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Emotional Exhaustion in German Preschool Teachers: The Role of Personal, Structural, and Social Conditions at the Workplace

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ABSTRACT

Research has demonstrated that preschool teachers are particularly prone to develop burnout symptoms, such as emotional exhaustion. However, which workplace conditions are particularly related to burnout symptoms in preschool teachers remains widely unknown. Hence, this study aims to disentangle personal characteristics (e.g. educational degree, working experience) and structural as well as social conditions of preschool teachers' work environment (e.g. teacher–child ratio, team climate) in relation to emotional exhaustion. We draw on data collected from a nation-wide sample of 1,394 preschool teachers nested in 204 preschools. Multilevel analysis demonstrated that center differences explained only 5.8% of the overall variance in levels of emotional exhaustion. Emotional exhaustion was strongly associated with social experiences at the workplace, but much less with structural or personal job conditions. Hence, practical interventions should also focus on social aspects, such as team cohesion and dealing with challenges in parent-teacher collaborations.

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Burnout; early childhood education; emotional exhaustion; preschool teachers; relation to parents; team climate

For many decades, researchers have been interested in a phenomenon called burnout that is characterized by a “persistent, negative, work-related state of mind” (Schaufeli & Enzmann, 1998, p. 36). Emotional exhaustion – feeling overstrained and drained of emotional resources – is widely recognized as the core component of job burnout (Klusmann et al., 2008; Kristensen et al., 2005; Lee & Ashforth, 1996; Maslach & Jackson, 1981). Studies over the past 40 years have shown that childcare professionals are especially prone to experience burnout symptoms at some point during their careers (e.g., Blöchliger & Bauer, 2018; Goelman & Guo, 1998; Koch et al., 2015; Løvgren, 2016; Manlove, 1993; Maslach & Pines, 1977; Pines & Maslach, 1980; Viernickel et al., 2013).

Staff with burnout symptoms have higher turnover rates and absenteeism from work and experience more health problems and less well-being (Blöchliger & Bauer, 2018; Borritz et al., 2006; Burisch, 2014; Salvagioni et al., 2017; Sandilos et al., 2015; Swider & Zimmerman, 2010). All of these aspects are highly relevant for an early childhood education and care (ECEC) work force that is already struggling with low staffing levels and increasing demands (OECD, 2017; Schreyer & Krause, 2016), such as caring for more and younger children or higher requirements with regard to the quality of the pedagogical work. Further, research revealed negative consequences of preschool teachers' emotional exhaustion for the quality of interactions with children (Ansari et al., 2022) and for instructional practices (Wieduwilt et al., 2023). To combat against negative consequences for the ECEC workforce

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as well as children, it is important to understand the specific underlying factors associated with burnout symptoms in preschool teachers.

There is substantive research demonstrating the general influence of the workplace on the development of burnout symptoms across professions (e.g., Demerouti et al., 2001; Halbesleben & Buckley, 2004; Maslach et al., 2001). To investigate the impact and to structure relevant working conditions on employees' health and well-being, studies often use existing job stress models (Bakker & Demerouti, 2007; Jonge et al., 2000), such as the job demands-resources (JD-R) model (Demerouti et al., 2001; Lesener et al., 2019). It predicts job strain, such as burnout, by two categories – job demands and job resources (Bakker & Demerouti, 2007) – that can be of physical, psychological, social, or organizational nature (Demerouti et al., 2001). The more demands and the less resources an individual worker has available, the more job strain is experienced. However, the allocation of a particular job aspect to one of the two categories is often difficult (Schaufeli & Taris, 2014; Van Veldhoven et al., 2020). Whereas one individual may perceive a condition as a resource (e.g., a high scope of responsibility), another may consider it as a demand. Another way of structuring job conditions is to distinguish between value-neutral personal and environmental job conditions (e.g., Maslach et al., 2001; Rothland & Klusmann, 2016).

To our knowledge, only a few studies investigated workplace factors of ECEC settings in particular (see e.g., Barford & Whelton, 2010; Blossfeld et al., 2014; Goelman & Guo, 1998; Jeon et al., 2018; Løvgren, 2016). Taken together, these studies suggest that both personal and environmental job conditions are associated with preschool teachers' burnout symptoms (e.g., Blöchliger & Bauer, 2016; Jungbauer & Ehlen, 2015; Viernickel et al., 2013). However, previous research was based on regional samples (e.g., Blöchliger & Bauer, 2018; Viernickel et al., 2013), did not specifically focus on burnout symptoms but on more general constructs (e.g., work-related stress; Schreyer & Krause, 2016), and did not investigate a variety of job conditions to find out which ones matter the most. Finally, hardly any studies considered the nested data structure resulting from several preschool teachers belonging to the same preschool center (for an exception, see Blöchliger & Bauer, 2018). Therefore, the present study draws on a large national (German) dataset and examines a wide range of personal as well as environmental job conditions and their association with preschool teachers' symptoms of emotional exhaustion, both within and between preschool centers. The investigation might provide indications for adjustments at the workplace of preschool teachers to prevent adverse effects for teachers and children and to ensure high quality of center care. The following sections summarize specific personal and environmental conditions relevant in ECEC settings with a focus on those that have been associated with high-quality care and/or with the emergence of burnout symptoms.

Personal job conditions

Personal job conditions refer to individual requirements or circumstances related to the job. They describe professional competencies and personal workloads that often depend on individual (career) decisions. For example, research indicates that preschool teachers with higher education experience less burnout symptoms (Jeon et al., 2018; Manlove, 1993). Goelman and Guo (1998) argue that higher education may lead to more realistic expectations of the job and roles, which in turn may influence preschool teachers' perception of their work. Interestingly, there seem to be only very small or no associations between preschool teachers' formal qualification and classroom quality or child outcomes (Early et al., 2006, 2007). However, studies investigating in-service trainings show positive associations with quality (Fukkink & Lont, 2007; Slot, 2018; Slot et al., 2015) – especially if they follow fixed curricula and are not carried out within large-scale programs (Fukkink & Lont, 2007) – and preschool teachers perceive the support of in-service trainings in a center as a resource (Viernickel et al., 2013). Jeon et al. (2018) demonstrated that preschool teachers were less stressed with more access to professional development. However, an online training on teacher–child interactions also has been shown to increase exhaustion symptoms (Roberts et al., 2020).

Another construct of this category is teachers' working experience in ECEC settings. It can serve as a resource because workers are feeling more confident in dealing with different requirements, but is also associated with lower working capacity (Viernickel et al., 2013). Research from the educational sector demonstrates that (preschool) teachers with more working experience/higher age show lower burnout symptoms (see Blöchliger & Bauer, 2018; Klusmann et al., 2008; Viernickel et al., 2013) and better process quality, meaning educational processes and interactions between children and their teachers, other children, and their surroundings in the classroom are of higher quality (Pianta et al., 2005; Tietze et al., 2012). Slot et al. (2015) showed that more work experience increased pedagogical quality and decreased negative effects of a high number of migrant children in preschool classrooms.

Individual workload, which is generally considered as a main driver of burnout, is often measured by the number of working hours of an individual worker (Maslach et al., 2001). Furthermore, the respective roles and accompanying tasks of preschool teachers also differ in terms of workload. Thus, lead teachers usually bear a higher degree of responsibility compared to assistant teachers. Thereby, lead teachers may experience higher demands, but they also have higher resources (Blöchliger & Bauer, 2016), such as more autonomy and control.

Environmental job conditions

In contrast to personal job conditions that mainly relate to the individual worker, environmental job conditions depend on organizational and work contexts and are shared with coworkers. They can be of structural or social nature. Structural conditions comprise quantitative characteristics of the work setting that are objectively determinable, which means that they demand for little or no subjective concordance between people (Phelan et al., 1993). The regulation and control of structural conditions are incumbent upon legislations, policies, and funding strategies (Slot, 2018) from decision-makers at management or policy levels. In contrast, social conditions of the work environment refer to the quality of interactions between people involved in the job, and as such to relationships, the perceived climate, or emotional support between people. They are often elusive, multifaceted, and more dependent on individuals and as such less controllable by decision-makers at higher levels. Interventions focusing on changing or improving social conditions are often time-consuming and complex and require personal guidance and intensive (team) trainings (cfl. Glisson et al., 2006).

Structural job conditions in preschools

The structural work environment in preschools is particularly determined by personnel conditions, characteristics of children, and existing organizational structures. The most prominent structural condition concerns staffing issues, such as the teacher–child ratio (Blöchliger & Bauer, 2018; Viernickel et al., 2013). A low number of caregivers in relation to a high number of children increases a preschool teacher's workload or demand because the teacher has to care for more children (Maslach & Pines, 1977) and is less able to perform the job well (Viernickel et al., 2013). In addition to the sheer ratio, the total number of available staff members in a center influences the workload. If there are only a few teachers working in a center, adequate staffing is at risk in times of temporary absences — for example, due to illness (Viernickel et al., 2013). A high number of available teachers can somewhat counteract this problem.

Regarding children's characteristics, a high total number of children and rising heterogeneity of children (e.g., due to different family languages) may lead to a more complex and diverse work environment and to increased workload (e.g., through additional demands concerning language promotion). In accordance, research on preschool quality demonstrates that more migrant children (Kuger & Kluczniok, 2009; Slot et al., 2015), higher teacher-child ratios, and younger children in a group decrease process quality (Kuger & Kluczniok, 2009).

