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Occupational well-being and teamwork in Finnish early childhood education

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ABSTRACT: The study examined Finnish early childhood education professionals' (ECEP) (n = 107) experiences of occupational well-being and systems intelligent teamwork. Occupational well-being was measured with basic psychological job satisfaction, work engagement and burnout. In the analysis of variances by rank, the ECEPs' had high work engagement, felt competent and relatedness in a working community. By contrast, their autonomy was low, and they felt exhausted, even though the overall burnout level was low. Extensive working experience increased work-related well-being and perceiving socioemotional systems in work. The ECE teachers had the highest work engagement, basic psychological need satisfaction and lowest burnout, but didn't feel strongly competent in perceiving systemic interaction structures. On the other hand, the ECE social pedagogues felt most competent in systems intelligence behavior. The ECE childcarers valued the support of the systems intelligence team. In the cluster analysis, we identified two different clusters representing the level of occupational well-being and systems intelligence. The solution presented a connection between the ECE teachers with high work-related well-being and systems intelligence. We suggest that the multi-professional teamwork should be developed according to the ECEPs' diverse educational background and that professional responsibilities be made more consistent with their education.

Keywords: *ECE professional, occupational well-being, systems intelligence, multi-professional teamwork*

Introduction

Finnish early childhood education (ECE) is currently going through various changes which have significant effects on ECE professionals' (ECEP) organizational responsibilities and well-being. The major affecting causes for the changes are the ongoing labor shortage, reforms in the National Core Curriculum for Early Childhood Education and Care (National Agency for Education [EDUFI], 2018, 2022), and the legal reforms of the Act on Early Childhood Education and Care (540/2018).

Finnish ECE suffers from recruiting competent staff, especially qualified ECE teachers. Decades long struggles of the ownership of Finnish ECE between social and educational administrations has spread its roots also among the professionals with different educational background increasing occupational malfunctioning (Kinos, 2008). Before the legislation reform in 2017, previous Finnish studies showed how ECE teachers (also with Bachelor of Health Care and Social Services degree), experienced more workload, had lower leadership satisfaction and the highest turnover intentions compared to other professionals in ECE (Heilala et al., 2021). The reasons for turnover intensions were low pay, high workloads, unrealistically high job descriptions, low resources, limited scope for advancement and few opportunities for participation (Eskelinen & Hjelt, 2017). However, there are also results describing ECE teachers' (also with B. Ss. degree) high occupational well-being and competence, low burnout and low stress-levels (Nislin et al., 2016; Nislin & Pesonen, 2019). In some professions a strong work identity might have a positive effect with work engagement results, even if the person would feel less engagement in one's work. To a respondent, their personal values might be more important than their well-being. In previous research ECEPs' work engagement values have been relatively high, which might describe respondents' professional commitment more than well-being at work (Hakanen et al., 2006; Nislin et al., 2016; Royer & Moreau, 2016). The reasons for these contradictory results also stem from the different perspectives. The negative results mostly describe poor working conditions and resources, and weak organizational structure and management due to the former national legislation concerning Finnish ECE (Eskelinen & Hjelt, 2017; Fonsén & Keski-Rauska, 2018; Kangas et al., 2022; Ranta et al., 2022). On the other hand, the positive results often describe the reasons, values, and motives for applying for or remaining in the profession (Basinska & Dåderman, 2019; Brieger et al., 2021; Nislin et al., 2016; Nislin & Pesonen, 2019).

Exploring occupational well-being

In this study the definition of occupational well-being (OW) has been constructed by utilizing three different scientifically tested and generally used measurements in organizational psychology. To describe and create a holistic understanding of the factors

of Finnish ECEPs' occupational well-being, their level of engagement, burnout, and basic psychological need satisfaction were measured. The level of work engagement describes individual's a positive and fulfilling, work-related state of mind characterized by three components: vigor (i.e., having high levels of energy during work), dedication (i.e., perceiving work as being important and meaningful), and absorption (i.e., being immersed in work) (Shaufeli et al., 2002). Burnout has seen as partly opposite psychological state to engagement though both are being considered as principally independent of each other. An individual can have high burnout level but still feel engagement toward one´s profession (Shaufeli & Bakker, 2004). The level of burnout is measured with three main factors: exhaustion, cynicism, and decreased professional efficacy. It is characterized by a low level of energy, filled with hopelessness, and combined with poor professional identification (Maslach et al., 1996). The measure of basic psychological need satisfaction describes employee's experience of belonging in a community. Sense of belonging is one of the core factors in well-being (Martela & Sheldon, 2019) and cannot been isolate from the holistic view of occupational well-being. The level of psychological need satisfaction plays an important role for the motivation, well-being, life satisfaction, and vitality of people on both general and daily level (Martela & Riekki, 2018). It is measured by autonomy (i.e., a sense of volition and self-determination), competence (i.e., a sense of mastery and efficacy), and relatedness (i.e., a sense of belonging to a community) (Deci et al., 2001). Exploring occupational well-being from the three distinctive approaches, we can create a holistic description of the level of occupational well-being of the participants.

Steering documents forming ECE organization and professions

The national documents of implementation of ECE in Finland have long been influenced by two approaches: the social services, and the educational perspectives. Even though ECE has been seen as an educational service, its national administration was part of the Ministry of Social Affairs and Health until 2013. This culturohistorical factor of Finnish ECE, still reflects on today's ECEPs' daily teamwork and leadership (Kinos, 2008; Kinos et al., 2021).

Both, the new National Core Curriculum for Early Childhood Education and Care (EDUFI, 2018, 2022), and the legal reforms of the Act on Early Childhood Education and Care (540/2018) strengthen the lifelong learning path from Finnish early childhood education to the pre-primary and primary education (Fonsén & Vlasov, 2017). The steering documents also set professional qualification requirements in Finnish ECE. Now, the professional responsibilities are planned and delegated based on the professionals' educational background. According to local and international studies, the cohesion between an educational background and a profession has a positive impact on employees'

feeling of competence and occupational well-being (Bunderson & Thompson, 2009; Heikka, Pitkäniemi et al., 2021; Martela & Riekki, 2018; Nislin & Pesonen, 2019; Perren et al., 2017).

As part of the national development work Forum for Developing Education and Training Provision and Programmes in Early Childhood Education and Care (Ministry of Education and Culture, 2021), has stated premises for qualification and degree programs in secondary education institutions, in universities of applied sciences, and in universities. The Act on ECEC (540/2018) and the Forum's Competence Profile Division (CPD) required teachers in ECE to have at least a Bachelor's (B. Ed.) or master's degree in Education (M. Ed.) and to be the main respondents of the pedagogy in the child group. Childcarers in ECE with a vocational upper secondary qualification in education and guidance with a licensed vocational nurse degree (LVN) or similar are mainly responsible of children's basic care. Social pedagogues in ECE with at least a Bachelor's degree in healthcare and social services (B. Ss.) share the same responsibilities with ECE teachers (B. Ed. & M. Ed.) and childcarers concerning responsibilities in development and care, rich pedagogical environment, general knowledge in ECE pedagogy, supporting lifelong learning, working in multi-professional collaboration, and with different stakeholders. The CPD highlighted the need for more research concerning differentiated competence and responsibilities for social pedagogues. To maintain social pedagogues' competence, occupational well-being and needed quantity in the field, the professionally distinctive qualifications are needed in practice (Ministry of Education and Culture, 2021).

The aim of the organizational reform is to create multi-professional teams, which maintain high-quality ECE pedagogy based on professionals' diverse educational backgrounds and competence. Ongoing organizational reforms aim to enhance both ECEPs' occupational well-being and children's well-being in ECEC centres. Although, the reforms create more work-based stress and workload, those are well justified and based on research. Good teamwork is one of the key factors in enhancing job satisfaction (Frost et al., 2005; Hur et al., 2015; Pugh, 2008), high-quality pedagogy and also the well-being of the children in the groups (Nislin et al., 2016; Organization for Economic Co-operation and Development [OECD], 2021).

Teamwork and its history as the core of the ECE system

Currently, Finnish ECE and its professionals are strongly guided by the national educational administration with the following documents: (1) Act on Early Childhood Education and Care (540/2018); (2) Finnish National Core Curriculum for Early Childhood Education and Care (EDUFI, 2018, 2022); (3) Finnish National Core Curriculum for Pre-Primary Education (EDUFI, 2016), and (4) Guidelines and recommendations for evaluation of the quality of early childhood education and care (Vlasov et al., 2019).

Eventually, the municipalities and local ECE centres have the responsibility of the final implementation of the steering documents (Heikka, Pitkäniemi et al., 2021).

