Academic Paper

Workplace mentoring: Investigating the influence of job characteristics on mentoring

Torbjørn Waaland ✉ (Department of Cultural Studies and Languages, University of Stavanger, Norway)

Abstract

No previous research has explored the relationship between three categories of job characteristics and mentoring provided. A cross-sectional design based on a survey questionnaire was sent to employees from 29 preschools in Norway. Exploratory factor analysis was used to assess the validity and reliability of measurement scales. Three research hypotheses were formulated and analysed using stepwise regression analysis. The results revealed that cognitive tasks, interaction outside the organisation and feedback from others have a significant influence on mentoring provided, indicating that these job characteristics could promote the role of providing mentoring to others in the workplace.

Introduction

In two survey studies by Waaland (2013, 2014) the respondents described their role mentoring colleagues as an interaction with colleagues based on a formalised responsibility of mentoring them in the job and thereby describing the job as a workplace learning arena. Both studies emphasised the role of providing mentoring as a function of cognitive tasks characterised by information processing and problem-solving. Apart from these studies, there is no study investigating the influence of job characteristics on the mentoring provided. When Walker, Kelly, and Hume (2002) argue for the research into how organisational characteristics, hierarchical structures, and task design influence the mentoring role, they point to an indisputable need for increased research into job characteristics and mentoring. Therefore, the purpose of this study is to investigate a broader set of job characteristics to reveal which have the largest influence on the occurrence of mentoring provided.

The context of this study is Norwegian preschools. In 2017, Norway adopted the current framework plan for preschools (NOU, 2017). This document emphasizes that early childhood is an important part of lifelong learning and aims to secure the quality and control of the resources invested in early childhood education. Consequently, the preschools provide children aged one to five years opportunities for development and activities. The core is to create a good and safe childhood through education, mentoring and care. Although the framework is relatively broad, it nevertheless provides relatively detailed descriptions of goals, content, and methods for educational work related to early childhood learning. The study of Lohmander, Karlson, Vandenbroeck, Pirard, Peeters and Alvestad (2009) provides a more thorough description of the context in Norwegian preschools.

Work and mentoring relationships – a review of gaps in the research field

Educational and organisational changes in Norwegian preschools have resulted in new tasks and new ways of performing these tasks, for example, when educational leaders and their colleagues are confronted with job challenges that have no obvious answer. The research literature (Stokking, Leenders, De Jong & Van Tartwijk, 2003; Dicke, Elling, Schmeck & Leutner, 2015) suggest more realistic mentoring programmes to reduce the potential job-related practice shock experienced by teachers early in their career. The current study investigates the relationship between a broad set of job characteristics and mentoring provided. To the best of my knowledge, such an approach has never been followed in international mentoring research. However, there is international research on mentoring that argues for increased research on the relationship between work and mentoring.
In their theoretical study on new directions in mentoring research, McManus and Russel (1997) referred to the lack of research exploring the relationship between work and informal mentoring. For example, they argued that an individual can assist another employee who is behind on a project deadline without forming a long-term, developmental relationship with that person. In this way, they argued that the way work is organised can influence and even trigger employees to mentor each other, even if this involves an informally organised mentoring relationship.

Referring to structural changes, Ragins (1997) asked what kind of factors influence the initiation of diversified mentoring relationships. More precisely, Ragins (1997) focused on structural segregation and proposed that it increases the degree of diversity in mentoring relationships and the prevalence of diversified mentoring relationships. In accordance with this, Higgins and Kram (2001) identified the following areas as implications for mentoring: new employment contract, rapid pace of technology, changing organisational structures and forms and diverse organisational memberships. They also argued that structural changes, such as downsizing, delayering and the increased use of team-based organisations, may influence those who provide mentoring support and how mentoring is provided.

In two other relevant studies, Allen, Poteet, Russell and Dobbins (1997) showed how high workloads and time demands were inhibiting factors on a person's willingness to become a mentor, while Waters (2004) showed that high workloads are time-consuming and thereby have a negative influence on establishing a protégée–mentoring agreement. In a review of mentoring research, Haggard, Dougherty, Turban, and Wilbanks (2011) covered a research period of 30 years and drew the following conclusion: "In fact, in our review we did not identify any articles dealing with the issue of job/professional context and mentoring" (p. 295).

In a concluding statement, Haggard et al. (2011) gave the following recommendation for future research that is in line with the aim of this article: "We encourage researchers to consider how contextual factors, such as occupations and work settings, might constrain both the construct of mentoring and the experience of mentoring relationships for protégées and mentors" (p. 300). In line with this recommendation, Shanks, Robson, and Gray (2012) showed how a workplace-learning environment based on the roles of formalised mentors is important to support teachers' professional learning. A review study in 2015 concluded in a similar way, that is, no studies so far

have examined the consequences of multiplexity between work and non-work roles (Janssen, Van Vuuren & De Jong, 2015, p. 503). Spooner-Lane (2016, p. 271) suggested that future research needs to consider how the context of beginning teachers' mentoring programmes in primary schools will be addressed in the planning and delivery of such programmes. Finally, a review study on e-mentoring in higher education recommended that future research should investigate the relationship between organisational infrastructure and the implementation of e-mentoring programmes (Tinoco-Giraldo, Torrecilla Sanchez & Lowe, 2020, p. 21).