Organizational structures describe how institutional “activities are divided, organized and coordinated” (Ahmady et al., 2016, p. 455). In preschools, these include, for example, designated planning

time, frequency of team meetings, or time for leadership tasks. Research indicates that the amount of time teachers have for planning, preparing, and follow-up work disencumber preschool teachers (Sosinsky & Gilliam, 2011) and decrease teachers' workload (Blöchliger & Bauer, 2016) by avoiding working overtime or working at home (Viernickel et al., 2013). Planning time also raises the quality of an ECEC setting (Tietze et al., 1998, 2012). Further, frequent staff meetings create the opportunity to socialize and support each other (Maslach & Pines, 1977; Viernickel et al., 2013). As such, they can help to prevent a lost sense of connection, one of the drivers of burnout symptoms (Maslach et al., 2001). The importance of good leadership in ECEC settings has recently been reinforced in the research literature (cfl. Strehmel et al., 2019). One structural aspect with the potential to increase good leadership is fixed time for leadership tasks of center managers.

Social job conditions in preschools

That the social environment of the workplace clearly impacts workers' well-being and performance has already been shown in many studies across professions (González-Romá et al., 2009; Levecque et al., 2014; Viitala et al., 2015; Viswesvaran et al., 1999), including the educational sector (Hascher & Waber, 2021; Skaalvik & Skaalvik, 2009; Van Droogenbroeck et al., 2014). In preschools, two groups of people shape the social environment of preschool teachers in particular: colleagues and parents. Thereby, both groups take on very different roles in the everyday working life and shape social experience in different ways. Colleagues are part of the same team and are working partners at a position of equity. The burnout literature suggests that a lost connection to the work community, non-shared values with the working group, and conflicts with colleagues increase or even release burnout symptoms (Maslach et al., 2001; Viernickel et al., 2013). It also has been shown that a good team climate and professional exchange between team members are associated with better quality of care for children (Resa et al., 2018; Wertfein et al., 2013), that less satisfaction with team collaboration is associated with higher exhaustion levels in preschool teachers (Trauernicht et al., 2022), and that strained relationships with coworkers are perceived as stressful (Tebben et al., 2021). From special education teachers, we know that they are more likely to leave the job or to intend leaving the job when their collegial support is low (Billingsley & Bettini, 2019).

In contrast to colleagues, parents are educational partners and service recipients, coming with certain expectations and claims regarding the education and care of their children. Cooperation and networking with parents constitute an increasing emphasis in ECEC settings (Hachfeld et al., 2016) and depict an important part of preschool teachers' work tasks (Kluczniok & Roßbach, 2014), much more than in primary and secondary school settings. Research from secondary school contexts found positive associations between pressure from students' parents and burnout (Stoerber & Rennert, 2008) and negative associations between good relations to parents and burnout (Skaalvik & Skaalvik, 2009, 2010). In the preschool context, more satisfaction with collaboration with parents was associated with fewer burnout symptoms (Trauernicht et al., 2022) and conflictual relationships with parents were perceived as sources of stress (Tebben et al., 2021). However, Jeon et al. (2018) did not show associations between support from families and exhaustion of preschool teachers. All in all, previous research suggests that social job conditions can serve as demands or resources for preschool teachers.

The role of the center

Job conditions differ not just within, but also between preschool centers — for example, due to the composition of children, parents, and staff or specific regulations. In line with this, there is growing recognition in the research literature for a shared element of burnout symptoms within the institution (Blöchliger & Bauer, 2018; Halbesleben & Leon, 2014), even though burnout was originally viewed as an individual phenomenon (e.g., Halbesleben & Buckley, 2004; Maslach et al., 2001). One line of reasoning argues that some institutions have more exhausting working conditions than others (Klusmann et al., 2008). Another argument comes from research about emotional contagion

(Hatfield et al., 1994); from this perspective, burnout symptoms spread within a given workplace if colleagues are frequently talking about work-related problems and individuals are particularly susceptible to others' emotions (Bakker & Schaufeli, 2000). So far, empirical educational studies have revealed mixed results. Klusmann et al. (2008) found only very little explained variance of emotional exhaustion between German secondary schools and a much greater influence of individual factors. In contrast, Blöchliger and Bauer (2018) found a medium-to-large effect of explained variance between Swiss ECEC centers with regard to burnout symptoms of their staff. Clarification of the extent to which exhaustion levels differ between centers is still pending in many national contexts, including the German.

Study context: Early childhood education and care in Germany

To facilitate comparison with other national ECEC systems and to better classify the results of this study, it is important to understand the national context of the given sample. Germany's ECEC system is highly decentralized. Each of the 16 federal states translates general national regulations into its own laws and conditions leading to high heterogeneity between federal states with regard to ECEC provision, quality, and funding (Schreyer & Krause, 2016). The ECEC system is assigned to the child and youth welfare system of the country. This means that preschools are embedded in other child and youth welfare services and they follow a socio-pedagogical tradition. This is also reflected in the strong emphasis on the holistic preparation of children for life and life-long learning (Jugend- & Kultusministerkonferenz, 2004). Traditionally, many preschools take a situation-oriented approach (see Oertel, 1984), where the daily pedagogical routine is driven by situations and topics relevant for the children (Neuhaus et al., 2018); moreover, free and unguided play is highly valued and children of different ages are often part of the same group (Anders, 2015). As opposed to formal schooling, there is no fixed curriculum with distinct subjects in German preschools that determine the daily schedule (Jugend- & Kultusministerkonferenz, 2004); however, the federal education plans emphasize the role of ECEC in the support of different learning domains, particularly of language and literacy (Viernickel & Schwarz, 2009).

However, throughout Germany there has been a strong reorganization of its ECEC system in the past decades (Tietze et al., 2012), resulting in new challenges and opportunities for preschool teachers. The ECEC system is confronted with rising participation rates through the expansion of legal entitlement to a place in a childcare setting from age 1 to school entry (OECD, 2017; Schreyer & Krause, 2016; Tietze et al., 2012). Whereas participation rates for 3- to 5-year-olds have increased only slightly (from 87.3% in 2006 to 93.7% in 2017), participation rates for children age 2 or younger have almost tripled, from 13.6% in 2006 to 33.1% in 2017 (Autorengruppe Bildungsberichterstattung, 2018). Of course, this increase also resulted in a higher demand for preschool teachers; even though the number of employed preschool teachers increased (Autorengruppe Bildungsberichterstattung, 2018), they do not yet meet the existing demands (Schreyer & Krause, 2016) and will probably not do so in the coming years (Autorengruppe Bildungsberichterstattung, 2018).

In addition to quantitative expansion, there is also progressive professionalization and related substantive change of childcare services (Kluczniok & Roßbach, 2014; OECD, 2015, 2017) leading to new tasks for preschool teachers, such as quality development and documentation obligations, education and care for more children age 2 and below, and implementation of educational programs. In addition, there is an increasing heterogeneity of children in terms of language, social, and cultural background, which means both new opportunities, but also new demands for preschool teachers in their daily work (cfl. Stenger et al., 2017). About 70.3% of all professionals working in the German ECEC system hold a vocational training degree (Autorengruppe Bildungsberichterstattung, 2018); this educational track is very general in content and enables degree holders to work in a variety of related jobs, such as in preschools, after-school programs, or residential childcare (Jannsen, 2010). Therefore, preschool teachers are often not trained and prepared for the specific tasks in their daily work with preschool children. All of these changes are accompanied by a growing interest in ECEC-related

research (Anders & Roßbach, 2013), which had long been neglected as compared to ECEC research in the Anglo-Saxon world (Linberg et al., 2013). Further, the traditional child centeredness in German ECEC centers is now gradually being replaced by a stronger orientation toward educational curricula, customary in many other OECD countries.

The present research

Based on previous research, the present study aims at understanding associations between personal conditions as well as structural and social environmental conditions at the workplace with preschool teachers' symptoms of emotional exhaustion. We first analyze to what extent symptoms of emotional exhaustion differ between preschool centers. Second, we investigate how personal job conditions (e.g., qualification, ECEC work experience) are related to symptoms of emotional exhaustion. Third, we examine the additional association of environmental job conditions of centers (e.g., planning time, teacher-child-ratio) and groups (e.g., number of children in group, proportion of migrant children in group) with emotional exhaustion of preschool teachers. Last, we investigate the additional role of social working conditions (team climate, relation to parents) in relation to preschool teachers' emotional exhaustion.

Method

Participants and procedure

Data were provided by the evaluation study of the German federal program *Sprach-Kitas: Weil Sprache der Schlüssel zur Welt ist* [Language day care centers: because language is the key to the world]. The project is funded by the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth and under the lead of the Free University of Berlin and the University of Bamberg. The program was implemented in 10.5% of all German preschools with a focus on larger preschools with high proportions of children from migrant, refugee, or disadvantaged families, which increases this sample's variance in these variables. Sprach-Kitas aims at enhancing preschool quality with a focus on language education integrated into daily routines, inclusive pedagogy, and collaboration with parents. The data used for this study stemmed from three different sources: from preschool teacher reports collected in spring 2018, from reports of their center managers collected in fall 2017, and from baseline data on structural aspects of each preschool collected in fall 2018. Even though the data collection took place in the context of an evaluation study, the present study does not answer evaluative questions.