Despite a strong guidance from the steering documents, the content has been criticized for remaining on the level of ideological guiding and not supporting ECEPs' autonomous working (Kinos et al., 2021). In practice, especially before the legal reform (540/2018) everyone in the team shared the same responsibilities. The executed teamwork was not based on a multi-professional competency or a pedagogical planning (Ranta et al., 2021). This led to the situation where pedagogical actions were planned and executed by to the ECEPs' work shift list. Professionals' educational background and the importance of pedagogical team leadership were ignored.

Lack of hierarchy and multi-professionality has been crucial to teamwork development in Finnish ECE. Numerous research has proven that one of the main factors in effective teamwork is a good leader who is responsible of team's internal communication and actions (Kangas et al., 2022; Ranta & Uusiautti, 2022; Salas et al., 2015; Shuffler et al., 2020).

By ignoring the professionals' education background and leaning on the social services approach, the level of pedagogy and the number of ECE teachers with a Bachelor's or Master's degree in Education decreased (Kinos 2008; Kinos et al., 2021; Ranta et al., 2021). Simultaneously, when the number of ECE teachers was diminishing, social pedagogues were being trained in large numbers. ECE teachers' positions were filled by professionals with a health care and social services approach to ECE (Ranta et al., 2021).

The professional identity of ECEPs had become vague (Kinos 2008; Melasalmi & Husu, 2018). An occupational identification and dignity in work (Bunderson & Thompson, 2009) have fundamental effects on overall well-being as well as work-related well-being, like motivation, commitment, work absenteeism, turnover intensions, and career choices (Martela & Riekki, 2018; Rosso et al., 2010; Ruohotie-Lyhty, 2018). Accordingly, several scholars have recognized the meaningful work as one of the most important questions for organizational scholarship (Lepisto & Pratt, 2017; Martela & Riekki, 2018; Melasalmi & Husu, 2018). For strengthening the quality of ECEPs' teamwork and well-being, the professional identities need to be defined and recognized firmly (Flores & Day, 2006; Melasalmi, 2018; Ruohotie-Lyhty, 2018).

Teamwork, as the core action in ECE systems, proved to be the most crucial factor in high quality ECE pedagogy and ECEPs' occupational well-being, and professional learning. Vice versa, low-quality teamwork causes frustration, exhaustion, and stress among ECEPs, which in turn is strongly connected to children's distress and disorder in ECE groups

(Frost et al., 2005; Melasalmi, 2018; Nislin et al., 2016; OECD, 2021; Pugh, 2008; Ranta et al., 2020;).

The ECE teams deal with multiple systemic approaches in the field (Melasalmi & Husu, 2018; Nislin et al., 2016; Syrjämäki et al., 2017). In addition to pedagogical and care driven responsibilities, there are multiple steering documents as well as other stakeholders to collaborate with (Ranta et al., 2021). Schools, parents, health care and social services are the main stakeholders in the practice which create the complex ECE field (Waniganayake et al., 2017). According to Thayer et al. (2014), generally organizations are increasing team-based structures to accomplish complex organizational systems. The aim is to abandon traditional hierarchical structures in organizations and give teams more autonomy in decision-making over day-to-day operations. Team-based structures in organizations allows enhancing the collaboration of the expertise of multiple professionals. Complex organizational systems and challenges cannot be solved individually and require functionally diverse backgrounds among members.

To succeed in a complex systemic environment, the driving force for strong professionality needs to rely on education-based knowledge and high-quality teamwork. For perceiving the systemic complexity from a larger holistic point of view and to succeed in it, the ECE professionals need to have opportunities and skills to create robust discussion of their work and improve their collegial coworking (Melasalmi & Husu, 2018). Good, effective teamwork is always the result of good communication and coordination between the members (Thayer et al., 2014). Leaders of ECEC centres can support ECEPs in their team development work by creating possibilities for teams to improve their work (Ahtiainen et al., 2021). By monitoring and supporting the development work, leaders are also sharing their leadership among ECE professionals (Douglass 2019; Fonsén & Mäntyjärvi, 2019).

As stated by Pugh (2008) the nature of professional knowledge — 'what I know' and 'what I do' – draws on a combination of theoretical and experiential knowledge. Even though the knowledge is tacit within the workplace, in multi-professional teams it must be more explicit and shared across the team. The point is also to remain and deploy distinctive specialisms within teams, as well as a general understanding to gain job satisfaction (Deci at el., 2001).

Professionals' self-determination and inner motivation firm job satisfaction but to recognize, create and retain an effective team or organization, professionals should be able to perceive their own and colleagues' action as part of a larger system. Existential is to understand and value the fact that individuals' own effect in systems exists and every system is perceived from a different point of view (Saarinen & Hämäläinen, 2007). According to systems intelligence theory (SI) (Saarinen & Hämäläinen, 2007), in a

successful and healthy organization, individuals can perceive holistically social and organizational systems, and act for common success. In a systems intelligent multi-professional team, ECEPs' autonomy, competence, and relatedness, are recognized and optimized (Hämäläinen et al., 2014; Hämäläinen et al., 2020). With high-quality multi-professional teamwork, every professional can perceive their own specified work done as part of a larger whole.

The study reviews the participant ECEPs' occupational well-being and teamwork from a complex systemic point of view. The aim is to describe the level of occupational well-being, collegial collaboration, and teamwork with measures of work engagement (Schaufeli & Bakker 2004), basic psychological need satisfaction (Deci et al., 2001), burnout (Maslach et al., 1996), and systems intelligence (Törmänen et al., 2016) from the perspective of individuals and teams.

The questions of the study are:

1. How the participant ECEPs' experience their occupational well-being, teamwork, and systems intelligent behavior?

2. What kind of connections there are between the participant ECEPs' educational background, occupational well-being, teamwork, and systems intelligent behavior?

Methods

Procedure

The current study was a survey which played a part in a larger study of ECEPs' occupational well-being and teamwork. The survey consists of three independent questionnaires. The two first questionnaires were Systems Intelligence Inventory's (SII) individual and team versions (Törmänen et al., 2016). The inventories examined ECEPs' self-evaluated experiences of their own behavior and team's collaboration in work. The third questionnaire concerned ECEPs' occupational well-being, which measured work engagement through the Utrecht Work Engagement Scale (UWES) (Schaufeli & Bakker, 2004), burnout through the Maslach Burnout Inventory (BMI) (Kalimo et al., 2006), and Basic Psychological Need Satisfaction Work Scale (BPNSWS) (Deci et al., 2001).

Participants

In September 2019, the survey was sent to 36 ECE centres in one of the largest municipalities in Finland. In total, 15 ECE centres took part in the survey, resulting in a

return rate of 41.6 %. Altogether 162 ECEPs from 55 teams responded to the survey. To be qualified for the data, the participants needed to answer all three questionnaires in the survey. Finally, 107 ECEPs from 46 teams responded to all three questionnaires. The qualification percentage of the participants was 66 %.

The most common respondents' educational background was a licensed vocational nurse (LVN) with 60.7 % (n = 65). 20.6 % (n = 22) of the respondents had a Bachelor's degree in Health Care and Social Services (B.Ss.) or other social services' education, and 18.7 % (n = 20) had a Bachelor's degree (B.Ed.) or Master's degree (M.Ed.) in Education. Most of the respondents were working as an ECE teacher (46.7 %, n = 50) or ECE childcarer (46.7 %, n = 50). Almost a fifth (18.5 %) of LVNs were working as an ECE teacher. The rest of them were working as an ECE teacher with B. Ss. degree (1.9 %, n = 2), ECE assistant (1.9 %, n = 2), ECE special education teacher (0.9 %, n = 1), a head of ECE centre (0.9 %, n = 1) or a general helper (0.9 %, n = 1) (Table 1). Regarding the respondents' working experience in ECE, 27.1 % (n = 29) had more than 20 years, 29 % (n = 31) had 10 to 20 years and the rest, 43.9 % (n = 37) had 0 to 10 years of experience (Table 2).