Theoretical framework

The argument that mentoring relationships can be influenced by job characteristics is based on two theoretical assumptions, an elaboration of Russel's (1988) principle of analogical reasoning. First, mentoring is considered a learning environment at work. Eddy, Tannenbaum, Lorenzet, and Smith-Jentsch (2005) explored mentoring as one method individuals might utilise to enhance continuous learning in a work-related learning environment. Second, learning is considered an outcome of job design in general and job characteristics in particular. A learning and development approach describes how the continuous redesign of work affects people's role taking (Parker & Wall, 1998, p. 35). Presumably, this could also influence the different roles in formalised mentoring relationships. The following presents a more in-depth analysis of these approaches.

Formalised mentoring as a learning environment at work

Most of the literature has focused mentoring relationships as a work-related learning environment beneficial for protégées (Elkin, 2006). Research on mentoring includes a way of promoting career advancement (Scandura, 1992), career development (Ostroff & Kozlowski, 1993), career satisfaction (Fagenson, 1989) and socializing protégées about attitudes and culture of the workplace (Ostroff & Kozlowski, 1993).

Mentoring relationships are also beneficial learning environments for mentors. Mentors learn when they make productive use of knowledge and expertise in middle age (Dalton, Thompson, & Price, 1977) and learn in new ways, especially when protégées keep the mentor up to date with relevant technology and systems (Feldman, Folks, & Turnley, 1999).

In organisations that emphasise formalised mentoring relationships, individuals are also involved in a variety of short-term, less formalised, and low-intensity interactions. Ellinger and Bostrom (1999) argue that individuals, due to changing work environments, must seek developmental support from colleagues or professional associations outside their organisations. Therefore, they assume roles like mentors and protégées interchangeably dependent upon the actual challenges of work. The ultimate purpose of mentoring relationships is to establish a learning environment for people to achieve their utmost potential. In their study of the professional development of principals, Lim (2002) characterised mentoring and relationships with fellow principals as learning relationships. In his own words: "The principals related to one another. They learned. And as they learned, they related" (Lim, 2002, p. 188). In this way Lim describes mentoring as a learning process that is a product of work, an approach that could support the idea of analysing the relationship between job characteristics and mentoring relationships.

In the second part of this theoretical background, I will argue for the use of job design and job characteristics theory to study mentoring relationships in general and the role of providing mentoring in particular.

A job design perspective on learning outcomes

Job-enlargement, as opposed to job-simplification, is a job-design tradition with a focus on knowledge-intensive forms of working (Parker & Wall, 1998, p. 88). In a changing workplace, the redesign of jobs can affect the role-taking of employees. Parker and Wall (1998) refer to this as a job-related learning and development process based on "occupational socialization" (p. 34). Based on this view, it can be assumed that job characteristics will influence the role-taking of employees who provide mentoring to others. Morgeson and Humphrey (2006) showed that knowledge requests at work increased the need for training, while Parker and Wall (1998) argue that the job design area needs to "consider learning and development as outcomes of job restructuring" (p. 34). This idea of organising jobs in ways that promote learning and development is therefore a natural argument for establishing formal mentoring relationships at work.

The dominant theoretical model in the job-enlargement tradition is the job characteristics theory (Hackman & Oldham, 1975, 1976). This theory considers learning and development as outcomes of job design (Parker, 2015). Morgeson and Humphrey (2006) divide job characteristics into three categories: task, knowledge and social job characteristics. Knowledge characteristics reflect the kinds of knowledge, skill, and ability demands that are placed on an individual as a function of what is done on the job. In addition to problem solving tasks, which will be addressed later in this article, Morgeson and Humphrey (2006) divide knowledge characteristics into skill variety, job complexity and specialisation. This approach indicates that jobs will be enriched in the sense that they are made more motivating and satisfying if high levels of these knowledge characteristics are present. Furthermore, it is expected that formalised mentoring relationships will contribute to this job enrichment.

This review shows the relevance of using job characteristics as a theoretical approach in the study of mentoring as a learning environment. Consequently, together with mentoring provided, these job categories will be included in this theoretical framework.

Mentoring provided

The formalization of mentoring at work suggests that a mentor is a senior, experienced organisational member, who specifically helps a younger professional to develop their individual, technical, interpersonal, and political skills (Irby, Abdelrahman, Lara-Alecio, & Allen, 2020). This definition underpins how a formalised mentoring relationship is a way of organising work in a job environment that combines productive work with learning. Therefore, this study also builds upon the view of Kutsyuruba, Walker, and Godden (2019) who argue that the role of providing mentoring to others is a job-function where mentoring is a formalised duty and performance. According to Waaland (2013), this role is also challenged by tasks that do not have a clear solution in which the mentor has to be creative and solve problems that are not familiar to the teaching profession.

This function of providing mentoring to a protégé is an opportunity to make productive use of knowledge and expertise in middle age (Tomlinson, 2019) and to learn in new ways (Wexler, 2019). Based on a formalised perspective of mentoring, Allen, Poteet and Burroughs (1997) asked experienced mentors why they chose to mentor others. They labelled one category "other-focused motives", which included the desire to help others, pass along information to others and the desire to build a competent workforce. Another category of motives, "self-focused motives", included the desire to increase personal learning and feel gratification. Such studies display the learning benefit that the provision of mentoring can have for organisations, but they also indicate the importance of motivating employees to assume formalised mentoring roles.