Our sample consisted of $N = 1,394$ preschool teachers (93.3% women; age range: 18–75; $M = 39.69$, $SD = 11.87$) nested in $N = 204$ preschool centers (on average, 6.83 preschool teachers per center) of nine federal states of Germany. Beforehand, we excluded data from preschool teachers with missing values on all ($n = 50$) or less than 50% of all items ($n = 3$) measuring emotional exhaustion. The average preschool teacher worked for 33.42 hours per week ($SD = 7.61$), had 12.95 years of working experience in ECEC settings (range: 0–49 years, $SD = 11.55$), graduated from a vocational program (86.8%), and worked in a group with 19.57 children ($SD = 8.05$) age 3.35 ($SD = 1.28$) with 45.85% migrant children ($SD = 30.13$). The average preschool center in our sample cared for 94.07 children ($SD = 44.85$), whereby 39.21% of the enrolled children had a migration background (i.e. having at least one parent with another first language than German), with a teacher-child ratio (in full-time equivalents) of 1 to 6.26 ($SD = 1.79$). Tables 1 and 2 provide overviews of all descriptive data.

Measures

In line with our research questions and theoretical assumptions, emotional exhaustion of preschool teachers statistically served as our outcome variable and personal as well as structural and social

Table 1. Means, standard deviations, and correlations among preschool teacher-level variables.

	<i>M (SD)</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Emotional exhaustion ^a	2.38 (1.15)	1.00										
<i>Personal conditions</i>												
(2) Educational level ^b	1.89 (.68)	.01	1.00									
(3) In-service training hours ^c	8.74 (21.53)	-.03	.06*	1.00								
(4) ECEC working experience ^d	12.95 (11.55)	.09**	-.05	.04	1.00							
(5) Working hours/week	33.42 (7.61)	.02	.05	.01	-.10	1.00						
(6) Position ^e	0.59 (.49)	.05	.34**	.02	.10**	.24**	1.00					
<i>Structural group conditions</i>												
(7) Number of children	19.57 (8.05)	.05	-.04	-.01	.03	.04	-.07	1.00				
(8) Age of children	3.35 (1.28)	.11**	.00	.04	.13**	.01	.03	.40**	1.00			
(9) Migrant children (%)	45.85 (30.13)	.08**	-.02	.04	-.03	.05	-.02	.11**	.30**	1.00		
<i>Social conditions</i>												
(10) Team climate ^f	4.06 (.65)	-.37**	-.01	.08**	.02	.04	.04	.03	-.05	.03	1.00	
(11) Relation to parents ^g	4.94 (.85)	-.34**	.03	.05	.02	.06	.02	-.01	-.05	.00	.30**	1.00

N ranges from 554 to 1,377; ** $p < .01$; * $p < .05$; ^arange: 1–7; ^b0 = any level, 1 = any pedagogical/social vocational training, 2 = vocational training as preschool teacher, 3 = bachelor's degree, 4 = master's degree; ^cin the past year; ^din years; ^e0 = assistant role, 1 = leading role; ^frange: 1–5; ^grange: 1–7.

Table 2. Means, standard deviations, and correlations among preschool center-level variables.

	<i>M (SD)</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Emotional exhaustion ^a	2.40 (.61)	1.00										
<i>Structural conditions</i>												
(2) Teacher-child ratio	6.26 (1.79)	-.04	1.00									
(3) Number of teachers	16.38 (8.51)	.06	-.36**	1.00								
(4) Number of children	94.07 (44.85)	.04	-.10	.87**	1.00							
(5) Migrant children (%)	39.21 (25.17)	.07	-.05	-.09	-.25**	1.00						
(6) Planning time/week ^b	2.60 (3.16)	.02	-.21**	.11	-.19*	.19**	1.00					
(7) In-service training days/year	4.67 (1.83)	.01	-.16	.47**	.13	.21*	.30**	1.00				
(8) Time for leadership tasks (%)	72.35 (34.51)	.09	-.23**	.40**	.35**	.06	-.03	.11	1.00			
(9) Frequency of team meetings ^c	2.45 (.87)	.02	.01	-.01	.07	-.15	-.28	-.05	.07	1.00		
<i>Social conditions</i>												
(10) Team climate ^d	4.10 (.42)	-.35**	.03	.12	-.12	.08	.07	.13	-.10	-.12	1.00	
(11) Relations to parents ^e	4.99 (.54)	-.52**	.04	-.04	-.15*	-.03	.06	.15	-.12	-.12	.46**	1.00

N ranges from 65 to 204 centers; ** $p < .01$; * $p < .05$; ^arange: 1–7 (mean per center); ^bin hours; ^c1 = several times a week, 2 = once a week, 3 = several times a month, 4 = once a month, 5 = less often, 6 = never; ^drange: 1–5 (mean per center); ^erange: 1–7 (mean per center).

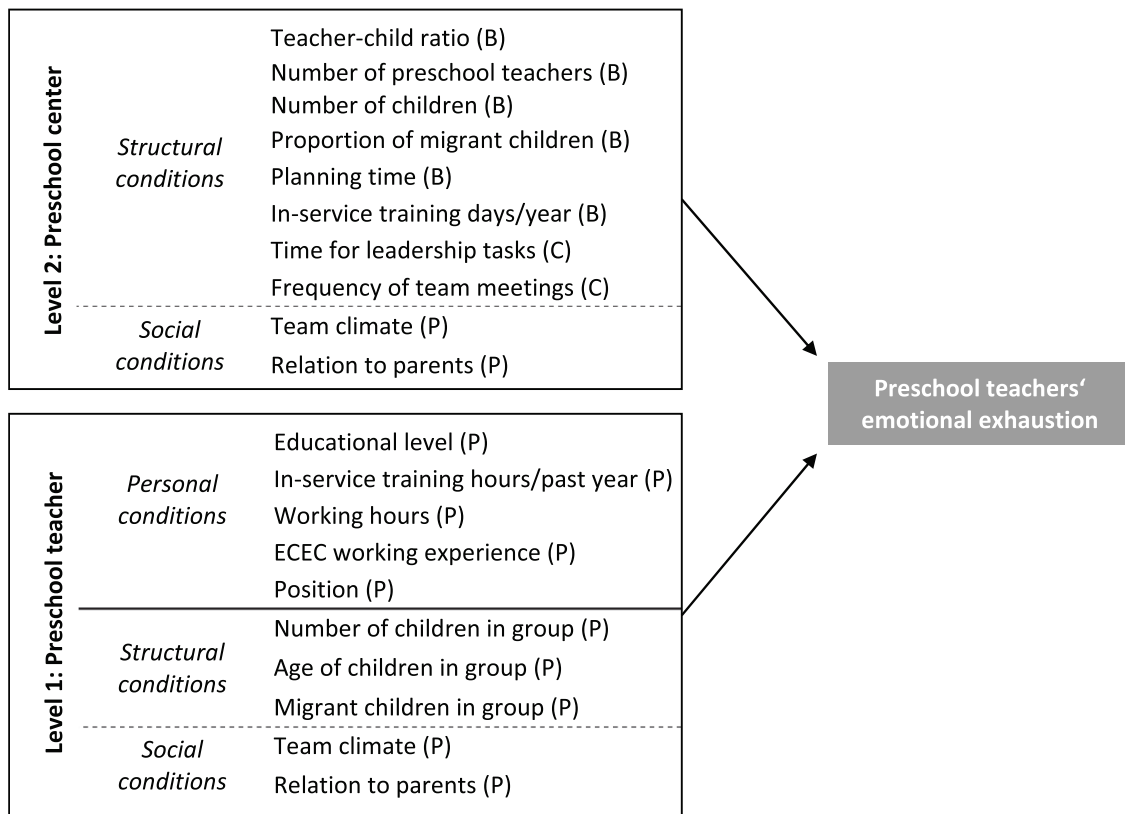


Figure 1. Overview of variables examined in the present study, including assumed direction of relationships. Depicted are personal, structural, and social job conditions on the level of the preschool center (level 2) as well as of the individual teacher (level 1). Uppercase letters indicate data sources: B = baseline data, C = center manager reports, p = preschool teacher reports.

environmental job conditions, both on the level of the teacher and center, as our predictor variables. Figure 1 depicts an overview of our measures.

Outcome measure

Emotional exhaustion was measured with the respective subscale of the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981).¹ We used an established German translation (Büssing & Perrar, 1992) and slightly adapted two items for better reading fluency. Preschool teachers indicated their agreement with nine items (e.g., “I feel emotionally drained from my work.”) on a 7-point response scale ranging from 1 = *hardly ever* to 4 = *moderately* to 7 = *very strongly*. Internal consistency in our sample was excellent (Cronbach’s $\alpha = .93$); for comparison, Büssing and Perrar (1992) report an internal consistency of .89 (Cronbach’s α). For more information on the psychometric properties, see Maslach et al. (2018) for the original English version or Büssing and Perrar (1992) for the applied German version of the questionnaire.

Preschool teacher-level predictors

Personal conditions. We asked preschool teachers to indicate all professional degrees they hold and used their highest degree as their current educational level. Further, they specified if they had a leading or an assisting position in their predominant group or if they filled in any other role, which we treated as missing value. Preschool teachers also provided information on how many hours of training they had received in the past 12 months, how many years they had already worked in ECEC contexts, and how many hours per week they worked according to their employment contract. As the description of participants revealed, we also asked respondents to indicate their gender and age. But because our sample consisted primarily of women and because working experience was highly correlated with age, we did not include gender and age as covariates into our analyses.

Structural group conditions of the work environment. Preschool teachers provided information on group characteristics, depicting their closest work environment, including number and age of children in their group as well as number of children with migration background. Migration background was defined as having at least one parent with another first language than German. Unfortunately, we did not have data on the teacher–child ratio at the group level.