TABLE 1 The respondents' educational background distributed among job descriptions

	JOB DESCRIBTION	*Assistant/ general helper N*	*ECE Childcarer N*	*ECE Teacher (B.Ss.) N*	*ECE Teacher N*	*ECE Spec.Ed. Teacher N*	*Head of ECEC N*
EDUCATION	LVN	3	50	0	12	0	0
	B. Ss.	0	0	2	20	0	0
	M. Ed. or B. Ed.	0	0	0	18	1	1

TABLE 2 The respondents' educational background and working experience in ECE

	EXPERIENCE	*0–5 years N*	*5–10 years N*	*10–15 years N*	*15–20 years N*	*20< years N*
EDUCATION	LVN	21	9	12	8	15
	B. Ss.	8	2	3	3	6
	M. Ed. or B. Ed.	5	2	4	1	8
	Total %	**31.8**	**12.1**	**17.8**	**11.2**	**27.1**

Measurements

Basic Psychological Need Satisfaction Work Scale (BPNSWS)

For investigating respondents' autonomy, competence, and relatedness in the work, we used the BPNSWS (Deci et al., 2001) work scale, which is based on the Self-Determination Theory (SDT) (Deci et al., 2017; Ryan & Deci, 2000). SDT describes person's inherent growth, self-motivation, well-being, and psychological needs, as well as the conditions for fostering those positive psychological processes (Ryan & Deci, 2000). In BPNSWS, the basic psychological needs explain the psychological mechanisms in socially contextual factors in the workplace, which have a strong relation to the motivation and work outcomes (Olafsen et al., 2021; Ryan & Deci, 2000). BPNSWS consists of three need satisfaction subscales *autonomy*, *competence*, and *relatedness*. Each of the subscales has a positive correlation with individuals' optimal functioning and flourishing (Ryan & Deci, 2000; Van den Broeck et al., 2010). BPNSWS consists of 21 items, reported on a scale ranging from 0 (completely disagree) to 6 (completely agree). For every subscale (autonomy-competence-relatedness) and its items, respondents evaluated their experiences starting from a point of view of *"When I am at work…"*. The autonomy satisfaction was measured with seven items (e.g., … *I feel like I can make a lot of inputs to deciding how my job gets done*., … *I have to do what I am told*.), competence satisfaction with six items (e.g., … *I do not feel very competent*., … *Most days I feel a sense of accomplishment from working*.) and relatedness with eight items (e.g., … *I get along with people*., … *The people I work with do not seem to like me much*.). In the present study, we translated the inventory from the original English version into Finnish (Deci et al., 2001). Regarding the scale's 21 items' internal consistency, Cronbach's alpha was good (α = .70) (Table 3).

Work Engagement (UWES)

Work engagement is characterized by a high level of energy and strong identification with one's work. It describes opposite experiences compared to burnout. While burned-out professionals suffer from exhaustion, cynicism and decreased professional efficacy, their engaged colleagues experience vigor, dedication, and absorption (Schaufeli & Bakker, 2004). Work engagement is measured with 17 seven-point scale (0 = *never*, 6 = *daily*) questions. Vigor as one of the three main characteristics of engagement describes a person's levels of energy and effort in work, mental resilience, and persistence when facing difficulties (e.g., "*At my work, I feel bursting with energy"*, *"When I get up in the morning, I feel like going to work"*, …). Dedication is characterizing a person's sense of significance, enthusiasm, inspiration, pride, and challenge in work (e.g., "*I find the work that I do full of meaning and purpose*", "*I am proud of the work that I do*", …). The third characteristic, absorption, describes a person's deep concentration, where sense of time

disappears and one has difficulties being detached from work (e.g., "*When I am working, I forget everything else around me", "It is difficult to detach myself from my job"*, …). We used the Finnish version of UWES. The internal consistency of the questionnaire was good (α = .88) (Table 3).

Burnout (MBI-GS)

For measuring participants burnout, we used the Finnish version of the Maslach Burnout Inventory - General Survey (BMI-GS) (Kalimo et al., 2006; Maslach et al., 1996). BMI-GS is the most widely used instrument for assessing burnout within three main factors: exhaustion, cynicism, and decreased professional efficacy. Each factor has five or six items describing it (Bakker et al., 2002). Emotional exhaustion represents the state where an employee feels overextended and can no longer cope. Cynicism reflects negative attitudes and responses towards other persons (children, colleagues, parents, etc.). Decreased professional efficacy (6 items) reflects on an employee's emotions of low competence and achievements (Maslach et al., 2001). The item scale ranged '0 = *never*' to '6 = *daily*'. The 16 items of the inventory describe reliably (α = .90) the values of respondents' burnout (Table 3).

Systems Intelligence Inventory (SII)

Participants' experiences of collegial collaboration and teamwork, from a systemic and holistic point of view, were measured with an individual and team version of Systems Intelligence Inventory (SII) (Törmänen et al., 2016). SII is a seven tier (0–6) Likert-scale inventory of 32 questions. SII is constructed from four dimensions *acting, thinking, attitude* and *perceiving*, which in turn are dealt into eight factors described as *systemic perception, attunement, attitude, spirited discovery, reflection, wise action, positive engagement,* and *positive responsiveness*.

PERCEIVING	Systemic Perception	*I form a rich overall picture of situations* *I easily grasp what is going on*	*I get a sense of what is essential to a given situation* *I keep both the details and the big picture in mind*
	Attunement	*I approach people with warmth and acceptance* *I take into account what others think of the situation*	*I am fair and generous with people from all walks of life* *I let other people have a voice*
ATTITUDE	Positive Attitude	*I explain away my mistakes* *I have a positive outlook on the future*	*I easily complain about things* *I let problems in my surroundings get me down*
	Spirited Discovery	*I like to play with new ideas* *I look for new approaches*	*I like to try out new things* *I act creatively*
THINKING	Reflection	*I view things from many different perspectives* *I pay attention to what drives my behaviour*	*I think about the consequences of my actions* *I make strong efforts to grow as a person*
	Wise Action	*I am willing to take advice* *I take into account that achieving good results can take time*	*I am wise in my judgements* *I keep my cool even when situations are not under control*
ACTING	Positive Engagement	*I contribute to the shared atmosphere in group situations* *I praise people for their achievements*	*I'm good at alleviating tension in difficult situations* *I bring out the best in others*
	Effective Responsiveness	*I prepare myself for situations to make things work* *I easily give up when facing difficult problems*	*I'm able to put the first things first* *When things don't work, I take action to fix them*

FIGURE 1 The dimension, factors and items of Systems Intelligence Inventory

SII measures the respondent's ability to act and perceive holistic systemic unities in a complex socioemotional environment. The theory of SI is related to the original core disciplines of the learning organization by Senge (1990) and a personal mastery of systems thinking (Törmänen et al., 2016). The concept of Systems Intelligence (SI) (Saarinen & Hämäläinen, 2007) defines an individual's ability to act and reason in everyday life systems such as organizations, family, and relationships in general. It seeks to create productive action and success with a positive and respectful approach, and shared well-being in a community (Saarinen et al., 2014). It has also been shown that SI behavior has a strong connection with perceived performance (Jumisko-Pyykkö et al., 2022). From an organizational development perspective SI theory recognizes and values the importance of minor changes and bottom-up organizational improvements. The internal consistencies of the inventories' 32 items from both versions, individual (α = .92) and team (α = .96) tested high (Table 3).

TABLE 3 Internal consistency of the measurements used in the survey

MEASUREMENT	*Item (N)*	*Cronbach's alpha*
Basic Psychological Need Satisfaction Work Scale	21	.70
Work Engagement	17	.88
Burnout	16	.90
Systems Intelligence Inventory (individual)	32	.92
Systems Intelligence Inventory (team)	32	.96

Data Analysis

The data analysis was done with the IBM SPSS 27 statistics program. As the responses of the survey data were not normally distributed, we used non-parametric methods for the analysis. For comparing the initial mean values of the responses by grouping the participants in various different ways, we used custom tables, and for a more exact analysis, the Kruskal-Wallis test. As the final and main analysis for the data, we used the Two-Step cluster analysis. The clustering method enabled us to find subgroups from the small data sample. Comparative studies of the Two-Step suggest cluster analysis as one of the most reliable in terms of the number of subgroups detected, the classification probability of individuals to subgroups, and reproducibility of findings (Benassi et al., 2020; Guy et al., 2017). The first step is a sequential approach to pre-cluster the cases based on the definition of dense regions in the data. In the second step, the pre-clusters are compounded in a stepwise way until all clusters are in one cluster (Benassi et al., 2020). In the Two-Step cluster analysis, the number of clusters is automatically formed from the variables. Its reliability is enhanced by the ability to determine the number of clusters without a manual cluster solution defined by the researcher. The analysis determines the cluster solution by the strongest differences between the listed sequential values in the proposed *cluster changes* in the Akaike Information Criterion (AIC) and Schwarz's Bayesian Information Criterion (BIC) (Kent et al., 2014). The solution principal is that the more clusters there are, the weaker the differences between clusters. The aim is to create less clusters with strong differences between clusters. The determining line goes after the smaller number of clusters. The lowest values in AIC and BIC indicate the highest quality in the cluster solution. The significance of the distribution between the cluster solution and the respondent groups was tested with the non-parametric Chi-square test.