The workplace learning aspect of mentoring provided is closely related to career development. Formalised mentoring as a development aspect of work is supported by Eddy et al, (2005). They explored mentoring as one method individuals might utilise to enhance continuous workplace learning to develop individual careers. Furthermore, Tims and Akkermans (2019) argued that the

implications of job design on career development concern the design of systems for personal advancement. Employees in redesigned jobs can be so stimulated by the work that they seek additional responsibilities that are no longer readily available. This issue highlights the importance of allowing job design to continue to expand by encouraging employees to learn different skills or offering special assignments through short-term projects.

Mohrman, Cohen, and Mohrman (1995) argue that people need to reconceptualise their views of careers away from "hierarchical progression". This means that mentors can encourage career development based on sideways development, for instance, encourage employees to attend the role of project managers instead of educational or top manager in preschools. Therefore, a formalised and traditional view on mentoring assumes that the relationship is mainly beneficial for the mentor. Nevertheless, Elkin (2006) points to a less beneficial aspect and characterises formalised mentoring relationships as a "forced relationship". He argues that formal mentoring relationships are not as motivating as informal mentoring relationships potentially are. Furthermore, the study of Billett (2003) showed that mentors found it difficult to find time for their mentoring role and lacked support and acknowledgment from the management. Even though there are less beneficial aspects to being a mentor, one would nevertheless expect that those who provide mentoring to others would benefit from the experience, especially when they are confronted with challenging tasks that have no obvious or clear solutions.

Career stages and demographic characteristics

To determine the unique variance of job characteristics on mentoring provided, some controls were included in the analyses. Research has shown that career stages and demographic characteristics, such as job tenure (Salami 2008), career tenure (Sorcinelli, Yun & Baldi, 2016), educational degree (Rodriguez, Smith & Magill, 2020) and job position (Gul, Demir & Criswell, 2019) can influence perceptions of mentoring processes. Therefore, it is expected that these controls could be potential covariates in the analyses.

Task characteristics

Autonomy

Paulsrud and Wermke (2019) defined autonomy as the amount of freedom and independence an individual has in terms of carrying out his or her work assignment. Barnett (1995) argues that this autonomy is important for the ability of teachers to reflect on work-related problems that have to be solved. In this way, both mentors and protégées continually use their experiences as possible insights into future situations at work.

Man and Lam (2003) argue that increased autonomy has been associated with improved performance in workgroups. In preschools, there is an increased use of teamwork where individual differences in skills and education are used to stimulate individual job performance and thereby promoting job autonomy. The team will then be used as a mentoring relationship arena to tackle challenges that confront the individuals. Since mentoring is dependent upon the actual situations and challenges at work (Ellinger & Bostrøm, 1999), it is expected that job autonomy will stimulate mentoring relationships.

Task significance

Task significance reflects the degree to which a job has an impact on the lives of others, both inside and outside the organisation (Allan, Batz-Barbarich, Sterling & Tay, 2019). Although an original component of job characteristics theory, recent scholarly discussions have highlighted the increasing importance of task significance in today's society (Grant, 2008) due to employees being interested in impacting the lives of others through their work (Turban & Greening, 1997).

Job design researchers conceptualise task significance as an objective characteristic of the work itself, seeking to increase job performance by structurally redesigning tasks to enrich employees' perceptions of task significance (Parker, 2015). Social information processing researchers conceptualise task significance as a subjective judgment that is socially constructed in interpersonal interactions, seeking to increase job performance by providing social cues to reframe employees' perceptions of task significance (Anderson & Stritch, 2016). Although these two theoretical perspectives emphasise different antecedents of task significance, they share the premise that once perceptions of task significance are cultivated, employees are more likely to involve themselves in interactions with others such as mentoring relationships. Based on the previous rationale, the following hypothesis (H1) was formulated.

H1. The variability of autonomy and task significance will increase the occurrence of mentoring provided when controlled for by demographic and career variables.

Social characteristics

Interaction outside the organisation

Interaction outside the organisation reflects the extent to which the job requires employees to interact and communicate with individuals external to the organisation (Morgeson & Humphrey, 2006). In preschools, this interaction could take place with parents, local politicians, or any other external entity. It has similarities with the "serves the public" dimension identified by Van Witteloostuijn, Esteve and Boyne (2018). However, the interaction outside the organisation construct goes beyond simply interacting with and serving stakeholders such as parents.

Whereas the other social characteristics primarily focus on information exchange and interaction within an organisation, interaction outside the organisation represents communication between an organisational member and a non-organisational member. As such, this work characteristic involves the broader social environment. For example, educational leaders in preschools often have a high level of interaction with primary school teachers outside the organisation because they have a common interest in children's learning and development.

In contrast to the other social characteristics, less is known about the impact of interaction outside the organisation on employee involvement in providing mentoring to others. Still, such interaction may involve knowledge sharing that is useful for mentoring roles.

Feedback from others

Feedback from others reflects the degree to which others in the organisation provide information about performance (Morgeson & Humphrey, 2006). In particular, co-workers and supervisors are two potentially important sources of feedback. Feedback from others is different from feedback from the job, as it focuses more broadly on the interpersonal component of feedback rather than the performance information derived directly from the work itself. Perry, Hutchinson, and Thauberger (2013) argue that new teachers adopt a teaching role based on guidance, feedback, and social reinforcement during practice. On these occasions, student teachers and mentors collaboratively plan for, reflect on activities in their classrooms, and receive feedback from colleagues about their practices. This interplay is in accordance with research showing a positive relationship between social support and mentoring relationships (Salami, 2008). On this background, the following hypothesis was formulated.