Social conditions of the work environment. To assess how individual teachers perceived the team climate in their center, we used a selection of items inspired by Brodbeck et al. (2000) Team Climate Inventory (English version: Anderson & West, 1996). The items comprised several aspects of the social climate between colleagues, such as shared vision, working style, team cohesion, and communication. Preschool teachers rated their agreement to 12 items (e.g., “I personally agree with my team’s objectives” or “I feel accepted and understood by my team colleagues”) on a 5-point Likert scale. Response categories ranged from 1 = *does not apply at all* to 5 = *absolutely true*. Individual scores in this study consisted of averaged responses across items if participants answered at least 50% of the items. The internal consistency in our sample was excellent (Cronbach’s $\alpha = .92$). Similarly, high internal consistencies of the subscales as well as further information on the existing validity of the original and complete inventory are reported by Brodbeck et al. (2000).

To measure teachers’ perception of the relation to parents, we used Kurucz et al. (2020) scale called Perceived Cooperation Quality With Parents With and Without Immigrant Background. The measure consists of 14 items; seven items refer to parents with migration background and seven refer to parents without migration background. The scale uses a semantic differential. For each item, respondents specify how they generally perceive the relation to parents on a 7-point bipolar response scale without labels between two antonyms (e.g., *strenuous* and *trouble-free*). The internal consistency of the total scale in our sample was excellent (Cronbach’s $\alpha = .91$). Since we were interested in preschool teachers’ general perception of the relation to parents regardless of their background, individual scores consisted of averaged responses across all 14 items if at least 50% of all items had been answered.

Preschool center-level predictors

Structural conditions of the work environment. We asked center managers to indicate how many hours per week they worked according to their employment contract and how many hours of them they were free to work on leadership tasks. The proportion of time for leadership tasks compared to total working time was used as predictor variable. We also asked them about the frequency of team meetings. They responded on a 6-point response scale ranging from *several times a week*, *once a week*, *several times a month*, *once a month*, *rarer* to *never*. From the baseline data, we used information about the total number of children (without children in after-school care) and the total number of preschool teachers in the center (without the additional specialist for language education funded by the federal program) as well as about the number of migrant children, meaning children with at least one parent with another first language than German. These data are indicators for the size and the social milieu of the institution. Further, we used information on the available training days per year for full-time staff, contractually agreed planning time for full-time staff, and we calculated full-time equivalent teacher–child ratios from provided number of available places and number and hours of staff members, as is commonly calculated (Destatis, 2019).

Social conditions of the work environment. We assessed perceived team climate as well as relation to parents on the center-level by aggregating individual ratings of each scale (described above) per center. We calculated the intraclass correlation coefficients ICC1 and ICC2 that are commonly used as effect size and reliability indices for aggregated level-2 variables (see Lüdtke et al., 2006, 2009). The ICC1 provides information about the extent to which individual ratings are affected by the center environment. For perceived team climate, the ICC1 value was .24 (24% of the variance lies at the center level) and for relation to parents, it was .15 (15% of the variance lies at the center level). Since ICC1 values of .01 indicate a small effect, ICC1 values of .10 a medium effect, and ICC1 values of .25 a large effect

(LeBreton & Senter, 2008), both ICC1 values can be considered as medium effects. Based on the ICC1 and the number of units, it is possible to calculate the ICC2 (Bliese, 2000). Values above .70 are interpreted as strong agreement, values above .50 are considered as moderate agreement (LeBreton & Senter, 2008). In our sample, the ICC2 for perceived team climate was .68 and for relation to parents .53, indicating a moderate agreement for both measures.

Statistical analyses. The dataset for this study was compiled by selecting all of our variables of interest from the general preschool teacher survey and by adding the additional variables for each respondent from the survey of center managers as well as baseline data of the preschool (see Figure 1 for a detailed description of the survey sources of all used variables). Preliminary and correlational analyses were conducted with IBM SPSS Statistics 25 (IBM Corp Released, 2017). According to our research questions and structure of variables, multilevel analysis was obligatory. Therefore and in order to shed light on the influence of working conditions at the individual and center level on emotional exhaustion of preschool teachers, we applied hierarchical linear modeling (Raudenbush & Bryk, 2002). In this way, we produced correct estimates of standard errors of beta coefficients and we could disentangle within- and between-center variance. We specified teacher variables at the first level and center variables at the second level; all models presented are random intercept models with fixed slopes. On the level of the teacher, we centered all personal and structural variables at the grand mean of the sample to control for interindividual differences. All social variables were centered at the group mean to account for interindividual differences, as Lüdtke et al. (2009) suggest for the measurement of perceptions that are also aggregated at the second level. Multi-level analyses were performed with MPlus 8 (Muthén & Muthén, 1998–2017). We report standardized regression coefficients to increase interpretability and we specify proportions of variance explained by predictors at each of the two levels. For hierarchical linear modeling, we used full information maximum likelihood (FIML) to account for missing values, which performs better than multiple imputation procedures in the context of multilevel analyses (Larsen, 2011).

Results

To what extent do symptoms of emotional exhaustion differ between preschool centers?

On average, preschool teachers rated their emotional exhaustion below the midpoint of the scale ($M = 2.38$, $SD = 1.15$, range: 1 *hardly ever* –7 *very strongly*). Before disentangling center differences from individual differences in emotional exhaustion, we pre-analyzed if there were enough meaningful differences between centers in the center-level variables. For the structural conditions, the standard deviation is a good indicator of variability between clusters (Klusmann et al., 2008). All of these variables showed substantive standard deviations, as can be seen in Table 2. Further, ICC1 and ICC2 values of the aggregated ratings on social conditions (team climate/relation to parents) suggested meaningful variations between centers (.24/.15) as well as a moderate agreement between raters of these variables (.68/.53). Now, to answer our first research question, we specified a null model for emotional exhaustion. The analysis revealed an ICC1 of .058, meaning that 5.8% of the overall variance in preschool teachers' emotional exhaustion is located between centers. This indicates a small effect (LeBreton & Senter, 2008).

How are personal conditions related to symptoms of emotional exhaustion?

To answer our second research question, we entered all personal job conditions of preschool teachers into a first model (see Table 3, model 1). The standardized coefficients help to understand and compare unique effects of single variables. We only found a statistically significant coefficient for working experience in ECEC settings ($\beta = .09$). This means, when all other personal variables were held constant, an increase of one standard deviation in years

Table 3. Preschool teachers' emotional exhaustion: Results from multilevel modeling.

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	β	SE (β)	β	SE (β)	β	SE (β)
<i>Center level</i>						
<i>Structural conditions</i>						
Teacher-child ratio			-.07	.15	-.04	.11
Number of teachers			-.05	.30	.16	.17
Number of children			-.04	.24	-.28	.14
Migrant children			-.07	.19	-.12	.12
Planning time			-.11	.16	-.08	.10
In-service training days			.04	.20	.10	.11
Time for leadership tasks			.16	.17	.07	.10
Frequency of team meetings			.13	.14	.01	.09
<i>Social conditions</i>						
Team climate					-.34**	.11
Relation to parents					-.74**	.09
<i>Teacher level</i>						
<i>Personal conditions</i>						
Educational level	.01	.03	.01	.03	.00	.03
In-service training hours	-.04	.03	-.05	.03	-.01	.03
ECEC working experience	.09**	.03	.08**	.03	.11**	.03
Working hours/week	.02	.05	.01	.04	.04	.04
Position	.04	.03	.03	.03	.06	.03
<i>Structural group conditions</i>						
Number of children			.03	.04	.06	.03
Age of children			.08*	.04	.04	.03
Migrant children			.09	.05	.09*	.04
<i>Social conditions</i>						
Team climate					-.32**	.03
Relation to parents					-.19**	.03
<i>Explained variance (R²)</i>						
Teacher level	.01	.01	.03*	.01	.17**	.02
Center level			.07	.09	.80**	.11

Model 1 = model only with personal characteristics as statistical predictors; Model 2 = model with personal characteristics and structural conditions statistical predictors; Model 3 = full model; ** $p < .01$; * $p < .05$; grand-mean centering of personal and structural variables, group-mean centering of social variables.

of preschool teachers' ECEC working experience was associated with an increase of .09 in preschool teachers' emotional exhaustion. All variables together explained 1% of the variance of the teacher-level, but the amount of explained variance of the model did not significantly differ from zero.

How are structural conditions related to symptoms of emotional exhaustion?

To respond to our third research question, in addition to personal conditions on the level of the preschool teacher, we also entered structural job conditions both on the individual- and center-level into the model (see Table 3, model 2). Of the preschool teacher-level variables, again working experience in ECEC settings was a statistically significant coefficient ($\beta = .08$). Further, we found an effect of one of the structural group conditions, namely children's age ($\beta = .08$), meaning when all other personal and structural variables were held constant, an increase of one standard deviation in the age of children a teacher cares for was associated with an increase of .08 in preschool teachers' reported emotional exhaustion. None of the center variables were associated with teacher exhaustion. All variables together statistically significantly explained 3% of the variance of the teacher-level. The explained variance of the center-level was 7%, but did not significantly differ from zero.

What additional role do social conditions play in relation to emotional exhaustion?

Our last research question concerned the additional role of social job conditions. To shed light on this issue, we specified a full model and entered all variables, including the social conditions, on both preschool teacher- and center-level simultaneously into the model (see Table 3, model 3). The results show that on both levels perceived team climate as well as relation to parents was associated with preschool teachers' emotional exhaustion. In more detail, when all other variables were held constant, an increase of one standard deviation in the (positive) perception of the team climate in his or her center was associated with a decrease of .32 ($\beta = -.32$) in the preschool teacher's emotional exhaustion. Similarly, an increase of one standard deviation in preschool teachers' perception of the relation to parents was associated with a decrease of .19 ($\beta = -.19$) in his or her reported emotional exhaustion. On the level of the center, results showed in the same direction: An increase of one standard deviation in preschool teachers' perception about how well the team climate functions was associated with a decrease of .34 ($\beta = -.34$) in the reported emotional exhaustion within this center. Further, an increase of one standard deviation in preschool teachers' perception about the relation to parents within their center was associated with a decrease of .74 ($\beta = -.74$) in the reported emotional exhaustion within this center.