Results

With the following results, we present the level of respondents' self-reported occupational well-being and systems intelligent behavior (RQ 1), the variation of the mean values between the respondents, the significance of working experience, and the tendency between the values and educational backgrounds (RQ 2) with the cluster solution (see Table 5 & Figure 3).

All the participants had overall high or positive values in occupational well-being and systems intelligence on a scale from 0 to 6 (Table 4). To see if there are significant differences among participants, we grouped the responses with numerous different ways in the Kruskal-Wallis analysis. By doing so, we surprisingly found a statistically significant and positive connection between long working experience (>20years), high work engagement, low burnout and self-evaluated systems intelligence. When examining the

significance between the respondents' educational background and occupational well-being in work engagement, psychological basic need satisfaction, and burnout, the ECE teachers with a degree from educational sciences had the highest values in all measurements for a positive occupational well-being. Even so, the data did not reach out to a statistical significance but could testify a clear tendency in the data.

Regarding the results in systems intelligence behavior, the respondents had evaluated their own individual systems intelligence behavior higher than their team's shared systems intelligence. In contrast, the tendency from the respondents' educational background did not exist similarly in SII than in occupational well-being values. For more careful review of the perceived tendency between the respondents' educational background and the survey measurements we did a Two-Step analysis.

Basic Psychological Need Satisfaction Work Scale (BPNSWS)

The respondents' (n = 107) mean values in psychological need satisfaction were overall relatively high. Between the subscale values, *autonomy* had significantly the lowest values. *Competence* and *relatedness* were relatively high (Table 4). The respondents with 5 – 10 years of experience in ECE had the highest psychological need satisfaction values in custom tables ($M = 4.66$), but there were no significant differences in the Kruskal-Wallis test between the work experience groups ($p = .692$). The ECEPs with B. Ed. or M. Ed. degree had the highest psychological need satisfaction values. Their values were higher than the overall mean value in the group, but the differences with ECEPs with LVN and B. Ss. degree were minor, $H(2) = 2.73$ and $p = .255$ (Table 5).

TABLE 4 The respondents' mean values in occupational well-being and systems intelligence scales

MEASUREMENT	*M*	*SD*	*Min.*	*Max.*
Basic Psychological Need Satisfaction	4.40	0.66	2.65	5.67
Autonomy	3.76	0.7	1.86	5.14
Competence	4.77	0.8	2.33	6.00
Relatedness	4.78	0.9	2.00	6.00
Work Engagement	4.90	0.7	1.77	5.94
Absorption	4.56	1.0	.67	6.00
Vigor	5.11	0.7	2.83	6.00
Dedication	5.03	0.8	1.80	6.00
Burnout	1.34	1.0	.00	3.80
Exhaustion	1.75	1.3	.00	5.20
Cynicism	1.08	1.1	.00	5.80
Professional efficacy	1.10	0.9	.00	3.83

Systems Intelligence	**4.4**	**.51**	**3.42**	**5.79**
Systemic Perception	4.5	.58	3.00	6.00
Attunement	4.9	.58	3.75	6.00
Spirited Discovery	4.3	.80	2.00	6.00
Reflection	4.5	.67	2.75	6.00
Wise Action	4.5	.60	3.25	6.00
Positive Engagement	4.1	.75	2.00	6.00
Positive Attitude	3.9	.76	2.00	5.75
Effective Responsiveness	4.5	.67	2.67	6.00
Team Systems Intelligence	**4.3**	**.62**	**7.21**	**.00**
Systemic Perception	4.5	.67	68.9	.00
Attunement	4.7	.70	65.3	.00
Spirited Discovery	4.4	.74	58.0	.00
Reflection	4.3	.75	59.4	.00
Wise Action	4.5	.74	62.7	.00
Positive Engagement	4.0	.84	49.8	.00
Positive Attitude	3.5	.63	57.6	.00
Effective Responsiveness	4.5	.73	64.2	.00

Work Engagement (UWES)

The respondents settled overall on the level of "high engagement" in the work engagement. Accordingly, the subscales *vigor* and *dedication* were both high. The *absorption* of the participants had high deviation between the responses and the mean value stayed lower (Table 4). Working experience had a positive significant effect on work engagement ($H(4) = 8.39$, $p = .039$). Respondents with over 20 years of working experience had the highest scores in work engagement ($M = 5.1$, $SD = 0.6$). Of the sub scales *vigor* ($p = .023$) had a positively significant effect on work experience. The respondents' educational background created minor differences between the scores, but these were not statistically significant ($H(2) = .048$, $p = .852$). The tendency between the educational background of the respondents was repeating itself, with the B. Ed. or M. Ed. degree scoring the highest values. The respondents with a B.Ss. and LVN degree scored the same work engagement values (Table 5).

Burnout (MBI-GS)

The respondents' burnout values were low but there were a lot of variances between the responses. The whole sample average values settled on the level of "low burnout", which is between the values 0 and 1.49 (Table 4). From the subscales, respondents' *exhaustion* had the highest scores. The other two subscales, *cynicism* and *professional efficacy* scored

similarly. The differences between the respondents' work experiences were significant in (H(4) = 1.62, p = .047). From the point of view of ECEPs' working experience the respondents with the least (0–5 years) (M = 1.57) and the ones with 10–15 years of experience (M = 1.59) had *moderate burnout*. The most experienced ECEPs (>20 years) had the lowest burnout values (M = 1.06). The respondents' educational background did not have a statistically significant effect on average burnout level (H(2) = .764), p = .682). In line with the previous results, the respondents with a B. Ed or M. Ed. degree had the lowest burnout but with minor differences to the respondents with a B.Ss. degree. ECEPs with the LVN degree scored slightly higher values than the other respondents (Table 5).

Systems Intelligence Inventory (SII)

The respondents' self-evaluated average individual systems intelligence was relatively high with the smallest variance between all the measurement in the survey. They evaluate their teams' SI values a little lower than their own individual SI values. There were significant differences among individual SI values but not between SI team values (H(4) = 3.037, p = .552). Working experience had a significant positive impact (H(4) = 10.46, p = .033) on an individual's SI and on the subscales *systemic perception* (p = .040), *positive engagement* (p = .021), and *effective responsivenesss* (p = .009). The participants with over 20 years of working experience in ECE had the highest individual SI values, and the lowest values were held by participants working in ECE between 15 to 20 years. Comparing the eight factors, *systemic perception*, *attunement*, *spirited discovery*, *reflection*, *wise action*, *positive engagement*, *positive attitude*, and *effective responsiveness,* the lowest values to settle on the SI dimensions were *attitude* and *acting*. The highest values were settled on the factor *attunement* which describes an individual's capability to perceive socioemotional systemic environment positively (Table 4). The respondents' educational background had nonsignificant differences (H(2) = .877, p = .645). Worth mentioning is that, opposite the previous tendencies, the respondents with a B.Ss. educational background had the highest mean rank scores (59.32) in self-evaluated individual SI. The ECEPs with a B. Ed. or M. Ed. degree (54.15) and LVN degree (52.15) had minor differences. The respondents evaluated *attunement* (M = 4,7, SD = 0,7) for the teams strongest SI factor (Table 4). Based on the respondents' educational background, the SI team values (H(2) = .351, p = .839) were not in line with the previous occupational well-being measurements. The LVNs' experienced their teams' systems intelligence collaboration the highest, while the respondents with a B.Ss. degree evaluated their teams' systems intelligence the lowest (Table 5).

TABLE 5 The distribution of average mean values in measurements between respondents' education

		N	*M*	*SD*	*Min.*	*Max.*
Basic Psychological Need Satisfaction	*LVN*	65	4.40	.68	2.65	5.67
	B. Ss.	22	4.37	.60	2.91	5.16
	B. Ed. or M. Ed.	20	4.63	.66	3.19	5.44
Work Engagement	*LVN*	65	4.85	.79	1.77	5.82
	B. Ss.	22	4.91	.71	2.50	5.83
	B. Ed. or M. Ed.	20	5.04	.60	3.81	5.94
Burnout	*LVN*	65	1.40	.94	.00	3.80
	B. Ss.	22	1.27	.90	.13	3.12
	B. Ed. or M. Ed.	20	1.21	.83	.00	2.84
Systems Intelligence	*LVN*	65	4.40	.51	3.53	5.79
	B. Ss.	22	4.47	.35	3.74	5.02
	B. Ed. or M. Ed.	20	4.39	.66	3.42	5.41
Team Systems Intelligence	*LVN*	65	4.34	.63	2.81	5.75
	B. Ss.	22	4.22	.58	2.50	5.47
	B. Ed. or M. Ed.	20	4.28	.63	2.97	5.47

Occupational well-being and systems intelligence between the educational backgrounds

Concerning connections between the respondents' educational background in occupational well-being, teamwork, or systems intelligent behavior (R2), there were statistically insignificant differences between the respondents, but a clear tendency in how the values were distributed in occupational well-being due to the respondents' educational background (Table 5). For a further review of the data, we used the Two-Step cluster analysis to observe initial subgroups from the data (Benassi et al., 2020). All three measurements for occupational well-being (*BPNSWS, UWES, MBI-GS*) and two systems intelligent inventories (*SII* - individual and team version) were included in the cluster analysis. The strongest differences in cluster changes were between a solution of two and three clusters. The lowest BIC (-53.8) and AIC (-80.5) changes for a two-cluster solution strongly differed from the lowest BIC (-11) and AIC (-15.8) changes for three cluster solution. The two-cluster solution was chosen because it describes the most authentic distribution of the variables in the original data.