H2. The variability of interaction outside the organisation and feedback from others will increase the occurrence of mentoring provided when controlled for by task characteristics, demographic variables, and career variables.

Knowledge characteristic

Cognitive tasks

Cognitive tasks are knowledge characteristics that, as opposed to manual or routine tasks, are difficult to automate (Nembhard & Uzumeri, 2000). The educational staff in pre-schools are confronted with complex needs among children. Therefore, such jobs require higher levels of active information processing to solve problems. The combination of information processing and problem-solving is a central aspect of cognitive tasks (Morgeson & Humphrey; 2006).

Information processing at work reflects the degree to which a job requires attending to and processing data or other information. Wall, Jackson, and Mullarkey (1995) have suggested that jobs differ in their level of monitoring and processing of information, some jobs require higher levels of monitoring and active information processing than others. Higher levels of information processing are expected to change the requirements for jobs, as employees require high levels of knowledge in high information-processing jobs to complete their work (Morgeson & Humphrey, 2006).

According to Jackson, Wall, Martin and Davids (1993), problem solving involves generating unique or innovative ideas or solutions, diagnosing and solving non-routine problems, and preventing or recovering from errors. The mentoring process of school leaders was the focus involving the work of Peters (2010). The author found that the mentoring process could be described as the mentor fulfilling a model for problem-solving. After interviewing mentors and new teachers, Gardiner (2017) found that a formal mentoring program helped protégées solve problems in the classroom that does not have an obvious solution. One would, therefore, expect an increased need for mentoring when employees are confronted with complicated tasks that challenge their cognitive abilities. With this focus on cognitive tasks, it is interesting to note that Hou, Sung, and Chang (2009) argue for increased use of knowledge-sharing as a problem-solving strategy at work. Even though they do not relate their study to mentoring, they argue that the sharing of teacher-related knowledge may help teachers solve a variety of problems that they face. By taking advantage of a unified framework of information-processing and problem-solving psychology, this shows how job performance is dependent upon the acquisition of complex skills. Therefore, it was expected that cognitive tasks could influence the occurrence of mentoring provided.

H3. The variability of cognitive tasks will increase the occurrence of mentoring provided when controlled for by task characteristics, social characteristics, demographic variables, and career variables.

Method

Sample and procedures

This study used a cross-sectional research design with a pilot study and survey questionnaires as the main procedure to gather data.

An information meeting was held, which was attended by one educational leader from each of the 29 preschools. The purpose of the meeting was to inform the teachers about the main aims of the study with a recommendation that the questionnaires be filled out by the employees individually. First, the questionnaire was tested in cooperation with three preschool institutions that did not participate in the main study. The purpose of the pilot testing was to ensure that the items, especially the translation into Norwegian of the international validated items, were unbiased and meaningful to the respondents. Second, the questionnaires were brought to the educational management of the 29 preschools and then distributed to all the employees.

The unit of analysis for the main survey was 435 employees from 29 preschools. They all received a questionnaire, and 284 usable questionnaires were returned, yielding a 65.3% response rate. The survey questionnaires were answered by participants based on their consent voluntarily, thereby comprising a convenience sampling approach supported by Teddlie and Yu (2007). Nine of the respondents did not answer any of the control variables and were therefore excluded from the analysis. Furthermore, listwise deletion of missing values showed that from a total of 284 responses 24 missed one or more of the demographic variables, while 14 missed one or more of the theoretical variables in the study. To examine whether the missing data were distributed with certain biases, I tested the mean differences between those who missed a particular item and those who answered the item with respect to a selected item in the same scale. The results showed that those who missed a certain item did not have significant mean differences from those who did not miss an item, indicating that the missing data were randomly distributed. The average job tenure of the respondents was 6.2 years (SD=5.71), while the average career tenure was 10.41 years (SD=10.13). Professionals educated as pre-school teachers constitute 39.1% (n=108) of the respondents.

Ethical consideration

The presented research was conducted in accordance with the Code of Ethics of the Norwegian Centre for Data Research (NSD, n.d.). The permission necessary to conduct the study was obtained in accordance with the policy of each preschool. Participants received written and oral information on voluntary participation, data protection and confidentiality. All the participants were informed that they could contact the researchers if they had any further questions.

Measures

The items that were used to measure the dependent and independent variables were all assessed by using a five-point Likert scale (See Table 1). Responses were given on a five-point scale ranging from "Disagree strongly" (1) to "Agree strongly" (5). Measures that were originally developed in English were translated into Norwegian and then checked by a bilingual English language researcher.

Dependent variable

Mentoring provided

The following four items were originally developed by Waaland (2013) and employed to assess the degree to which employees share their knowledge and take responsibility for the learning of others. The items are: "I tell my colleagues what they should learn at work", "It is a part of my job to mentor my colleagues", "Mentoring my colleagues is a natural way for me to work", and "Learning at work makes me a better mentor for my colleagues". Cronbach's alpha of the four-item scale was .88.

Independent variables

Morgeson and Humphrey (2006) have validated all the independent variables used to measure job characteristics.