In this last model, the effect of working experience in ECEC settings remained stable ($\beta = .11$). However, the age of children in a group was no longer a significant structural variable on the level of the teacher, but the proportion of migrant children in a group ($\beta = .09$). The more migrant children in the group, the more the individual teacher felt exhausted. None of the structural center characteristics became significant. In general, this model significantly accounted for 17% of the variance on the preschool teacher-level and for 80% of the variance on the center-level.

Discussion

To add to the scarce scientific literature on burnout or exhaustion symptoms of preschool teachers and to suggest possible intervention approaches for policy and practice, this study aimed at understanding how ECEC working conditions are related to preschool teachers' emotional exhaustion in Germany. Thereby, we focused on four research questions: we wanted to know the extent to which preschool centers differ in symptoms of emotional exhaustion, the relationship between personal job conditions and exhaustion levels, and the additional role that structural and social conditions of the work environment play.

Between-center variability in preschool teachers' emotional exhaustion

The current study is one of the first to distinguish between the center- and teacher-level when analyzing the degree of emotional exhaustion in preschool teachers, clarifying the role of belonging to a certain ECEC center. Our findings demonstrated that levels of emotional exhaustion indeed differed between preschool centers, but most of the variability was ascribed to individual factors. These findings support the claim that there is some shared element of burnout symptoms within institutions (see Blöchliger & Bauer, 2018; Halbesleben & Leon, 2014) — for example, due to shared working conditions or emotional contagion (see Hatfield et al., 1994; Klusmann et al., 2008) — that also applies to German preschool centers. Thereby, our findings revealed a higher influence of the preschool center than has been found for the German school context (Klusmann et al., 2008). However, it is important to keep in mind that primary and secondary teachers in Germany are generally assigned to schools through a central administrative office. This results in a rather randomized composition of the faculty. In contrast, German preschools are free to choose whom they employ; they might select employees with distinct characteristics (e.g., attitudes or skills) or only have a specific applicant clientele to choose from (e.g., socio-demographic background). This self-selection process has the potential to cluster more similar preschool teachers

within the same center and thus artificially increasing the center effect. Nevertheless, Blöchliger and Bauer (2018) found even more between-center differences in a Swiss sample. Therefore, it is still reasonable to assume that there is at least some shared part ascribable to the center, which also justifies intervention at this level.

Personal and environmental job conditions and their relation to preschool teachers' emotional exhaustion

Next, we examined a wide range of personal and environmental job conditions of preschool teachers to enrich the scarce literature on this topic. The current study demonstrated that most of the personal job conditions under investigation, such as education, training, working hours, and position, that often depend on individual decisions did not play a role in the statistical prediction of emotional exhaustion. Only preschool teachers' ECEC working experience was positively associated with exhaustion symptoms. That older or more experienced (preschool) teachers are more likely to suffer from burnout symptoms is in line with other studies from the educational sector (see Blöchliger & Bauer, 2018; Klusmann et al., 2008; Viernickel et al., 2013). The findings suggest that long-term exposure to the work environment in ECEC institutions may be responsible for preschool teachers' increasing fatigue over time. Hence, tackling adverse job conditions is important to decrease burnout symptoms, especially for those with higher working experience. In addition, more experienced staff, as those most affected, should be given special support in coping with work stress and building up resources.

When investigating the role of the work environment, we first focused on structural conditions of centers and groups. Interestingly, we found that none of the structural conditions on the center-level was related to emotional exhaustion of preschool teachers. On the level of the individual teacher's group environment, the results were not consistent. We found a small effect of children's increasing age on emotional exhaustion; however, it disappeared when we entered the social conditions into the model. Instead, a small negative effect of the increasing proportion of migrant children was revealed. We can only speculate about underlying mechanisms. Perhaps the results would have been a bit clearer if we had data on the teacher-child-ratio in the group. Since children's age was positively correlated with the number of children in the group (see Table 1) and age is usually also associated with fewer preschool teachers per child in the group, and the proportion of migrant children was positively correlated with both the number and age of children (see Table 1), the age and migration effect on preschool teachers' degree of exhaustion could have disappeared if we had controlled the teacher-child ratio in the group. Overall, however, also the structural environmental conditions in ECEC centers and groups could explain only a very small amount of the variability in preschool teachers' exhaustion levels.

In a final step, we examined additional associations between exhaustion symptoms and social conditions of the preschool work environment, including the perceived team climate with colleagues and the relation to parents. Both groups of people represent important social counterparts in the everyday work life of preschool teachers with diverging roles: colleagues as working partners at a position of equity and parents as educational partners. On the level of the center, social conditions were able to explain a very large part of the overall variability between centers, in particular the perceived relation to parents. But also for the preschool teacher-level, a better perceived team climate as well as more pleasant relations to parents were associated with less exhaustion symptoms of teachers. Tense and conflictual relationships with colleagues and parents in turn were related to increased exhaustion. Therefore, the results suggest that social experiences at work can serve both as a demand or as a resource for preschool teachers. Our findings are in line with research literature that uncovers the general strong influence of social aspects of the workplace on worker's well-being (e.g., González-Romá et al., 2009; Levecque et al., 2014) and the pivotal role of social relationships for teacher well-being (Hascher & Waber, 2021). In line with Trauernicht et al. (2022) and Tebben et al. (2021), our results also emphasize the role of the relationship to colleagues and parents on burnout experiences in the ECEC sector.

Limitations and future research

As in every research project, there are several limitations to the present study resulting in new ideas for future research. First, the data were cross-sectional in nature. This means we measured job conditions and preschool teachers' emotional exhaustion concurrently and we did not observe the effect of one on the other. Therefore, we cannot make a conclusive statement about the causal relationship between job conditions and exhaustion levels and a reversed relationship is also possible. For example, more exhausted preschool teachers also might experience parent interactions as more negative than less exhausted colleagues. Future research could examine if improving the team climate and relationship to parents will actually decrease preschool teachers' exhaustion levels, just as Oliveira et al. (2021) showed that social-emotional learning interventions combatted burnout symptoms in preschool teachers. Second, the full model still revealed a large amount of unexplained variance between individual preschool teachers, namely 83%. This means that there are still many factors that explain differences between individuals and their symptoms of emotional exhaustion that were not captured by our research. However, the amount of explained variance at the individual level corresponds to findings of related research (e.g., Blöchliger & Bauer, 2018; Klusmann et al., 2008). Further, it has been shown that many of the differences between individuals' burnout symptoms are due to interpersonal dispositions, such as core self-evaluations (e.g., self-esteem, self-efficacy) or personality traits (e.g., emotional stability, extraversion) (see Alarcon et al., 2009; Guo et al., 2022; Kim et al., 2019; Swider & Zimmerman, 2010). However, in this study we focused on working conditions that are somewhat changeable by policies and not on interpersonal dispositions or private contexts. Hence, we did not include respective variables into the data collection or analyses. Third, the data concerning the structural job conditions on the center-level, which were drawn from the center manager survey and baseline data of the program, were collected a few months before or after the data collection of the remaining data drawn from the preschool teacher survey, as presented in the methods section. Thus, there is a possibility that conditions may have changed in the meantime. However, structural characteristics are rather stable and the periods between the time points of data collection were short. Concerning the sources and also content of data, future studies could enrich the data by including the teacher-child ratio in each group, the number of children with refugee status or from disadvantaged families, and information about parents (e.g., socio-economic background, self-reports on perceived relationship to preschool teachers) to gain deeper understanding of how exhaustion symptoms are associated with the relation to parents. It would also be interesting and insightful to include individual perceptions of the adequacy of preschool teachers' group and center structural conditions and more objective data about exhaustion levels (e.g., physical symptoms, days of absence) to examine whether the relationships found also apply to this kind of data. Additionally, the perceived relations to children could be included as another social job condition of preschool teachers. Further, the investigation of interaction effects between center level and preschool teacher-level variables may provide a deeper understanding of interrelationships. For example, smaller preschools with less children may benefit more from a functioning teamwork than larger preschools.

Finally, our sample is not completely representative of the average German preschool because the program Sprach-Kitas focused on larger preschools and high proportions of children from disadvantaged families and centers had to be willing to participate in such a program in the first place, thereby demonstrating their openness for quality development. However, our sample is much larger than those of studies with related contents (e.g., Blöchliger & Bauer, 2018; Viernickel et al., 2013) and we accounted for many differences to an average German preschool by including these data into the analyses (e.g., center size, proportion of migrant children). Furthermore, the increased variance in these variables facilitated the identification of potential effects in these variables. Of course, our sample is also not completely equivalent to those of other countries' ECEC systems. However, the results of this study have emerged from the background of a major national ECEC shift toward professionalization and quantitative as well as qualitative expansion; as such, they can also inform other countries that are undergoing similar changes.