The quality for the cluster solution was fair (0,4) on the silhouette scale between values -1 and 1. The chi-square for the solution was (1, N = 107) = 27, p = <.001. The variables were named by describing the importance and distribution of the values in both clusters: *1. Low burnout with high occupational well-being and systems intelligence values* and *2. High burnout with moderate occupational well-being and systems intelligence values* (Table 6).

TABLE 6 Two cluster solution

Label		***1. Cluster***	***2. Cluster***
Description		*Low burnout with high occupational well-being and systems intelligence values*	*High burnout with moderate occupational well-being and systems intelligence values*
N		61	46
Inputs	*Burnout*	0.76	2.10
	Basic Psychological Need Satisfaction	4.85	3.89
	Work Engagement	5.26	4.43
	Systems Intelligence	4.57	4.20
	Team Systems Intelligence	4.47	4.08

As shown in the cluster solution (Table 6) the variables were arranged by the strongest variance between the responses in the variable (*burnout*) to the weakest variance in the variable (*team systems intelligence*) similarly to those in the original data.

For a further review of the distribution of the respondents' working experience in the two-cluster solution, we created a custom table from the cluster solution and the respondents' working experience groups. Figure 2 showed how Cluster 1 was represented in 50 % or more of all experience groups, but not in the group "10–15 years of experience" (see Figure 2). The significance of the distribution between the working experiences in the two-cluster solution was tested with the non-parametric Chi-square test (4, N = 107) =17.8, p = <.001.

The result supports the previous studies, where the experience group with around 10 to 15 years of experience often has, at the same time, a demanding family life and lots of career expectations, which might negatively affect their occupational well-being (Flores & Day, 2006; Royer & Moreau, 2016; Thayer et al., 2014).

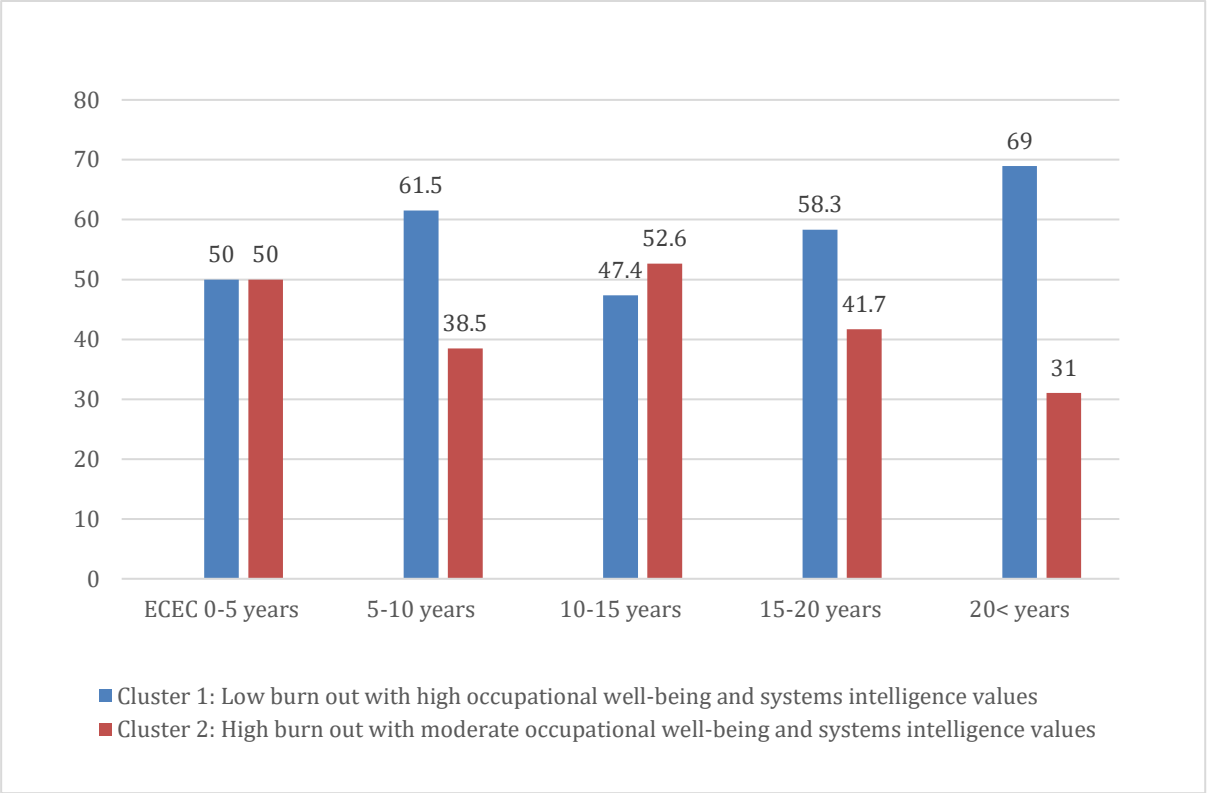

FIGURE 2 The distribution of the cluster solution between the respondents' work experiences

The distribution of the two clusters between the educational background supported positively the tendencies detected from the previous test done with the data (see Figure 3). The respondents with a B. Ed. or M. Ed. degree had the highest percentage of representatives (65 %) from Cluster 1. The respondents with LVN degree had 55.4 % and the respondents with a B. Ss. degree had 54.5% of the representatives from Cluster 1. The distribution between the educational backgrounds in the two-cluster solution was tested with the non-parametric Chi-square test (2, N=107) = 36.2, p = <.001.

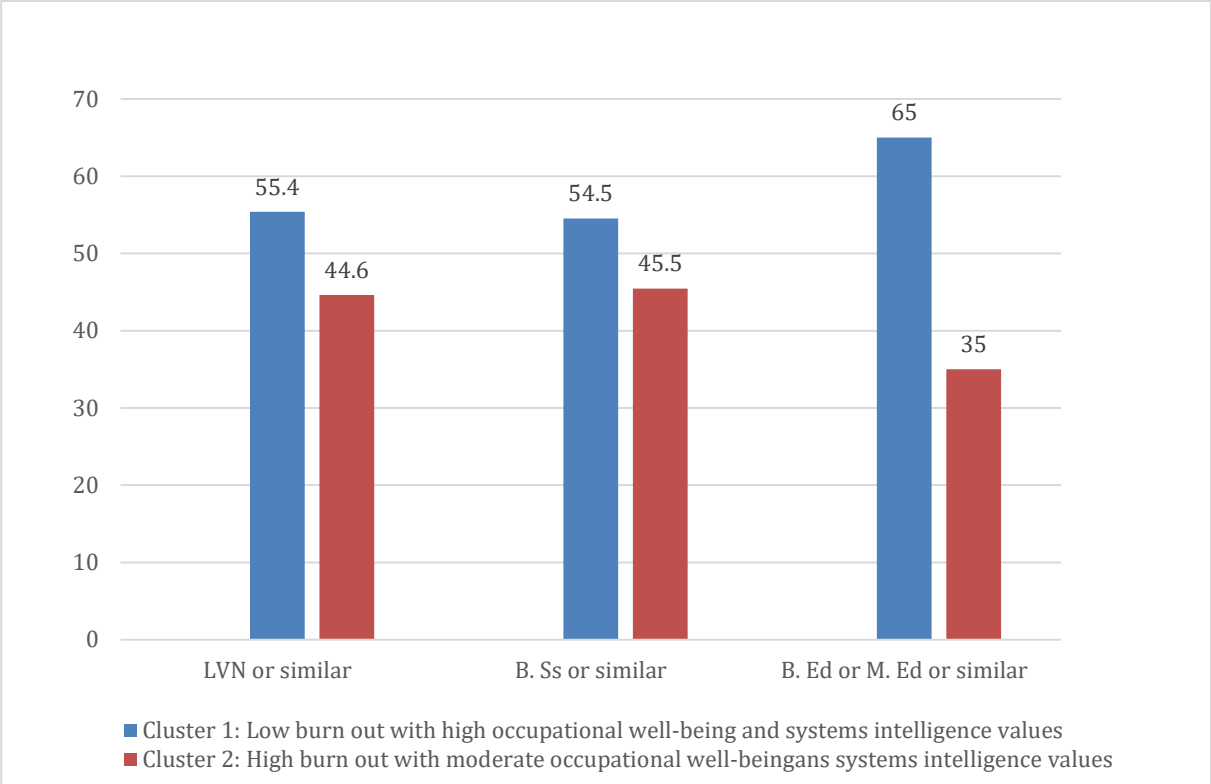

FIGURE 3 The distribution between ECECPs' educational backgrounds in the two-cluster solution

Conclusion

The aim of the study was to describe the level of participant ECEPs´ occupational well-being, collegial collaboration, and teamwork from the perspective of individuals and teams. We also reviewed the connections between participants' educational background, occupational well-being, and systems intelligent behaviour.

