Deakins, D. (1996). *Entrepreneurship and small firms*. Berkshire: McGraw-Hill Publishing Company.
- Di Maio, M., & Valente, M. (2006). *Working paper: Uncertainty, optimal specialization and growth*. ECONSTOR1-23.
- Diamond, M., Allcorn, S., & Stein, H. (2004). The surface of organizational boundaries: A view from psychoanalytic object relations theory. *Human Relations*, 57(1), 31–53.
- Drucker, P. (1985). *Innovation and entrepreneurship*. New York: Harper and Row.
- Eastaugh, S. (2001). Hospital costs and specialization: Benefits of trimming product lines. *Journal of Health Care Finance*, 28(1), 61–71.
- EU (2017a). *Tertiary education statistics*. . http://ec.europa.eu/eurostat/statistics-explained/index.php/Tertiary_education_statistics.
- EU (2017b). *Employment rates of recent graduates*. . http://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_rates_of_recent_graduates.
- Farrell, G., Bobrowski, C., & Bobrowski, P. (2006). Scoping workplace aggression in nursing: Findings from an Australian study. *Journal of Advanced Nursing*, 55(6), 778–787.
- Findorff, M. J., McGovern, P. M., Wall, M., & Gerberich, S. (2005). Reporting violence to a healthcare employer: A cross sectional study. *AAOHN Journal*, 53(9), 399–406.
- Flannery, R. B. (1996). Violence in the workplace, 1970–1995: A review of the literature. *Aggression and Violent Behavior*, 1(1), 57–68.
- Frese, M., & Zapf, D. (1999). On the importance of the objective environment in stress and attribution theory. *Journal of Organizational Behaviour*, 20, 761–765.
- Gaglio, C., & Katz, J. (2001). The psychological basis of opportunity identification: Entrepreneurial alertness. *Small Business Economics*, 16, 95–111.
- Galenson, D. (2004a). *A portrait of the artist as a very young or very old innovator: Creativity at the extremes*. Cambridge, MA: National Bureau of Economic Research1–85.
- Galenson, D. (2004b). *A portrait of the artist as a very young or very old innovator: Measuring the careers of modern novelists*. Cambridge, MA: National Bureau of Economic Research1–85.
- Galenson, D. (2004c). *A portrait of the artist as a very young or very old innovator: Creativity at the extremes of the life cycle*. Cambridge.
- Galloway, S. (2012). Recreation specialization among New Zealand river recreation users: A multiactivity study of motivation and site preference. *Leisure Sciences*, 34, 256–271.
- Golden, T. (2007). Co-workers who telework and the impact on those in the office: Understanding the implications of virtual work for co-worker satisfaction and turnover intentions. *Human Relations*, 60(11), 1641–1667.
- Goodman, B., Krockenberger, A., & Schwarzkopf, L. (2007). Master of them all: Performance specialization does not result in trade-offs in tropical lizards. *Evolutionary Ecology Research*, 9(3), 527–546.
- Guest, D. E., & Conway, N. (2002). Communicating the psychological contract: An employer perspective. *Human Resource Management Journal*, 12(2), 22–39.
- Hardy, G., & Barkham, M. (1994). The relationship between interpersonal attachment styles and work difficulties. *Human Relations*, 47(3), 263–281.
- Harpaz, I., & Fu, X. (2002). The structure of the meaning of work: A relative stability amidst change. *Human Relations*, 55(6), 639–667.
- Harrison, D., Laplante, N., & St-Cyr, L. (2001). Cooperation and resistance in work innovation networks. *Human Relations*, 54(2), 215–255.
- Herriot, P., & Pemberton, C. (1997). Contracting careers. *Human Relations*, 49(6), 759–790.
- Holland, J. L. (1959b). A theory of vocational choice. *Journal of Counseling Psychology*, 6, 35–45.
- Holland, J. L., Gottfredson, D. C., & Power, P. G. (1980). Some diagnostic scales and signs for the selection of vocational treatments. *Journal of Personality and Social Psychology*, 39, 1191–1200.
- Huckman, R., & Ton, Z. (2008). Managing the impact of employee turnover on performance: The role of process conformance. *Organizational Science*, 19, 56–68.
- Hughes, D., & Dodge, M. (1997). African American women in the workplace: Relationships between job conditions, racial bias at work, and perceived job quality. *American Journal of Community Psychology*, 25(5), 581–599.