Autonomy

Decision-making autonomy is described through items such as "The job gives me a chance to use my personal initiative or judgment in carrying out the work", while work methods autonomy consists of items such as "The job allows me to make decisions about what methods I use to complete my work". Cronbach's alpha for the whole sample was .89.

Task significance

Three items were used to measure this variable. These items are illustrated with statements such as: "The results of my work are likely to significantly affect the lives of other people". Cronbach's alpha for the whole sample was .72.

Interaction outside the organisation

Three items were used to measure interaction outside the organisation. Two items measured work scheduling interaction with people outside the organisation: "The job involves interaction with people who are not members of my organisation" and "The job requires spending a great deal of time with people outside my organisation". The aspect of communication was measured by one item: "On the job, I frequently communicate with people who do not work for the same organisation as I do". Cronbach's alpha of the three-item scale was .85.

Feedback from others

Three items were used to measure feedback from others. These items are illustrated with statements such as: "I receive a great deal of information from my manager and co-workers about my job performance". An additional item was added to describe feedback from people outside the organisation: "I receive feedback on my performance from people outside my organisation". Cronbach's alpha for the whole sample was .80.

Cognitive tasks

Six items measured cognitive tasks at work. These items are a mixture of information processing items such as: "The job requires me to monitor a great deal of information" and problem-solving items such as: "The job involves solving problems that have no obvious answers". Cronbach's alpha for the whole sample was .88.

Control variables

Career stages and career tenure were reported as the elapsed number of years since employment and graduation, while educational degree was dummy coded (not educated as a pre-school teacher, 0; educated as a pre-school teacher, 1). Positions representing non-leading roles were recoded to zero (0), while positions representing educational leading roles were recoded to one (1).

Data analysis

The Statistical Package for Social Science (SPSS) version 18.0 was used to analyae the data (SPSS, 2009). Initially, exploratory factor analysis (EFA) was used to assess the validity and reliability of measurement scales (Mohajan. 2017). This was followed by other tests, namely the Kaiser-Mayer-Olkin Test (KMO), Bartlett's Test of Sphericity, eigenvalue, variance explained and Cronbach Alpha (α). Secondly, Pearson Correlation (r) analysis and descriptive statistics were conducted to analyse the constructs based on the data set (Tabachnick & Fiedell, 2019). Finally, stepwise regression analysis was used to assess the magnitude and direction of the independent variables on the dependent variable.

Factor analysis

A principal component analysis with orthogonal (varimax) rotation was performed to identify the constructs based on the observed items. This analysis produced six components with eigenvalues greater than 1.00 and total variance for all constructs of 69.75% (Table 1). Eigenvalues greater than 1.00 are considered to be large enough to be retained in subsequent analysis (Tabachnick &

Fiedell, 2019). The results from Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) statistic suggest that the number of items (N=26) is appropriate to yield common factors.

Table 1: Factor loadings of items representing autonomy (AUT), task significance (TSIGN), interaction outside (INTOUT), feedback from others (FBACK), cognitive tasks (COGN) and mentoring provided (MPROV)

	AUT α = .89	TSIGN α = .72	INTOUT α = .85	FBACK α = .80	COGN α = .88	MPROV α = .88.
The job gives me a chance to use my personal initiative or judgment in carrying out the work	**.65**	.19	.02	.11	.28	.13
The job allows me to make a lot of decisions on my own	**.73**	.18	.11	.15	.21	.16
The job provides me with significant autonomy in making decisions	**.79**	.02	.16	.08	.10	.17
The job allows me to make decisions about what methods I use to complete my work	**.81**	.05	.08	.10	.10	.14
The job gives me considerable opportunity for independence and freedom in how I do the work	**.80**	.12	.11	.16	.06	.05
The job allows me to decide on my own how to go about doing my work.	**.81**	.09	.04	.07	.08	.02
The results of my work are likely to significantly affect the lives of other people	.23	**.76**	.05	.04	.14	.06
The job itself is very significant and important in the broader scheme of things	.10	**.78**	.03	.12	.24	.12
The work performed on the job has a significant impact on people outside the organisation	.12	**.73**	.19	.11	.20	.05
The job requires spending a great deal of time with people outside my organisation	.04	.02	**.76**	.05	.09	.25
The job involves interaction with people who are not members of my organization	.16	.15	**.83**	-.05	.12	.23
On the job, I frequently communicate with people who do not work for the same organisation as I do	.22	.13	**.86**	.02	.13	.16
I receive a great deal of information from my manager and coworkers about my job performance	.16	.04	-.01	**.89**	.01	-.08
Other people in the organisation, such as managers and coworkers, provide information about the effectiveness (e.g., quality and quantity) of my job performance	.14	-.03	.00	**.89**	.01	-.01
I receive feedback on my performance from other people in my organisation (such as my manager or coworkers).	.10	.14	-.02	**.75**	.15	.15
I receive feedback on my performance from people outside my organisation.	.18	.23	.11	**.55**	.06	.27
The job requires me to monitor a great deal of information.	.00	.12	.12	.05	**.80**	.19
The job requires that I engage in a large amount of thinking.	.18	.14	.17	.12	**.79**	.18
The job requires me to keep track of more than one thing at a time.	.15	.19	.04	.01	**.81**	.14
The job requires me to analyse a lot of information.	.16	-.02	.32	.12	**.74**	.17
The job involves solving problems that have no obvious correct answer.	.12	.17	.05	-.07	**.78**	.17
The job requires me to be creative.	.28	.21	-.21	.12	**.59**	.06
I tell my colleagues what they should learn in relation to work.	.13	.03	.16	.08	.07	**.73**
I mentor my colleagues when they need training related to work.	.06	.14	.16	.05	.27	**.81**
It is a part of my job to mentor my colleagues.	.16	.10	.21	.07	.29	**.80**
Mentoring my colleagues is a natural way for me to work.	.21	.03	.20	.04	.22	**.82**
Eigenvalues	8.31	1.22	1.45	1.97	2.92	2.26
Variance explained	31.97	4.71	5.57	7.57	11.22	8.71