As interpreting the ambiguous research results in a complex ECE field, some of the inquiries might describe a respondent's values rather than occupational well-being. In this research the occupational well-being inventories described the respondents' internal experiences, values, and motivation in a working context. SI inventory measured the type of the interaction and organizational collaboration between the respondents. As this research has shown, ECEP work has been found to be an engaging profession that is also highly demanding and stressful one. There are also studies, which describe ECEP work from a more practical viewpoint, where challenging socioemotional interactions, work overload, poor wages and working conditions, high job description, limited advancement opportunities and few opportunities for participation exist as facts (Eskelinen & Hjelt, 2017; Hakanen 2009; Nislin et al., 2016). As stated by Hakanen (2009), the truth lies somewhere between the differing results. Unreasonably high demands with limited

resources for professionals with a high work engagement, may lead to incorrect coping processes, thereby increasing the risk of burnout and health problems.

In the study the participants experienced relatively high occupational well-being and systems intelligence, and low burnout. Surprisingly, a long working experience had a positive impact on high engagement, low burnout, and high systems intelligence. This is a valuable information for an organizational development in the field. Despite the positive results, there are factors, which needs to be evaluated carefully. The values which reflect the ongoing labor shortage were low *autonomy* values in psychological need satisfaction compared to the self-evaluated high *competence* and *relatedness* values, which should promote more independent working (see Table 4) (Deci et al., 2001; Martela & Riekki, 2018; Olafsen et al., 2021). The respondents also had higher *exhaustion* values in burnout compared to the overall burnout and its other subscales' values (see Table 6). The need for developing ECEPs' teamwork and leadership skills were shown in the respondents' lower *positive attitude* and *positive engagement,* both in individual and team systems intelligence responses (see Table 7). Good teamwork is reflected in the attitudes of the members. Disagreements should be seen as part of the development, as increased trust between members and leaders, and as strong engagement within the team (Aira, 2012; Staples & Cameron, 2004).

A tool for developing the ECEPs' occupational well-being, teamwork and leadership skills is enhancing multi-professional teamwork skills. The focus should be on the advantages of the diverse educational backgrounds and knowledge of ECEPs. For decades now, all ECEPs with a diverse educational background have mainly focused on their work, producing and supporting high-quality pedagogy. As absurd as it sounds, licensed vocational nurses, Bachelor of Health Care and Social Services and Bachelors or Masters of Education have practically shared the same responsibilities. Our data showed a prominent tendency and a strong coverage between the ECEPs' educational background, occupational well-being, and an ability to thrive in socio-emotionally complex systemic environments. The majority (65 %) of ECEPs with a master's or bachelor's degree in education experienced more psychological job satisfaction, were more engaged in their work and experienced less burnout. They were able to act in a socioemotionally challenging work environment and experienced high-quality teamwork. Whilst more than half of the respondents with a licensed vocational nurse (55.4 %) or a bachelor's degree in health care and social services (54.5 %) education also experienced high levels of job satisfaction, were highly engaged, had low burnout, and acted systems intelligent in the working community and in teams, there is a significant difference (≥10 %) compared to the teachers with an academic educational sciences degree.

As was said before, the ECE is a complex systemic playground that is guided and obligated by multiple national and local steerers. In addition, for balancing between the steerers, the ECEPs are also responsible for being competent and caring adults, with the knowledge of scaffolding children's development and needs to create high quality pedagogy (Waniganayake et al., 2019). Finnish academic teacher education has long traditions in educating pre-service teachers to respond to previously mentioned requirements (Kinos, 2008) but is lacking in leadership skills. Our findings are in line with the previous research where ECE teachers with a B.Ed. or M.Ed. degree are not generally well-orientated to take the position of pedagogical leadership (Heikka, Pitkäniemi et al., 2021; Waniganayake et al., 2019). This was also evident in our results regarding the teachers' lower systems intelligence values compared to their high occupational well-being values. By contrast, the ECE teachers with a B.Ss. degree evaluated their own SI highest and the team's SI the lowest. There is a strong tendency regarding their education, which focuses on promoting social adaptation of individuals, in mobilizing collective activities for the community or creating active citizenship through formation (Eriksson & Eriksson, 2014). The information of the different experiences in occupational well-being and teamwork between ECEPs' based on their educational background offers more explicit information to Finnish ECE leadership research and organizational development work in practice. ECE leaders enable teams' development work (Douglass, 2019; Fonsén & Vlasov, 2017).

As this survey was collected in September 2019, since then there has been improvement concerning ECE's pre-service and qualifications. The national guidelines for trainings have been published in, *Developing Education and Training Provision and Programmes in Early Childhood Education and Care 2021–2030.* These guidelines affirm the implementing work in the field, for more specified responsibilities for ECE professionals according to their educational background. It highlights how social pedagogues in ECE construct a wide professional education for family services and social well-being, while the licensed vocational nurse education focuses on basic health care and comprehensive well-being (Ministry of education and culture, 2021).

Our findings are in line with the previous studies, where collegiality within a team and a professional differentiated education background were positively related to ECEPs' self-efficacy, competence, and attitudes, in contrast to the length of education (Hur et al., 2015; Perren et al., 2017; Tschannen-Moran et al., 1998). There is also preliminary evidence regarding how more coherent professional requirements have a positive effect on occupational motivation and well-being among ECE teachers. After the national contractual regulation (540/2018) for increased ECE teachers' planning, assessment, and development (PAD) hours was enacted, the change affected ECE teachers positively but other staff negatively (Heikka, Kahila et al., 2021). To enable professional development

for the staff with B.Ss. and LVN degrees, the current organizational transitional phase in Finnish ECE is strongly needed.

In ECE the systemic complexity is described well in the following. Professionals need to regulate their emotions and expressions when simultaneously influencing someone else's feelings, behavior, or attitudes. To succeed in their work, ECEPs need to express certain emotions and avoid expressing others, usually within a short period of time. This kind of work urges professionals to have strong self-regulation and time management skills (Heilala et al., 2021). When combining the previous studies and our results, we suggest that work-related well-being and high-quality multi-professional teamwork in ECE should be enhanced. Organizational responsibilities need to be adjusted more coherent with ECEP's educational background. For further research, there is a need for intervention studies focusing on reorganizing the ECE multi-professional teamwork and strengthening the identity and differentiated competence of professionals.

Limitations

There are limitations concerning the small size of the data, when attempting to generalize the results. Also, most of the respondents belonged to the shortest (0–5 years) or longest (<20 years) experience group. There is no comparable statistical data concerning the distribution of working experience of Finnish ECEPs currently working in the field (Karila et al., 2017). A considerable number of the respondents with the licensed vocational nurse degree (18.5 %) were working as unqualified in the ECE teacher position. Even though, the number represents the reality of the labor shortage of qualified ECE teachers, it challenges the interpretation of the participants' responses in the survey. In defiance of the previous fact, the participants' overall positive responses need to be taken into account when considering the reliability of the answers. In some previous research, ECEPs have given overly positive answers in terms of seeking professional appreciation from the wider social level (Royer & Moreau, 2016). Our choice of the Two-Step cluster analysis as the final method gives good initial results for the data, but more extensive research with a larger data sample is needed to get more precise results.