- Institute for Workplace Innovation (2010). *The innovative workplace: A white paper on developing an innovative workplace*. Lexington: University of Kentucky.
- Instituto Nacional de Estatística – INE (2013). *INE Estatísticas do Emprego: 3º Trimestre de 2013*. Lisboa.
- International Labour Organization (ILO) (2016). *Workplace stress: A collective challenge*. Italy: ILO1–57.
- Jaffee, C. (2001). Building the skill sets for the new economy. *Employment Relations Today*, 27(4), 9–22.

- Kahanec, M. (2007). *Ethnic competition and specialization*. ECONSTOR1-34.
- Kahn, W. (1992). To be fully there: Psychological presence at work. *Human Relations*, 45(4), 321-349.
- Kahn, W. (1995). Organizational change and the provision of a secure base: Lessons from the field. *Human Relations*, 48(5), 489-514.
- Kalemlı-Ozcan, S., Sorensen, B., & Yosha, O. (2003). Risk sharing and industrial specialization: Regional and international evidence. *The American Economic Review*, 93(3), 903-918.
- Kokko, K., Pulkkinen, L., & Puustinen, M. (2000). Selection into long-term unemployment and its psychological consequences. *International Journal of Behavioral Development*, 24(3), 310-320.
- Krieger-Boden, C. (2000). *Globalization, integration and regional specialization*. ECONSTOR1-43.
- Kuhnert, K. (2001). The latent and manifest consequences of work. *The Journal of Psychology*, 123(5), 417-427.
- Lundstrom, T., Pugliese, G., Bartley, J., Cox, J., & Gutter, C. (2002). Organizational and environmental factors that affect worker health and safety and patient outcomes. *AJIC*, 30(2), 93-106.
- Macarov, D. (2000). Families and work: Some future probabilities. *Employment Relations Today*, 26(4), 17-33.
- Mackie, K. S., Holahan, C. K., & Gottlieb, N. (2001). Employee involvement management practices, work stress, and . . . *Human Relations*, 54(8), 1065-1092.
- Martin, P. (2002). Sensations, bodies, and the 'spirit of a place': Aesthetics in residential organizations for the elderly. *Human Relations*, 55(7), 861-885.
- Martinsons, M. G., & Chong, P. K. (1999). The influence of human factors and specialist involvement on information systems success. *Human Relations*, 52(1), 123-152.
- McLaren, J. (2016). *Globalization and labor market dynamics*. University of Virginia1-33.
- McLeod, C., O'Donohoe, S., & Townley, B. (2009). The elephant in the room? Class and creative careers in British advertising agencies. *Human Relations*, 62(7), 1011-1039.
- Mill, S. (1848). In W.J. Ashley (Ed.), *Principles of political economy with some of their applications to social philosophy* London.
- Moeran, B. (2009). The organization of creativity in Japanese advertisement production. *Human Relations*, 62(7), 963-985.
- Moorhead, R. (2010). Lawyer specialization—Managing the professional paradox. *Law & Policy*, 32(2), 226-259.
- Munch, J., & Skaksen, J. (2009). Specialization, outsourcing and wages. *Review of World Economics*, 145, 57-73.
- Murphy, S. M., Wayne, S. J., Liden, R. C., & Erdogan, B. (2003). Understanding social loafing: The role of justice perceptions and exchange relationships. *Human Relations*, 56(1), 61-84.
- Narayanan, L., Menon, S., & Spector, P. E. (1999). Stress in the workplace: A comparison of gender and occupation. *Journal of Organizational Behaviour*, 20, 63-74.
- Nicholson, N. (1997). Evolutionary psychology: Toward a new view of human nature and organizational society. *Human Relations*, 50(9), 1053-1078.
- Nienhuys-Cheng, S., & Wolf, R. (1996). *The specialization problem and the completeness of unfolding*. Department of Computer Science, H4-19Erasmus University of Rotterdam1-26.
- Niepcz, W., & Molleman, E. (1998). Work design issues in lean production from a sociotechnical systems . . . *Human Relations*, 51(3), 259-287.
- Ohl, C., Lyul, S., & Hammitt, W. (2012). Predictive linkages between recreation specialization and place attachment. *Journal of Leisure Research*, 44(1), 70-87.