Results

Descriptive statistics and correlations

Results of the factorial analysis yielded six different components describing autonomy, task significance, interaction outside the organisation, feedback from others, cognitive tasks and mentoring provided (see Table 1). In this study, all six scales achieved an acceptable reliability level with Cronbach's alpha above .72.

The means, standard deviations and the inter-correlations of the study variables are presented in Table 2. An examination of the inter-correlations between the independent and dependent variables showed that they are moderately, but significantly, correlated. The correlations between the dependent variable mentoring provided and the independent variables range from .12 to .55. All the control variables correlate with one or more of the dependent and independent variables. The correlations between the independent variables indicate that there is no problem with multicollinearity (Schwarz, Schwarz, & Black, 2014).

Table 2: Descriptive statistics and Pearson correlations (N=284)

	M	SD	N										
Job tenure	6.19	5.71	268	1									
Position	1.40	0.59	275	-.04	1								
Professional education	0.39	0.49	275	-.01	.65**	1							
Career tenure	10.41	10.13	260	.38**	-.21**	-.29**	1						
Autonomy	3.93	0.67	278	.17**	.27**	.36**	-.07	1					
Task significance	4.40	0.57	280	.11	.12*	.22**	-.11	.37**	1				
Interaction outside	2.80	0.97	277	.06	.36**	.48**	-.18**	.31**	.27**	1			
Feedback from others	3.72	0.67	278	.02	-.03	.07	.03	.34**	.26**	.11	1		
Cognitive tasks	4.18	0.62	278	.01	.37**	.48**	-.27**	.38**	.43**	.33**	.20**	1	
Mentoring provided	3.01	0.95	275	.13*	.43**	.55**	-.22**	.36**	.28**	.49**	.20**	.45**	1

Note. M=mean, SD=standard deviation, N=number of observations
* p < .05 **p < .01

Table 3: Four step regression analyses for the influence of control variables, autonomy, task significance, interaction outside, feedback from others and cognitive tasks on mentoring provided

Dependent variable - Mentoring provided				
Independent variables	**Step 1**	**Step 2**	**Step 3**	**Step 4**
Job tenure	.17**	.14*	.13*	.12*
Position	.15*	.15*	.14*	.13*
Professional education	.42***	.36***	.28***	.23**
Career tenure	-.15*	-.14*	-.15**	-.10
Autonomy		.12*	.05	.03
Task significance		.11*	.03	-.01
Interaction outside			.26***	.26***
Feedback from others			.15**	.14**
Cognitive tasks				.20**
R^2	.35**	.39**	.46**	.49**
Change in R^2		.04**	.07**	.03**

Note. *** p<.001 ** p < .01 * p < .05

Regression analysis

A four-step hierarchical regression analysis was performed, as shown in Table 3. The dependent variable in this analysis was mentoring provided. The control variables were entered into the regression equation in Step 1, the task characteristics in Step 2, the social characteristics in Step 3 and, finally, the knowledge characteristic in Step 4. This procedure determined the unique contribution of both control variables in Step 1 and the independent variables in Step 2 to 4, as indicated by the change in the R2 value. In this way, the study can remove the influence of demographic and career variables on the dependent variable, thereby revealing the unique influence of task characteristics, social characteristics and knowledge characteristics.

The hypotheses aimed to explore the influence of job characteristics on mentoring provided when controlled for by demographic and career variables. When the control variables were entered in Step 1, they all showed a significant influence on the dependent variable (see Table 3). This gives an initial indication that they represent potential covariates combined with the independent variables.

Hypothesis 1 (H1) was supported when the task characteristics autonomy and task variety were entered into the regression equation in Step 2. Both autonomy (β = .12, p < .05) and task significance (β = .11, p < .05) showed a significant influence on mentoring provided. The control variables also contributed to a significant influence on mentoring provided, with professional preschool teacher education (β = .36, p < .001) as the dominant influence. This could indicate that employees with a professional preschool teacher education, as compared to those without such education, tend to involve themselves in mentoring when experiencing work characterised by autonomy and task significance. By entering task characteristics into the regression equations, autonomy and task significance account for 39% of explained variance (R^2), which is an increase in explained variance (ΔR^2) of 4%.

The social characteristics, interaction outside (β = .26, p < .001) and feedback from others (β = .15, p < .01) both showed a significant influence on mentoring provided when they were entered into the regression equations in Step 3, thereby supporting hypothesis 2 (H2). Interaction outside, which means that employees collaborate and communicate with people outside the organisation, indicates that interdisciplinary collaboration can positively influence the role of mentoring others. To a lesser extent, feedback from others within the organisation on their job performance also seem to influence the mentoring role. As compared to task characteristics, the social characteristics account for 46% of the explained variance, an increase of 7%.