References

Act on early childhood education and care. (540/2018). https://www.finlex.fi/sv/laki/alkup/2018/20180540

Ahtiainen, R., Fonsén, E., & Kiuru, L. (2021). Finnish early childhood education and care leaders' perceptions of pedagogical leadership and assessment of the implementation of the National Core Curriculum in times of change. *Primary Research Australasian Journal of Early Childhood, 46*(2), 126–138. https://doi.org/10.1177/18369391211010971

Aira, A. (2012). Vuorovaikutuksen näkökulma toimivaan työelämän yhteistyöhön. *Prologi, 8(1),* 49–53. https://doi.org/10.33352/prlg.95880

Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2002). Validation of the Maslach burnout inventory - General survey: An internet study. *Anxiety, Stress, and Coping, 15*(3), 245– 260. https://doi.org/10.1080/1061580021000020716

Basinska, B. A., & Dåderman, A. M. (2019) Work values of police officers and their relationship with job burnout and work engagement. *Frontiers in psychology, 10*, 442. https://doi.org/10.3389/fpsyg.2019.00442

Benassi, M., Garofalo, S., Ambrosini, F., Sant'Angelo, R. P., Raggini, R., de Paoli, G., Ravani, C., Giovagnoli, S., Orsoni, M., & Piraccini, G. (2020). Using two-step cluster analysis and latent class cluster analysis to classify the cognitive heterogeneity of cross-diagnostic psychiatric inpatients. *Frontiers in Psychology, 11*, 1085. https://doi.org/10.3389/fpsyg.2020.01085

Brieger, S. A., De Clercq, D., & Meynhardt, T. (2021). Doing good, feeling good? Entrepreneurs' social value creation beliefs and work-related well-being. *Journal of Business Ethics, 172*(4), 707–725. https://doi.org/10.1007/s10551-020-04512-6

Bunderson, J. S., & Thompson, J. A. (2009). The call of the wild: Zookeepers, callings, and the double-edged sword of deeply meaningful work. *Administrative Science Quarterly, 54*(1), 32–57. https://www.jstor.org/stable/27749305

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: the state of a science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*(1), 19–43. 10.1146/annurev-orgpsych-032516-113108

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former eastern bloc country: A cross-cultural study of self-determination. *Personality & Social Psychology Bulletin, 27*(8), 930–942. https://doi.org/10.1177/0146167201278002

Douglass, A. (2019). *Leadership for quality early childhood education and care* (OECD Education Working Papers, No. 211). OECD Publishing, Paris. https://doi.org/10.1787/6e563bae-en

Eriksson, L., & Eriksson, L. (2014). The understandings of social pedagogy from northern European perspectives. *Journal of Social Work, 14* (2), 165. https://doi.org/10.1177/1468017313477325

Eskelinen, M., & Hjelt, H. (2017). *Varhaiskasvatuksen henkilöstö ja lapsen tuen toteuttaminen. Valtakunnallinen selvitys* [Personnel in early childhood education and realization of support for children. Nationwide clarification] (Opetus- ja kulttuuriministeriön julkaisuja 2017:39). Opetus- ja kulttuuriministeriö.

Finnish National Agency for Education [EDUFI]. (2016). National Core Curriculum for Pre-primary Education 2014 (Publications 2016:6). Finnish National Agency for Education.

Finnish National Agency for Education [EDUFI]. (2018). *National core curriculum for early childhood education and care* (Regulations and guidelines 2018:3c). Finnish National Agency for Education. https://www.oph.fi/en/statistics-and-publications/publications/national-core-curriculum-early-childhood-education-and

Finnish National Agency for Education [EDUFI]. (2022). *Varhaiskasvatussuunnitelman perusteet 2022.* [National core curriculum for early childhood education and care2022] (Määräykset ja ohjeet 2022:2a). Finnish National Agency for Education. https://www.oph.fi/fi/koulutus-ja-tutkinnot/varhaiskasvatussuunnitelmien-perusteet

Flores, M. A., & Day, C. (2006). Contexts which shape and reshape new teachers' identities: A multi-perspective study. *Teaching and Teacher Education, 22(2),* 219–232. https://doi.org/10.1016/j.tate.2005.09.002

Fonsén, E. & Vlasov, J. (2017). Leading pedagogical quality in the context of Finnish childcare. In C. Ringsmose & G. Kragh-Müller (Eds.), *Nordic Social Pedagogical Approach to Early Years. International Perspectives on Early Childhood Education and Development* (pp. 253–265). Springer, Cham. https://doi.org/10.1007/978-3-319-42557-3_15

Fonsén, E., & Keski-Rauska, M. (2018). Varhaiskasvatuksen yhteinen johtajuus vastakohtaisten diskurssien valossa. *Työelämän tutkimus, 16*(3), 185–200. http://hdl.handle.net/10138/305511

Fonsén, E., & Mäntyjärvi, M. (2019). Diversity of the assessments of a joint leadership model in early childhood education in Finland. In P. Strehmel, J. Heikka, E. Hujala, J. Rodd & M. Waniganyake (Eds.), *Leadership in early education in times of change: Research from five continents* (pp. 154–170). Verlag Barbara Budrich. https://doi.org/10.2307/j.ctvmd84fc.15

Frost, N., Robinson, M., & Anning, A. (2005). Social workers in multidisciplinary teams: Issues and dilemmas for professional practice. *Child & Family Social Work, 10*(3), 187–196 . 10.1111/j.1365-2206.2005.00370.x

Guy, A. A., Niel, K., & Franco Durán E., R. (2017). Disclosure and stigma of a positive HIV-serostatus: A two-step cluster analysis of the HIV disclosure scale. *AIDS and Behavior; AIDS Behav, 22*(5), 1606–1613. https://doi.org/10.1007/s10461-017-1989-x

Hakanen, J. (2009). *Työn imua, tuottavuutta ja kukoistavia työpaikkoja? -Kohti laadukasta työelämää.* Työsuojelurahasto. Työterveyslaitos.

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*(6), 495–513. https://doi.org/10.1016/j.jsp.2005.11.001

Hämäläinen, R. P., Jones, R., Saarinen, E., & Varjonen, A. (2014). *Being better better: living with systems intelligence.* Aalto ARTS Books.

Hämäläinen, R. P., Kumpulainen, K., Harviainen, J. T., & Saarinen, E. (2020). Design gaming for learning systems intelligence in socio-emotional systems [Article]. *Systems Research and Behavioral Science, 39*(1), 163–167. https://doi.org/10.1002/sres.2750

Heikka, J., Kahila, S., Pitkäniemi, H., & Hujala, E. (2021). Teachers' time for planning, assessment and development connected to staff well-being in early childhood education. *Education in Childhood*. https://doi.org/10.5772/intechopen.99103

Heikka, J., Pitkäniemi, H., Kettukangas, T., & Hyttinen, T. (2021). Distributed pedagogical leadership and teacher leadership in early childhood education contexts. *International Journal of Leadership in Education, 24*(3), 333–348. https://doi.org/10.1080/13603124.2019.1623923

Heilala, C., Kalland, M., Lundkvist, M., Forsius, M., Vincze, L., & Santavirta, N. (2021). Work demands and work resources: Testing a model of factors predicting turnover intentions in early childhood education. *Early Childhood Education Journal, 50*, 399–409. https://doi.org/10.1007/s10643-021-01166-5

Hur, E., Jeon, L., & Buettner, C. K. (2015). Preschool teachers' child-centered beliefs: Direct and indirect associations with work climate and job-related wellbeing. *Child Youth Care Forum, 45*(3), 451–465. https://doi.org/10.1007/s10566-015-9338-6

Jumisko-Pyykkö, S., Törmänen, J., Vanni, K., Hämäläinen, R., Saarinen, E. (2022). Systems intelligence, perceived performance and wellbeing. In V. Salminen (Ed.), *Human Factors, Business Management and Society*. AHFE (2022) International Conference. AHFE Open Access, vol 56. AHFE International. https://doi.org/10.54941/ahfe1002252

Kalimo, R., Hakanen, J., & Toppinen-Tanner, S. (2006). *Työuupumuksen arvionti MBI-GS-menetelmällä* [Assessing burnout with MBI-SG]. Työterveyslaitos.

Kangas, J., Ukkonen-Mikkola, T., Sirvio, K., Hjelt, H., & Fonsén, E. (2022). Kun aika ja resurssit eivät riitä tekemään työtä niin hyvin kuin osaisi ja haluaisi sitä tehdä: Varhaiskasvatuksen opettajien käsityksiä työn haasteista ja mahdollisuuksista. *Kasvatus & Aika*, *16*(2), 72–89. https://doi.org/10.33350/ka.109089

Karila, K., Kosonen, T. & Järvekallas, S. (2017). *Varhaiskasvatuksen kehittämisen tiekartta vuosille 2017–2030* (Opetus- ja Kultturiministeriön julkaisuja 2017:30). Opetus- ja kulttuuriministeriö. https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/80221/okm30.pdf

Kent, P., Jensen, R. K., & Kongsted, A. (2014). A comparison of three clustering methods for finding subgroups in MRI, SMS or clinical data: SPSS twostep cluster analysis, latent gold and SNOB. *BMC Medical Research Methodology, 14*(1), 113. https://doi.org/10.1186/1471-2288-14-113

Kinos, J. (2008). Professionalism - a breeding ground for struggle. The example of the Finnish day-care centre. *European Early Childhood Education Research Journal, 16*(2), 224–241. https://doi.org/10.1080/13502930802141642

Kinos, J., Rosqvist, L., Alho-Kivi, H., & Korhonen, R. (2021). Suomalaisen varhaiskasvatuksen työ- ja toimintatavat opetussuunnitelmissa. *Kasvatus & Aika 15(2)*, 22–42. https://doi.org/10.33350/ka.99664.