Implications for policy and practice

From the results of this study, some intervention approaches for policy and practice can be derived to decrease exhaustion levels of preschool teachers. First of all, our finding that the center where a preschool teacher works influences how exhausted the individual feels justifies interventions in particularly affected preschools and not just with affected individuals or individuals at risk, as has often been the case so far (cfl. Blossfeld et al., 2014). Therefore, the focus of improvements of preschools' working conditions is often only on structural aspects, such as increasing the teacher-child-ratio. And, of course, it is well known that there are several structural aspects that have a positive effect on the quality in preschool centers (Slot, 2018), which therefore should not be completely neglected. However, our study demonstrated that with regard to preschool teachers' exhaustion levels, the working conditions that mattered the most were of a social nature. Social experiences with colleagues and parents made the difference, especially on the level of the center. Therefore, and after successful validation of these results, policies and objectives of support should also target these issues, even though they might require longer-term involvement and more indirect intervention methods.

To improve the team climate within an ECEC center, the center manager plays an important role and sets crucial impulses (see also Klaudy et al., 2016). The manager can initiate discussions in team meetings or hire an external coach to address vulnerabilities in the team. It also would be helpful if more public funds were available to promote this kind of work. Of course, developing shared visions, a supportive working style in the group, better team cohesion, and good communication with each other needs time and patience. Because this study demonstrated consistent connections to preschool teachers' exhaustion levels and others also demonstrated the value of good team collaboration for the quality of work in ECEC centers (Resa et al., 2018; Wertfein et al., 2013) as well as connections between the well-being of preschool teachers and higher quality care (e.g., Gerber et al., 2007; Hamre & Pianta, 2004; Jennings, 2015), it is worth the effort. Colleagues should be perceived as powerful support in the daily challenges and not as additional stressors (see also Viswesvaran et al., 1999). Another idea to foster team climate and collaboration, as well as the well-being of preschool teachers, comes from higher school contexts and encompasses the implementation of professional learning communities. Teachers come together in small groups to support and learn from each other, integrate new pedagogical approaches, or build-up new competencies (e.g., Owen, 2016).

The other group of people preschool teachers are in close contact with are parents. They are educational partners and service recipients. Cooperation with families is an important task of preschool teachers and also a quality criterion in the ECEC sector (Kluczniok & Roßbach, 2014). In Germany, the topic of parental cooperation is often only mentioned on the fringes of the vocational training for preschool teachers (Friederich, 2011), so preschool teachers can quickly feel overwhelmed. Since this study demonstrated that preschool teachers are more exhausted when they experience the relationship with parents as uncomfortable, stressful, and conflictual, better training and support for being in contact with parents (e.g., social-emotional learning interventions; Oliveira et al., 2021), both in their initial training and also during their professional life, might improve preschool teachers' well-being at work. Further, case discussions in team meetings and individual support by the center manager might also be helpful mechanisms to deal with challenging encounters and to unburden as well as empower staff members.

Conclusions

This research project aimed at closing a research gap by gaining a deeper understanding about which conditions at the workplace matter the most for preschool teachers' emotional exhaustion. Considering the existing literature and our outlined findings, we conclude that German ECEC teachers' symptoms of exhaustion differ between centers, but to a much lesser degree than between individuals. Further, we found that professionals with more ECEC working experience reported higher levels of emotional exhaustion, indicating that prolonged exposure

to the ECEC work environment is associated with increasing fatigue and the risk of burnout. From all the job conditions under investigation, we found that social working conditions were most relevant. If preschool teachers perceived the team climate and relations to parents as challenging and strenuous, they also tended to feel more exhausted in their jobs.

These results do go beyond contributing an important piece of work to the research literature on emotional exhaustion of preschool teachers. They also have the potential to fuel the public and political debate around the best strategies to enhance, improve, and professionalize the ECEC system in a way that it fosters teachers' well-being and engagement and, thereby, ensures good quality care for our children. According to our analyses, interventions and preventions tackling exhaustion in preschools should aim at enhancing social climates and at fostering good collaboration between teachers and parents as well as colleagues.

Note

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References

- Ahmady, G. A., Mehrpour, M., & Nikooravesh, A. (2016). Organizational structure. *Procedia - Social & Behavioral Sciences*, 230, 455–462. <https://doi.org/10.1016/j.sbspro.2016.09.057>
- Alarcon, G., Eschleman, K. J., & Bowling, N. A. (2009). Relationships between personality variables and burnout: A meta-analysis. *Work & Stress*, 23(3), 244–263. <https://doi.org/10.1080/02678370903282600>
- Anders, Y. (2015). *Literature review on pedagogy: For a review of pedagogy in early childhood education and care (ECEC) in England (United Kingdom)*. OECD.
- Anders, Y., & Roßbach, H. G. (2013). Frühkindliche Bildungsforschung in Deutschland. In M. Stamm & D. Edelmann (Eds.), *Handbuch Frühkindliche Bildungsforschung* (pp. 183–195). Springer VS.
- Anderson, N., & West, M. A. (1996). The team climate inventory: Development of the TCI and its applications in teambuilding for innovativeness. *European Journal of Work and Organizational Psychology*, 5(1), 53–66. <https://doi.org/10.1080/13594329608414840>
- Ansari, A., Pianta, R. C., Whittaker, J. V., Vitiello, V. E., & Ruzek, E. A. (2022). Preschool teachers' emotional exhaustion in relation to classroom instruction and teacher-child interactions. *Early Education and Development*, 33(1), 107–120. <https://doi.org/10.1080/10409289.2020.1848301>
- Autorengruppe Bildungsberichterstattung. (2018). *Bildung in Deutschland 2018: Ein indikatorengestützter Bericht mit einer Analyse zu Bildung und Migration*. wbv.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., & Schaufeli, W. B. (2000). Burnout contagion processes among teachers 1. *Journal of Applied Social Psychology*, 30(11), 2289–2308. <https://doi.org/10.1111/j.1559-1816.2000.tb02437.x>
- Barford, S. W., & Whelton, W. J. (2010). Understanding burnout in child and youth care workers. *Child & Youth Care Forum*, 39(4), 271–287. <https://doi.org/10.1007/s10566-010-9104-8>
- Billingsley, B., & Bettini, E. (2019). Special education teacher attrition and retention: A review of the literature. *Review of Educational Research*, 89(5), 697–744. <https://doi.org/10.3102/0034654319862495>
- Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 249–381). Jossey-Bass.

- Blöchliger, O. R., & Bauer, G. F. (2016). Demands and job resources in the child care workforce: Swiss lead teacher and assistant teacher assessments. *Early Education and Development, 27*(7), 1040–1059. <https://doi.org/10.1080/10409289.2016.1154419>
- Blöchliger, O. R., & Bauer, G. F. (2018). Correlates of burnout symptoms among child care teachers: A multilevel modeling approach. *European Early Childhood Education Research Journal, 26*(1), 7–25. <https://doi.org/10.1080/1350293X.2018.1412012>
- Blossfeld, H.-P., Bos, W., Daniel, H.-D., Hannover, B., Lenzen, D., Prenzel, M., Roßbach, H.-G., Tippelt, R., Wößmann, L., & Kleiber, D. (2014). *Psychische Belastungen und Burnout beim Bildungspersonal: Empfehlungen zur Kompetenz- und Organisationsentwicklung (Gutachten)*. Waxmann.
- Borritz, M., Rugulies, R., Bjorner, J. B., Villadsen, E., Mikkelsen, O. A., & Kristensen, T. S. (2006). Burnout among employees in human service work: Design and baseline findings of the PUMA study. *Scandinavian Journal of Public Health, 34*(1), 49–58. <https://doi.org/10.1080/14034940510032275>
- Brodbeck, F. C., Anderson, N., & West, M. A. (2000). Das Teamklima-Inventar: Handanweisung und Validierung der deutschsprachigen Version. *WOP Working Paper No 2000/2*.
- Burisch, M. (2014). *Das Burnout-Syndrom: Theorie der inneren Erschöpfung - zahlreiche Fallbeispiele - Hilfen zur Selbsthilfe* (5th ed.). Springer.
- Büssing, A., & Perrar, K.-M. (1992). Die Messung von Burnout: Untersuchung einer deutschen Fassung des Maslach Burnout Inventory (MBI-D). *Diagnostica, 38*(4), 328–353.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499–512. <https://doi.org/10.1037/0021-9010.86.3.499>
- Destatis. (2019). *Der Personalschlüssel in Kindertageseinrichtungen: Methodische Grundlagen und aktuelle Ergebnisse*. https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Soziales/Kindertagesbetreuung/Publikationen/Downloads-Kindertagesbetreuung/kindertageseinrichtungen-personalschluesel-5225409189004.pdf?__blob=publicationFile
- Early, D. M., Bryant, D. M., Pianta, R. C., Clifford, R. M., Burchinal, M. R., Ritchie, S., Howes, C., & Barbarin, O. (2006). Are teachers' education, major, and credentials related to classroom quality and children's academic gains in pre-kindergarten? *Early Childhood Research Quarterly, 21*(2), 174–195. <https://doi.org/10.1016/j.ecresq.2006.04.004>
- Early, D. M., Maxwell, K. L., Burchinal, M., Alva, S., Bender, R. H., Bryant, D., Cai, K., Clifford, R. M., Ebanks, C., Griffin, J. A., Henry, G. T., Howes, C., Iriondo-Perez, J., Jeon, H. J., Mashburn, A. J., Peisner-Feinberg, E., Pianta, R. C., Vandergrift, N., & Zill, N. (2007). Teachers' education, classroom quality, and young children's academic skills: Results from seven studies of preschool programs. *Child Development, 78*(2), 558–580. <https://doi.org/10.1111/j.1467-8624.2007.01014.x>
- Friederich, T. (2011). *Zusammenarbeit mit Eltern – Anforderungen an frühpädagogische Fachkräfte. Eine Expertise der Weiterbildungsinitiative Frühpädagogische Fachkräfte (WiFF)*. Deutsches Jugendinstitut e.V.
- Fukkink, R. G., & Lont, A. (2007). Does training matter? A meta-analysis and review of caregiver training studies. *Early Childhood Research Quarterly, 22*(3), 294–311. <https://doi.org/10.1016/j.ecresq.2007.04.005>
- Gerber, E. B., Whitebook, M., & Weinstein, R. S. (2007). At the heart of child care: Predictors of teacher sensitivity in center-based child care. *Early Childhood Research Quarterly, 22*(3), 327–346. <https://doi.org/10.1016/j.ecresq.2006.12.003>
- Glisson, C., Dukes, D., & Green, P. (2006). The effects of the ARC organizational intervention on caseworker turnover, climate, and culture in children's service systems. *Child Abuse & Neglect, 30*(8), 855–880. <https://doi.org/10.1016/j.chiabu.2005.12.010>
- Goelman, H., & Guo, H. (1998). What we know and what we don't know about burnout among early childhood care providers. *Child and Youth Care Forum, 27*(3), 175–199. <https://doi.org/10.1007/BF02589564>
- González-Romá, V., Fortes-Ferreira, L., & Peiró, J. M. (2009). Team climate, climate strength and team performance. A longitudinal study. *Journal of Occupational & Organizational Psychology, 82*(3), 511–536. <https://doi.org/10.1348/096317908X370025>
- Guo, L., Huang, M., Wang, Y., Shi, S., Yang, M., & Shuai, J. (2022). Effort–reward imbalance and job burnout in preschool teachers: A moderated mediation model. *Social Behavior & Personality: An International Journal, 50*(1), 1–13. <https://doi.org/10.2224/sbp.11882>
- Hachfeld, A., Anders, Y., Kuger, S., & Smidt, W. (2016). Triggering parental involvement for parents of different language backgrounds: The role of types of partnership activities and preschool characteristics. *Early Child Development and Care, 186*(1), 190–211. <https://doi.org/10.1080/03004430.2015.1007370>
- Halbesleben, J. R. B., & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management, 30*(6), 859–879. <https://doi.org/10.1016/j.jm.2004.06.004>
- Halbesleben, J. R. B., & Leon, M. R. (2014). Multilevel models of burnout: Separating group level and individual level effects in burnout research. In M. P. Leiter, A. B. Bakker, & C. Maslach (Eds.), *Burnout at work* (pp. 122–144). Psychology Press.
- Hamre, B. K., & Pianta, R. C. (2004). Self-reported depression in nonfamilial caregivers: Prevalence and associations with caregiver behavior in child-care settings. *Early Childhood Research Quarterly, 19*(2), 297–318. <https://doi.org/10.1016/j.ecresq.2004.04.006>