When the knowledge characteristic cognitive tasks (β = .20, p < .01) were entered into the regression equations in Step 4, it showed a significant influence on mentoring provided and thereby gave support for hypothesis 3 (H3). As expected, cognitive tasks characterised by information processing and problem-solving indicate the need for providing mentoring to others in a competence intensive work environment. However, the social characteristics still show a significant influence on mentoring provided, indicating that a workplace characterised by feedback from colleagues, interdisciplinary interaction and knowledge requests represents a job arena that stimulates the mentoring role. As compared to task characteristics, social and knowledge characteristics account for 49% of the explained variance, an increase of 3%. Finally, when all the independent variables were entered into the regression equation, the three control variables job tenure (β = .12, p < .05), job position (β = .13, p < .05) and professional education (β = .23, p < .01) represent potential covariates combined with the independent variables.

Discussion

This study aimed to investigate the relationship between task, social and knowledge characteristics at work and mentoring provided. Three hypotheses were formulated, and the results gave support

for all three. When all the job characteristics were entered into the regression equations and controlled for by demographic and career variables, the social job characteristics and knowledge characteristics showed a significant influence on mentoring provided.

First, respondents who perceived having a high degree of interaction outside the organisation reported a higher probability of involving themselves in mentoring others. Research has shown that educators and learners from two or more professional disciplines can learn from each other and develop knowledge and skills with the goal of improving collaboration and client care (Barr, Freeth, Hammick, Koppel & Reeves, 2006; Buring et al., 2009). Collaboration such as this can help reduce barriers to optimal care faced by employees in preschools and thereby improve their role as mentors. Much of the knowledge and skills that are included in preschools, primary schools, and childcare institutions are suitable for collaboration. This includes communication and relational work, knowledge about society and welfare institutions, work with groups, and community work. Education is multidiscipline since it is underpinned by theories from other social sciences, humanities, and indigenous knowledge. Some studies have focused on educational models of interdisciplinary collaboration and how they are conceived in school and educational practice (Amey & Brown, 2004; Grossman & McCormick, 2003; Maidenberg & Golick, 2001). Much of the knowledge and skills that are included in education are suitable for collaboration. Consequently, interaction outside a specific educational environment can contribute to multidisciplinary cooperation that is expected to have a positive influence on teachers with a formal responsibility of mentoring others at work.

Feedback from others is closely related to the need for support from colleagues. Perry et al. (2013) argue that student practice often takes the form of modelling relevant teaching activities when they receive instrumental support from peers and experienced teachers. Such activities encouraged students to support one another and, by evaluating their own and others' work, they received support from their teachers and peers that was instrumental to their learning goals. In preschools, mentoring relationships could work as a learning community where feedback produces significant benefits in learning and educational achievement, thereby promoting the workplace as a learning arena (Boud, Cohen & Sampson, 1999); this also increases social support among teachers as a function of challenging requests at work (McLaughlin, 1997).

Second, the information processing and problem-solving aspect of cognitive tasks reflect the need to identify non-routine problems at work (Nembhard & Uzumeri, 2000; Morgeson & Humphrey, 2006). This reasoning aspect of cognitive tasks, as Treisman and Gelade (1980) call it, reflects the need to expand workplace learning to learning communities that involves mentoring relationships. There are many reported benefits for teachers who participate in learning communities, including their feeling of being more positive about the profession (Darling-Hammond, 1996) and reducing their isolation (Lieberman, 2000). Consequently, this study indicates that structural changes in teachers' workplace can implicate an increased need for the involvement in learning communities at work based on formalised mentoring relationships. Thus, even when a particular cognitive task is undertaken by an individual employee in solo, the individual relies on a variety of interactions with people inside and outside the organisation. This is supported by Kirschner, Sweller, and Clark (2006), who argue against the idea of individuals being responsible for their learning without getting instruction. They see guided instruction, for example providing formalised mentoring, as a prerequisite for solving problems and conclude that unguided learning is less effective and may result in acquiring misconceptions or incomplete or disorganised knowledge (Kirschner et al., 2006, p 84).

Furthermore, knowledge-intensive, and complex jobs contribute to a group's cohesiveness (Man & Lam, 2003). If teacher-related jobs, according to Pounder (1999), are multifaceted and difficult to perform, it could be expected that an increase in cohesiveness will lead to more group activities characterised by mentoring relationships. This interaction, based on communication and discussions among employees, can generate alternative solutions, thus leading to better performance at work. Consistent with the findings of Tesluk and Mathieu (1999), a more complex

task will induce stronger motivation, such that team members are better able to cooperate over tackling the task assignment. From a mentoring perspective, formal mentors may feel that they can make a unique contribution when they share their competence with others. Interaction with fellow employees and cooperating with people outside the preschool, through cognitive tasks and interaction outside the organisation, can contribute to the coordination of work in which goals are achieved through mentoring relationships.

Implications for future research

Future research should especially consider the strong covariance that professional preschool teacher education accounts for mentoring provided when entered into the regression equation together with job characteristics. This assumption is supported by Holm and Horn (2003), who argue that teachers must assume formalised and less formalised roles of mentoring to become a professional master teacher. Furthermore, Wang and Odell (2002) encourage educational staff to cooperate with other teachers and professionals to improve teaching and education for children.