Lepisto, D. A., & Pratt, M. G. (2017). Meaningful work as realization and justification: Toward a dual conceptualization. *Organizational Psychology Review, 7*(2), 99–121. https://doi.org/10.1177/2041386616630039

Martela, F., & Riekki, T. J. J. (2018). Autonomy, competence, relatedness, and beneficence: A multicultural comparison of the four pathways to meaningful work. *Frontiers in Psychology, 9.* https://doi.org/10.3389/fpsyg.2018.01157

Martela, F., & Sheldon, K. M. (2019). Clarifying the concept of well-Being: psychological need satisfaction as the common core connecting eudaimonic and subjective well-being. *Review of General Psychology*, *23*(4), 458–474. https://doi.org/10.1177/1089268019880886

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Manual - Maslach burnout inventory*. https://www.mindgarden.com/maslach-burnout-inventory-mbi/685-mbi-manual.html

Melasalmi, A., & Husu, J. (2018). A narrative examination of early childhood teachers' shared identities in teamwork. *Journal of Early Childhood Teacher Education, 39*(2), 90–113. https://doi.org/10.1080/10901027.2017.1389786

Ministry of Education and Culture (2021). *Programme for developing education and training provision and programmes in early childhood education and care 2021–2030* (Publications of the Ministry of Education and Culture, Finland 2021:3). http://urn.fi/URN:ISBN:978-952-263-876-2

Nislin, M., & Pesonen, H. (2019). Associations of self-perceived competence, well-being and sense of belonging among pre- and in-service teachers encountering children with diverse

needs. *European Journal of Special Needs Education, 34*(4), 424–440. https://doi.org/10.1080/08856257.2018.1533093

Nislin, M., Sajaniemi, N., Sims, M., Suhonen, E., Maldonado, E. F., Hyttinen, S., & Hirvonen, A. (2016). Occupational well-being and stress among early childhood professionals: the use of an innovative strategy to measure stress reactivity in the workplace. *Open Review of Educational Research, 3*(1), 1–17. https://doi.org/10.1080/23265507.2015.1128352

OECD (2021). *Starting strong VI: Supporting meaningful interactions in early childhood education and care*. OECD Publishing, Paris. https://doi.org/10.1787/f47a06ae-en

Olafsen, A. H., Halvari, H., & Frølund, C. W. (2021). The basic psychological need satisfaction and need frustration at work scale: A validation study. *Frontiers in Psychology, 12*, 697306. https://doi.org/10.3389/fpsyg.2021.697306

Perren, S., Herrmann, S., Iljuschin, I., Frei, D., Körner, C., & Sticca, F. (2017). Child-centred educational practice in different early education settings: Associations with professionals' attitudes, self-efficacy, and professional background. *Early Childhood Research Quarterly, 38,* 137–148. https://doi.org/10.1016/j.ecresq.2016.07.001

Pugh, G. (2008). Developing multi-professional teamwork for integrated children's services. *Children & Society, 22*(2), 145–146. https://doi.org/10.1111/j.1099-0860.2007.00111.x

Ranta, S., & Uusiautti, S. (2022). Toimiva tiimityö onnistuneen varhaiskasvatuksen perustana. *Kasvatus*, 53(1), 79–85. https://doi.org/10.33348/kvt.113950

Ranta, S., Sajaniemi, N., Eskelinen, M., & Lämsä, T. (2021). Päivähoidosta varhaiskasvatukseen: Pedagogisen toiminnan edellytykset suomalaisessa päivähoidossa ja varhaiskasvatuksessa. *Kasvatus & Aika, 15*(2), 60–72. https://doi.org/10.33350/ka.103194

Ranta, S., Uusiautti, S., & Hyvärinen, S. (2020). The implementation of positive pedagogy in Finnish early childhood education and care: a quantitative survey of its practical elements. *Early Child Development and Care, 192*(3), 425–431. https://doi.org/10.1080/03004430.2020.1763979

Rosso, B. D., Dekas, K. H., & Wrzesniewski, A. (2010). On the meaning of work: A theoretical integration and review. *Research in Organizational Behavior, 30*, 91–127. https://doi.org/10.1016/j.riob.2010.09.001

Royer, N., & Moreau, C. (2016). A survey of Canadian early childhood educators' psychological wellbeing at work. *Early Childhood Education Journal, 44*(2), 135–146. http://dx.doi.org/10.1007/s10643-015-0696-3

Ruohotie-Lyhty, M. (2018). Identity-agency in progress: Teachers authoring their identities. In P. Schutz, J. Hong & D. Cross Francis (Eds), *Research on Teacher Identity* (pp. 25–36). Springer, Cham. https://doi.org/10.1007/978-3-319-93836-3_3

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Saarinen, E., & Hämäläinen, R. P. (2007). Systems intelligence: Connecting engineering thinking with human sensitivity. In R. Hämäläinen & E. Saarinen (Eds.), *Systems intelligence in leadership and everyday life* (pp. 51–78). Systems Analysis Laboratory. Helsinki University of Technology.

Salas, E., Shuffler, M. L., Thayer, A. L., Bedwell, W. L., & Lazzara, E. H. (2015). Understanding and improving teamwork in organizations: A scientifically based practical guide. *Human Resource Management, 54*(4), 599–622. https://doi.org/10.1002/hrm.21628

Schaufeli, W., & Bakker, A. (2004). *UWES Utrecht work engagement scale*. Preliminary Manual. https://www.wilmarschaufeli.nl/publications/Schaufeli/Test%20Manuals/Test_manual_UWES_English.pdf

Shuffler, M. L., Salas, E., & Rosen, M. A. (2020). The evolution and maturation of teams in organizations: Convergent trends in the new dynamic science of teams. *Frontiers in Psychology, 11*, 2128–2128. https://doi.org/10.3389/fpsyg.2020.02128

Staples, D. S., & Cameron, A. F. (2004). Creating positive attitudes in virtual team members. In S. H. Godar & S. P. Ferris (Eds.), *Virtual and Collaborative Teams* (pp. 76–98). IGI Global. https://doi.org/10.4018/978-1-59140-204-6.ch005

Syrjämäki, M., Sajaniemi, N., Suhonen, E., Alijoki, A., & Nislin, M. (2017). Enhancing peer interaction: an aspect of a high-quality learning environment in Finnish early childhood special education. *European Journal of Special Needs Education, 32*(3), 377–390. https://doi.org/10.1080/08856257.2016.1240342

Thayer, A. L., Rico, R., Salas, E., & Marlow, S. L. (2014). Teams at work. In M. C. W. Peeters, J. de Jonge, & T. W. Taris (Eds.), *An introduction to contemporary work psychology* (6th ed.) (Chapter 18). Town Hill Press.

Törmänen, J., Hämäläinen P., R., & Saarinen, E. (2016). Systems intelligence inventory. *The Learning Organization, 23*(4), 218–231. https://doi.org/10.1108/TLO-01-2016-0006

Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68*(2), 202–248. https://doi.org/10.3102/00346543068002202

Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-related Basic Need Satisfaction scale. *Journal of Occupational and Organizational Psychology, 83*(4), 981–1002. https://doi.org/10.1348/096317909X481382

Vlasov, J., Salminen, J., Repo, L., Karila, K., Kinnunen, S., Mattila, V., Nukarinen, T., Parrila, S., & Sulonen, H. (2019). *Guidelines and recommendations for evaluating the quality of early childhood education and care* (Publications 5:2019). Finnish Education Evaluation Centre.

Waniganayake, M., Cheeseman, S., Fenech, M., Hadley, F., & Shepherd, W. (2017). *Leadership: contexts and complexities in early childhood education*. Oxford University Press.

Waniganayake, M., Heikka, J., & Halttunen, L. (2019). Enacting pedagogical leadership within small teams in early childhood settings in Finland. In S. Cheeseman & R. Walker (Eds.), *Pedagogies for Leading Practice* (pp. 147–164). Routledge. https://doi.org/10.4324/9781351266925-13