- Palma, P., & Cunha, M. (2006). New challenges in entrepreneurship: Introduction to the special issue. *Comportamento Organizacional e Gestão*, 12(1), 3-7.
- Palma, P., & Lopes, M. (2012). *Paixão e talento no trabalho*. Lisbon: Sílabo.
- Palma, P. J. (2008). *Todos Diferentes ou Todos Iguais? O Desenvolvimento da Identidade nas Organizações Empreendedoras de Baixo e de Elevado Crescimento*. Tese de Doutoramento realizada na Universidade Nova de Lisboa Tese não publicada.
- Perlovsky, L. (2005). In Craig Thompson, & Henry Hexmoor (Eds.), *Final speech of Mr. Leonid Perlovsky at 2005 international conference on integration of knowledge intensive multi-agent systems*18-21 April 2005, Waltham.
- Paulos, M., & Moniz, B. (2013). *Os trabalhadores do conhecimento num setor tradicional: o caso dos designers do vestuário*, *Sociologia, Problemas e Práticas*, 72, Lisboa: Mundos Sociais/CIES-IUL103-122.
- Picci, L., & Savorelli, L. (2013). The technological specialization of countries: An analysis of patent data. *School of Economics & Finance Discussion Paper*. no. 1301, University of St Andrews.
- Phillips, K. (2012). Specialization and market development as engines of growth. *Journal of Economic Studies*, 39(5), 590-603.
- Pierce, J. V. (1961). Personality and achievement among able high school boys. *Journal of Individual Psychology*, 13, 102-107.
- Pierce, S. J. (1991). Subject areas, disciplines, and the concept of authority. *Library and Information Science Research*, 13, 21-35.
- Quental, T., Manus, M., Paten, M., & Pierce, N. (2007). Host plant specialization driven by sexual selection. *American Naturalist*, 169(6), 830-836.
- Ramos, V. (2013). *Formar para a emigração? Intersecções entre desemprego e qualificação no Portugal em crise*. *Plataforma Barómetro Social*. Porto: Instituto de Sociologia.
- Rebelo, G. (2003). *Emprego e contratação laboral em Portugal: uma análise sócio-económica e jurídica*. Lisboa: HR Editora.
- Richter, W., & Rosenmüller, J. (2010). *Efficient specialization in Ricardian production*. ECONSTOR1-16.
- Roberts, M. (2006). Essential tension: Specialization with broad and general training in psychology. *American Psychologist* 862-870.
- Robinson, S. L., & Morrison, E. W. (2000). The development of psychological contract breach and violation: A longitudinal study. *Journal of Organizational Behavior*, 21, 525-546.
- Rousseau, D. M. (1989). Psychological and implied contracts in organizations. *Employee Responsibilities and Rights Journal*, 2, 121-139.
- Rousseau, D. M. (1990). New hire perceptions of their own and their employer's obligations: A study of psychological contracts. *Journal of Organizational Behavior*, 11, 389-400.
- Rousseau, D. M., & McLean Parks, J. (1993). The contracts of individuals and organizations. In L.L. Cummings, & B.M. Staw (Eds.), *Research in Organizational Behavior* (pp. 1-43). Greenwich: JAI Press.
- Rousseau, D. M. (1995). *Psychological contracts in organizations: Understanding written and unwritten agreements*. Thousand Oaks: Sage.
- Rousseau, D. M. (2011). Schema, promise and mutuality: The building blocks of the psychological contracts. *Journal of Occupational and Organizational Psychology*, 74, 511-541.
- Schumpeter, J. (1961). *The theory of economic development: An inquiry into capital, credit, interest and the business cycle*. New York: Oxford University Press.

- Scott, D. (2012). Serious leisure and recreation specialization: An uneasy marriage. *Leisure Sciences*, 34, 366–371.
- Seiger, C., & Wiese, B. (2009). Social support from work and family domains as an antecedent or moderator of work-family conflicts? *Journal of Vocational Behaviour*, 75, 26–37.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226.
- Silva, E. (2013). *Sparse matrix-vector multiplication by specialization*. Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Science. Urbana, IL: Graduate College of the University of Illinois at Urbana-Champaign.
- Smith, A. (1776). In E. Cannan (Ed.), *On the wealth of nations: Volume I* London.
- Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change* 282–292.
- Spector, P. (2002). Employee control and occupational stress. *Current Directions in Psychological Science*, 11(4), 133–136.
- Spector, P. E., Cooper, C. L., Sanchez, J. I., O'Driscoll, M., Sparks, K., & Bernin, P., et al., (2002). Locus of control and well-being at work: How generalizable are western findings? *Academy of Management Journal*, 45(2), 453–466.
- Spector, P. E., & Chen, P. Y. (1992). Relationships of work stressors with aggression, withdrawal, theft and substance use: An exploratory study. *Journal of Occupational and Organizational Psychology*, 65, 177–184.
- Spector, P. E. (1975). Relationships of organizational frustration with reported behavioural reactions of employees. *Journal of Applied Psychology*, 60, 635–637.
- Spector, P. E., Miller, K., Greyling, M., Cooper, C., Lu, L., & Sparks, K. (2000). Occupational stress and gender: A cross-cultural study. *Stress Medicine*, 16, 271–278.
- Spender, J.-C., & Kessler, E. H. (1995). Managing the uncertainties of innovation: Extending Human Relations. *Human Relations*, 48(1), 35–56.
- Staats, B., & Gino, F. (2011). Specialization and variety in repetitive tasks: Evidence from a Japanese bank. *Harvard Business School* 1–32.
- Stebbins, R. (2012). Comment on Scott: Recreation specialization and the CL-SL continuum. *Leisure Sciences*, 34, 372–374.
- Storey, J., Salaman, G., & Platman, K. (2005). Living with enterprise in an enterprise economy: Freelance and contract workers in the media. *Human Relations*, 58(8), 1033–1054.
- Tausig, M., & Fenwick, R. (2001). Unbinding time: Alternate work schedules and work-life balance. *Journal of Family and Economic Issues*, 22(2), 101–119.
- Taylor, F. (1911). *The principles of scientific management*. New York: Harper & Row.
- Teece, D. (2000). Strategies for managing knowledge assets: The role of firm structure and industrial context. *Long Range Planning*, 33, 35–54.
- Thau, S., Crossley, C., Bennett, R., & Sczesny, S. (2007). The relationship between trust, attachment, and antisocial work behaviors. *Human Relations*, 60(8), 1155–1179.
- Tulgan, B. (2004). Trends point to a dramatic generational shift in the future workforce. *Employment Relations Today*, 30(4), 23–31.
- Turnley, W. H., & Feldman, D. C. (1999). The impact of psychological contract violations on exit, voice, loyalty and neglect. *Human Relations*, 52, 895–922.
- Vickers, M. (2003). Cyberhumanity: The blurring boundaries between people and technology. *Employment Relations Today*, 30(2), 1–13.
- Waddell, G., & Burton, A. (2006). Executive summary. *Is work good for your health and well-being?*. London: TSOvii-ix London.
- Wayne, S., & Green, S. (1993). The effects of leader-member exchange on employee citizenship and impression management behavior. *Human Relations*, 46(12), 1431–1440.
- Wiersma, E. (2007). Conditions that shape the learning curve: Factors that increase the ability and opportunity to learn. *Management Science*, 53(12), 1903–1915.
- Wrzesniewski, A., et al., (1997). Jobs, careers, and callings: People's relations to their work. *Journal of Research in Personality*, 31, 21–33.
- Yammarino, F. (1992). Superior-subordinate relationships: A multiple levels of analysis approach. *Human Relations*, 45(6), 575–600.
- Yelle, L. E. (1979). The learning curve: Historical review and comprehensive story. *Decision Sciences*, 10(2), 302–328.
- Yoon, J., Baker, M., & Ko, J.-W. (1994). Interpersonal attachment and organizational commitment: Subgroup hypothesis revisited. *Human Relations*, 47(3), 329–351.
- Zeytinoglu, I. U., & Lillevik, W. (2005). Introduction, overview of chapters on flexibility in workplaces and emerging research issues. In I.U. Zeytinoglu (Ed.), *Flexibility in workplaces: Effects on workers, work environment and the unions* (pp. 1–6). Geneva, Chapter 1.
- Zhang, L. (2013). *Industrial specialization: Determinants, processes and consequences*. A thesis submitted for the degree of Doctor of Philosophy. Utrecht: Utrecht University.