- Hascher, T., & Waber, J. (2021). Teacher well-being: A systematic review of the research literature from the year 2000–2019. *Educational Research Review*, 34(8), 100411. <https://doi.org/10.1016/j.edurev.2021.100411>
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion: Studies in emotion and social interaction*. Cambridge University Press.
- IBM Corp. (2017). *IBM SPSS statistics for windows* (Version 25.0) [Computer software].
- Jannsen, R. (2010). *Die Ausbildung frühpädagogischer Fachkräfte an Berufsfachschulen und Fachschulen: Eine Analyse im Ländervergleich*. Weiterbildungsinitiative Frühpädagogische Fachkräfte (WiFF Expertisen).
- Jennings, P. A. (2015). Early childhood teachers' well-being, mindfulness, and self-compassion in relation to classroom quality and attitudes towards challenging students. *Mindfulness*, 6, 732–743.
- Jeon, L., Buettner, C. K., & Grant, A. A. (2018). Early childhood teachers' psychological well-being: Exploring potential predictors of depression, stress, and emotional exhaustion. *Early Education and Development*, 29(1), 53–69. <https://doi.org/10.1080/10409289.2017.1341806>
- Jonge, J. D., Bosma, H., Peter, R., & Siegrist, J. (2000). Job strain, effort-reward imbalance and employee well-being: A large-scale cross-sectional study. *Social Science & Medicine*, 50(9), 1317–1327. [https://doi.org/10.1016/s0277-9536\(99\)00388-3](https://doi.org/10.1016/s0277-9536(99)00388-3)
- Jugend- & Kultusministerkonferenz. (2004). *Gemeinsamer Rahmen der Länder für die frühe Bildung in Kindertageseinrichtungen* [Beschluss der Jugend- und Kultusministerkonferenz]. http://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2004/2004_06_03-Fruhe-Bildung-Kindertageseinrichtungen.pdf
- Jungbauer, J., & Ehlen, S. (2015). Stressbelastungen und Burnout-Risiko bei Erzieherinnen in Kindertagesstätten: Ergebnisse einer Fragebogenstudie. *Gesundheitswesen*, 77(6), 418–423. <https://doi.org/10.1055/s-0034-1381995>
- Kim, L. E., Jörg, V., & Klassen, R. M. (2019). A meta-analysis of the effects of teacher personality on teacher effectiveness and burnout. *Educational Psychology Review*, 31(1), 163–195. <https://doi.org/10.1007/s10648-018-9458-2>
- Klaudy, E. K., Köhling, K., Micheel, B., & Stöbe-Blossey, S. (2016). *Nachhaltige Personalwirtschaft für Kindertageseinrichtungen: Herausforderungen und Strategien* Study (Vol. 336). Hans-Böckler-Stiftung.
- Kluczniok, K., & Roßbach, H.-G. (2014). Conceptions of educational quality for kindergartens. *Zeitschrift Für Erziehungswissenschaft*, 17(S6), 145–158. <https://doi.org/10.1007/s11618-014-0578-2>
- Klusmann, U., Kunter, M., Trautwein, U., Lüdtke, O., & Baumert, J. (2008). Engagement and emotional exhaustion in teachers: Does the school context make a difference? *Applied Psychology*, 57(Suppl 1), 127–151. <https://doi.org/10.1111/j.1464-0597.2008.00358.x>
- Koch, P., Stranzinger, J., Nienhaus, A., & Kozak, A. (2015). Musculoskeletal symptoms and risk of burnout in child care workers: A cross-sectional study. *PLoS One*, 10(10), e0140980. <https://doi.org/10.1371/journal.pone.0140980>
- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The copenhagen burnout inventory: A new tool for the assessment of burnout. *Work & Stress*, 19(3), 192–207. <https://doi.org/10.1080/02678370500297720>
- Kuger, S., & Kluczniok, K. (2009). Prozessqualität im kindergarten — konzept, umsetzung und befunde. In H. G. Roßbach & H. P. Blossfeld (Eds.), *Frühpädagogische förderung in institutionen* (pp. 159–178). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-91452-7_11
- Kurucz, C., Lehl, S., & Anders, Y. (2020). Preschool teachers' perspectives about the engagement of immigrant and non-immigrant parents in their children's early education. *International Journal of Early Childhood*, 52(1), 213–231. <https://doi.org/10.1007/s13158-020-00269-1>
- Larsen, R. (2011). Missing data imputation versus full information maximum likelihood with second-level dependencies. *Structural Equation Modeling: A Multidisciplinary Journal*, 18(4), 649–662. <https://doi.org/10.1080/10705511.2011.607721>
- LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods*, 11(4), 815–852. <https://doi.org/10.1177/1094428106296642>
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81(2), 123–133. <https://doi.org/10.1037/0021-9010.81.2.123>
- Lesener, T., Gusy, B., & Wolter, C. (2019). The job demands-resources model: A meta-analytic review of longitudinal studies. *Work & Stress*, 33(1), 76–103. <https://doi.org/10.1080/02678373.2018.1529065>
- Levecque, K., Roose, H., Vanroelen, C., & van Rossem, R. (2014). Affective team climate. *Acta Sociologica*, 57(2), 153–166. <https://doi.org/10.1177/0001699313498262>
- Linberg, T., Baeumer, T., & Rossbach, H.-G. (2013). Data on early child education and care learning environments in Germany. *International Journal of Child Care and Education Policy*, 7(1), 24–42. <https://doi.org/10.1007/2288-6729-7-1-24>
- Løvgren, M. (2016). Emotional exhaustion in day-care workers. *European Early Childhood Education Research Journal*, 24(1), 157–167. <https://doi.org/10.1080/1350293X.2015.1120525>
- Lüdtke, O., Robitzsch, A., Trautwein, U., & Kunter, M. (2009). Assessing the impact of learning environments: How to use student ratings of classroom or school characteristics in multilevel modeling. *Contemporary Educational Psychology*, 34(2), 120–131. <https://doi.org/10.1016/j.cedpsych.2008.12.001>
- Lüdtke, O., Trautwein, U., Kunter, M., & Baumert, J. (2006). Reliability and agreement of student ratings of the classroom environment: A reanalysis of TIMSS data. *Learning Environments Research*, 9(3), 215–230. <https://doi.org/10.1007/s10984-006-9014-8>