The relatively strong covariance of an educational leadership position should also be considered in future research. Gronn (2003) argued that individualised accounts of leaders have tended to dominate research on educational leadership. However, educational institutions such as preschools cannot handle their challenges in the postmodern society solely located within exceptional principals or formal educational leaders. Both within the practice of educational leadership and international research there is increased recognition of the need to move beyond the individualistic, role-embedded conceptualisation of leadership and leadership practices to one that focuses more broadly on sharing of knowledge, expertise, and action (Gronn, 2000; Elmore, 2002; Spillane, Halverson & Diamond, 2004).

Limitations

The present study has several limitations. Its main limitation is related to the way the sample has been drawn. If the purpose of the study was to generalise, a non-random sampling approach, such as convenience sampling, is problematic. Deming (1950) argues that convenience sampling may be considered as a type of judgment sampling where a minimal amount of "judgment" is used in the decision to select a particular sample. In contrast to the criticism by Deming (1950), Highhouse and Gillespie (2008) argue that convenience sampling is probably the most common sampling method used because of its informality, simplicity, adequacy, and cost-effectiveness.

Another limitation is that self-reports can be exposed to reporting biases (Hutton & Barham, 2019). Nevertheless, self-reports are well-established in the study of mentoring relationships (Bozionelos, 2004; Waaland, 2013). Finally, it is important to bear in mind that predictive power from job characteristics to mentoring provided does not confirm that the predictors cause the outcome variable. A cross-sectional design such as this does not allow for statements on effect or causality since any causal suggestions are preliminary and based on theory and previous empirical research. Therefore, future studies should obtain longitudinal data to document causal relationships between the independent and dependent variables. Despite the possible biases related to the methodology and the way the sample was drawn, future confirmatory and longitudinal studies based on structural equation modelling (for example Lisrel, Mplus or Amos), could be used to develop significant models controlled for by the error variance of both endogenous and exogenous latent variables. Furthermore, the control variable professional education represents a covariate and a possible moderator or mediator within a confirmatory design.

Finally, an important limitation is employing individual data without controlling for the clustered structure. Gender was expected to be a covariate of the analyses. To protect the anonymity of males in the 29 preschools, the collected questionnaires were not allowed to be clustered by the

Norwegian Centre for Data Research (NSD, n.d.). A cluster analysis would have made it possible to calculate the interclass correlation on a specific item. This measure would tell us how much the mean on a preschool level represents of the total variation of the individual respondents in that preschool. An interclass correlation value above 5% is an argument for repeated analyses since the confidence interval could be widened. Consequently, drawing conclusions about regressions on the individual-based analyses might be influenced by the clustered structure of means between preschools.

Conclusion

This study aimed to investigate how job characteristics, such as task, social and knowledge characteristics, influence mentoring provided to reveal which have the largest influence on the occurrence of mentoring provided. When all the variables were entered into the regression equations, the social job characteristics and cognitive tasks were the main contributors to explained variance. According to Parker and Wall (1998, p. 35), changes in job characteristics, such as cognitive tasks, can affect an employee's "cognitive development" and "role-taking at work". These aspects of job design in preschools are best illustrated through the increased use of formalised mentoring roles for educational leaders and the distribution of educational leadership based on teamwork. In a way, work in Norwegian preschools is continuously redesigned when the mentoring role of the educational staff must be combined with other tasks that are necessary to run the organisation. Cognitive tasks within this perspective could not be solved through previous knowledge of the individual but would challenge the formalised process of mentoring provided that is seen as a legitimate part of the individual's work. Cognitive development is extremely relevant for employees in Norwegian preschools because changes in the external environment confront employees with challenges that do not have an obvious answer. This dilemma is highlighted when preschools recruit children from different cultural backgrounds.

The implications of these findings indicate the importance of coordination at work to establish a job environment where cognitive tasks can be solved through a system combining formalised and less formalised mentoring roles. One central element in coordination is to standardise tasks to better achieve specific objectives (Mayordomo & Onrubia, 2015; Mintzberg, 1973). Such standardisation could be used to achieve individual and organisational learning objectives by formalising how mentoring can be used to handle a changing workplace. Based on the organisational context of preschools, the strategic challenge is to coordinate the tasks that involve mentoring relationships with the job performance tasks the employees are involved to perform. In the strategy literature, there is literature that focuses the challenge of coordination at work (Chandler, Murphy, Kram, & Higgins, 2016; Gittell, 2006; Malone & Crowston, 1990; Siddique, Procter, & Gittell, 2019). Rather than being centrally controlled and coordinated, the capacity to develop knowledge emerges from the complex patchwork of processes and participants who enact and negotiate their interpretations of what is going on. Consequently, the educational staff handle challenges through new knowledge. To succeed, they creatively improvise and adapt to rules and routines to address difficult problems.

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About the author

Torbjørn Waaland is an associate professor at the Faculty of Humanities and Education, University of Stavanger. He is engaged in issues concerning mentoring relationships and strategic school leadership. Together with his colleagues, he is also involved in school-related research projects, especially increased use of mixed-method design. In addition to research activities, Waaland is teaching students in educational psychology and supervising Ph.D. students in quantitative research methodology. The present paper concerns an understudied area: how the role of providing mentoring to others was predicted by job characteristics.