- Manlove, E. E. (1993). Multiple correlates of burnout in child care workers. *Early Childhood Research Quarterly*, 8(4), 499–518. [https://doi.org/10.1016/S0885-2006\(05\)80082-1](https://doi.org/10.1016/S0885-2006(05)80082-1)
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, 2(2), 99–113. <https://doi.org/10.1002/job.4030020205>
- Maslach, C., Jackson, S. E., & Leiter, M. P. (2018). *Maslach burnout inventory manual* (4th ed.). Mind Garden, Inc.
- Maslach, C., & Pines, A. (1977). The burn-out syndrome in the day care setting. *Child Care Quarterly*, 6(2), 100–113. <https://doi.org/10.1007/BF01554696>
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.
- Neuhaus, D. K., Macha, K., & Pesch, L. (2018). *Der situationsansatz in der kita: Pädagogische ansätze auf einen blick*. Verlag Herder GmbH.
- OECD. (2015). *Starting strong IV: Monitoring quality in early childhood education and care*. OECD Publishing.
- OECD. (2017). *Starting strong 2017: Key OECD indicators on early childhood education and care*. OECD Publishing.
- Oertel, F. M. (1984). *Preschool social education curricula in West Germany: The situation-oriented approach*. ERIC Clearinghouse on Elementary and Early Childhood Education, College of Education, University of Illinois.
- Oliveira, S., Roberto, M. S., Veiga-Simão, A. M., & Marques-Pinto, A. (2021). A meta-analysis of the impact of social and emotional learning interventions on teachers' burnout symptoms. *Educational Psychology Review*, 33(4), 1779–1808. <https://doi.org/10.1007/s10648-021-09612-x>
- Owen, S. (2016). Professional learning communities: Building skills, reinvigorating the passion, and nurturing teacher wellbeing and “flourishing” within significantly innovative schooling contexts. *Educational Review*, 68(4), 403–419. <https://doi.org/10.1080/00131911.2015.1119101>
- Phelan, J., Bromet, E. J., Schwartz, J. E., Dew, M. A., & Curtis, E. C. (1993). The work environments of male and female professionals: Objective and subjective characteristics. *Work and Occupations*, 20(1), 68–89. <https://doi.org/10.1177/0730888493020001004>
- Pianta, R. C., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, D., & Barbarin, O. (2005). Features of pre-kindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions? *Applied Developmental Science*, 9(3), 144–159. https://doi.org/10.1207/s1532480xads0903_2
- Pines, A., & Maslach, C. (1980). Combatting staff burn-out in a day care center: A case study. *Child Care Quarterly*, 9(1), 5–16. <https://doi.org/10.1007/BF01555032>
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods. Advanced quantitative techniques in the social sciences* (2nd ed., Vol. 1). SAGE Publications.
- Resa, E., Groeneveld, I., Turani, D., & Anders, Y. (2018). The role of professional exchange in improving language-related process quality in daycare centres. *Research Papers in Education*, 33(4), 472–491. <https://doi.org/10.1080/02671522.2017.1353671>
- Roberts, A. M., LoCasale-Crouch, J., Hamre, B. K., & Jamil, F. M. (2020). Preschool teachers' self-efficacy, burnout, and stress in online professional development: A mixed methods approach to understand change. *Journal of Early Childhood Teacher Education*, 41(3), 262–283. <https://doi.org/10.1080/10901027.2019.1638851>
- Rothland, M., & Klusmann, U. (2016). Belastung und Beanspruchung im Lehrerberuf. In M. Rothland (Ed.), *Beruf Lehrer/Lehrerin: Ein Studienbuch* (pp. 351–369). Waxmann.
- Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., Andrade, S. M. D., & van Wouwe, J. P. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PLoS One*, 12(10), e0185781. <https://doi.org/10.1371/journal.pone.0185781>
- Sandilos, L. E., Cycyk, L. M., Hammer, C. S., Sawyer, B. E., López, L., & Blair, C. (2015). Depression, control, and climate: An examination of factors impacting teaching quality in preschool classrooms. *Early Education & Development*, 26(8), 1111–1127. <https://doi.org/10.1080/10409289.2015.1027624>
- Schaufeli, W. B., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. Taylor & Francis.
- Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer & O. Hämmig (Eds.), *Bridging occupational, organizational and public health: A transdisciplinary approach* (pp. 43–68). Springer Netherlands.
- Schreyer, I., & Krause, M. (2016). Pedagogical staff in children's day care centres in Germany: Links between working conditions, job satisfaction, commitment and work-related stress. *Early Years*, 36(2), 132–147. <https://doi.org/10.1080/09575146.2015.1115390>
- Skaalvik, E. M., & Skaalvik, S. (2009). Does school context matter? Relations with teacher burnout and job satisfaction. *Teaching and Teacher Education*, 25(3), 518–524. <https://doi.org/10.1016/j.tate.2008.12.006>
- Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, 26(4), 1059–1069. <https://doi.org/10.1016/j.tate.2009.11.001>
- Slot, P. (2018). Structural characteristics and process quality in early childhood education and care: A literature review. OECD Education Working Papers Series (No. 176). OECD.

- Slot, P., Lerkkanen, M.-K., & Leseman, P. P. M. (2015). *The relations between structural quality and process quality in European early childhood education and care provisions: Secondary analyses of large scale studies in five countries*. EU CARE Project. https://ecec-care.org/fileadmin/careproject/Publications/reports/CARE_WP2_D2__2_Secondary_data_analyses.pdf
- Sosinsky, L. S., & Gilliam, W. S. (2011). Assistant teachers in prekindergarten programs: What roles do lead teachers feel assistants play in classroom management and teaching? *Early Education & Development*, 22(4), 676–706. <https://doi.org/10.1080/10409289.2010.497432>
- Stenger, U., Edelman, D., Nolte, D., & Schulz, M. (2017). *Diversität in der Pädagogik der frühen Kindheit. Im Spannungsfeld zwischen Konstruktion und Normativität*. Beltz Juventa.
- Stoeber, J., & Rennert, D. (2008). Perfectionism in school teachers: Relations with stress appraisals, coping styles, and burnout. *Anxiety, Stress, and Coping*, 21(1), 37–53. <https://doi.org/10.1080/10615800701742461>
- Strehmel, P., Heikka, J., & Hujala, E. (2019). Leadership in early education in times of change: Research from five continents. *Research Monograph. International Leadership Research Forum Early Childhood*.
- Swider, B. W., & Zimmerman, R. D. (2010). Born to burnout: A meta-analytic path model of personality, job burnout, and work outcomes. *Journal of Vocational Behavior*, 76(3), 487–506. <https://doi.org/10.1016/j.jvb.2010.01.003>
- Tebben, E., Lang, S. N., Sproat, E., Tyree Owens, J., & Helms, S. (2021). Identifying primary and secondary stressors, buffers, and supports that impact ECE teacher wellbeing: Implications for teacher education. *Journal of Early Childhood Teacher Education*, 42(2), 143–161. <https://doi.org/10.1080/10901027.2021.1918294>
- Tietze, W., Becker-Stoll, F., Bensel, J., Eckhardt, A. G., Haug-Schnabel, G., Kalicki, B., Keller, H., & Leyendecker, B. (2012). NUBBEK: *Nationale Untersuchung zur Bildung, Betreuung und Erziehung in der frühen Kindheit*. Fragestellungen und Ergebnisse im Überblick. <http://www.nubbek.de/media/pdf/NUBBEK%20Broschuere.pdf>
- Tietze, W., Meischner, T., Gänsfuß, R., Grenner, K., Schuster, K. M., Völkel, P., & Roßbach, H. G. (Eds.). (1998). *Wie gut sind unsere Kindergärten?: Eine Untersuchung zur pädagogischen Qualität in deutschen Kindergärten*. Luchterhand.
- Trauernicht, M., Besser, N., & Anders, Y. (2022). Burnout in der Kita und der Zusammenhang zu Aspekten der Arbeitszufriedenheit. *Frühe Bildung*, 11(2), 85–93. <https://doi.org/10.1026/2191-9186/a000566>
- Van Droogenbroeck, F., Spruyt, B., & Vanroelen, C. (2014). Burnout among senior teachers: Investigating the role of workload and interpersonal relationships at work. *Teaching and Teacher Education*, 43, 99–109. <https://doi.org/10.1016/j.tate.2014.07.005>
- Van Veldhoven, M., van den Broeck, A., Daniels, K., Bakker, A. B., Tavares, S. M., & Ogbonnaya, C. (2020). Challenging the universality of job resources: Why, when, and for whom are they beneficial? *Applied Psychology*, 69(1), 5–29. <https://doi.org/10.1111/apps.12211>
- Viernickel, S., & Schwarz, S. (2009). *Schlüssel zu guter Bildung, Erziehung und Betreuung: Wissenschaftliche Parameter zur Bestimmung der pädagogischen Fachkraft-Kind-Relation*. Expertise. GEW Berlin.
- Viernickel, S., Voss, A., Mauz, E., Gerstenberg, F., & Schumann, M. (2013). STEGE-Strukturqualität und Erzieherinnengesundheit in Kindertageseinrichtungen. *Wissenschaftlicher Abschlussbericht*.
- Viitala, R., Tanskanen, J., & Säntti, R. (2015). The connection between organizational climate and well-being at work. *International Journal of Organizational Analysis*, 23(4), 606–620. <https://doi.org/10.1108/IJOA-10-2013-0716>
- Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior*, 54(2), 314–334. <https://doi.org/10.1006/jvbe.1998.1661>
- Wertfein, M., Müller, K., & Danay, E. (2013). Die Bedeutung des Teams für die Interaktionsqualität in Kinderkrippen. *Frühe Bildung*, 2(1), 20–27. <https://doi.org/10.1026/2191-9186/a000073>
- Wieduwilt, N., Lehl, S., & Anders, Y. (2023). Preschool teachers' language-related pedagogical beliefs and their relation to observed classroom quality. *Early Childhood Research Quarterly*, 62, 175–185. <https://doi.org/10.1016/j.ecresq.2022.08.001>