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Early Childhood is also an Organization: Organizational predictors
of Children's Autonomy Support

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“You cannot make children learn. You can only provide the right conditions for learning to happen.”

Vince Gowmon

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Resumo

Os/as educadores/as de infância desempenham um papel essencial na qualidade da educação. Contudo, enfrentam diversas exigências profissionais e nem sempre têm os recursos necessários para ultrapassar essas dificuldades (Aguiar & Aguiar, 2022; Hakanen et al., 2006). Assim, de modo a compreender as necessidades dos/as educadores/as, é importante que sejam estudados os fatores pessoais e profissionais que os/as apoiam (Lipscomb et al., 2021). Considerando o Modelo de Exigências e Recursos do Trabalho, este estudo visa analisar o papel mediador da autoeficácia e do *engagement* no trabalho dos/as educadores/as na relação entre a liderança transformacional do/a coordenador/a e o apoio à autonomia das crianças por parte dos/as educadores/as, bem como verificar se o clima psicológico dos/as educadores/as influencia a relação entre a liderança transformacional do/a coordenador/a e a autoeficácia e o *engagement* no trabalho dos/as educadores/as. Participaram neste estudo 284 educadores/as (277 mulheres, 5 homens e 2 que preferiram não divulgar) com idades entre os 23 e 65 anos ($M = 47.74$, $SD = 9.80$). Os participantes responderam online a um questionário sociodemográfico e a algumas medidas de autorrelato. Os resultados revelaram que a autoeficácia e o *engagement* no trabalho dos/as educadores/as mediarão a relação entre a liderança transformacional dos/as coordenadores/as e o apoio à autonomia das crianças. Estes resultados são relevantes para compreender as necessidades dos/as educadores/as de infância e reforçar a importância que a autoeficácia e o *engagement* no trabalho têm na promoção de uma educação de qualidade.

Palavras-Chave: Jardim de infância, Recursos do trabalho, Educação de qualidade, Comportamento organizacional

Códigos PsycINFO:

3500 Psicologia Educacional e Escolar

3510 Administração Educacional e Pessoal

3600 Psicologia Organizacional e Recursos Humanos

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Abstract

Early Childhood Education (ECE) teachers play an essential role in delivering high-quality education, yet they often struggle with diverse job demands and lack of job and personal resources to help them manage those demands (Aguilar & Aguilar, 2022; Hakanen et al., 2006). To understand the needs of ECE teachers, it is important to study personal and professional factors that support them (Lipscomb et al., 2021). Based on the Job Demands-Resources Model, this study aimed to analyze the mediating role of ECE teachers' self-efficacy and work engagement in the relationship between coordinators' transformational leadership and children's autonomy support, and if teachers' psychological climate moderates the relationship between coordinators' transformational leadership and teachers' self-efficacy and work engagement. Data were collected from 284 ECE teachers (277 women, five men, and two who rather not say), aged between 23 and 65 years ($M = 47.74$, $SD = 9.80$). Participants answered online to the sociodemographic survey and self-report measures. The results revealed that teachers' self-efficacy and work engagement mediated the relationship between coordinators' transformational leadership and children's autonomy support by ECE teachers. These findings are relevant to understand the needs of ECE teachers and identify what areas can be improved to support ECE teachers' self-efficacy and work engagement, ultimately fostering higher-quality education.

Keywords: Early childhood education, Job resources, Quality education, Organizational behavior

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Glossary of abbreviations

ECE – Early Childhood Education

ECWES – Early Childhood Work Environment Survey

JD-R – Job Demands-Resources

OSTES – Ohio State Teacher Efficacy Scale

SCT – Social Cognitive Theory

TASC – Teacher as Social Context Questionnaire

TFL – Transformational Leadership

TLQ – Transformational Leadership Questionnaire

UWES – Utrecht Work Engagement Scale

Chapter I – Introduction

Early childhood education (ECE) addresses the education of children between three and six years and includes services with the intended educational purpose of supporting children's lifelong learning and development (European Commission/EACEA/Eurydice, 2019). In 2021, about 95.2% of children aged three or older attended ECE in Portugal (DGEEC/ME-MCTES, PORDATA, 2021), with 53.9% attending public ECE, 17.2% attending privately funded ECE, and 28.9% attending private non-profit ECE (Direção Geral de Estatísticas da Educação e Ciência/Direção de Serviços de Estatísticas da Educação, 2021).

Based on the European Pillar of Social Rights (European Commission, Secretariat General, 2018), children have the right to attend affordable high-quality ECE. However, not all children can access this provision. High-quality ECE comprehends structural and process characteristics (Slot, 2018). Structural quality refers to regulable features of classrooms, such as group (e.g., group size, adult-child ratios) and teacher characteristics (e.g., teacher education) (Slot, 2018; Slot et al., 2015), and process quality refers to teacher-child interactions and relationships, peer (child-child) interactions and relationships, and appropriate activities/materials and curriculum (Anders, 2015; Phillips et al., 2000; Slot et al., 2015). An indicator of process quality is the autonomy support provided by ECE teachers to children. Research has shown that ECE teachers who adopt autonomy supportive practices are more likely to have children who are more intrinsically motivated and engaged in classroom activities (Grolnick & Seal, 2007), contributing to children's perseverance and motivation in learning (Davis, 2003) and to the development acceptance, competence, and compliance (Ryan & Deci, 2000).

ECE teachers are essential to high-quality education and must be supported in responding to children's needs and supporting their learning and development. Portugal is one of the four countries with the most demanding requisites of teacher education, as an ECE teacher must have a master's degree in ECE or an equivalent level (European Commission/EACEA/Eurydice, 2019; Governmental Law No. 43/2007). However, according to the Portuguese Governmental Law No. 147/97, the maximum group size in ECE ranges between 20 and 25 children. Thus, on average, there are 16 children per ECE teacher in Portugal, while the average number in the European Union is 14 children per teacher (OECD, 2020). Relatedly, Aguiar and Aguiar (2022) studied Portuguese ECE teachers' perceptions of challenges and opportunities associated with group characteristics in ECE settings and found that having a large group is one of the biggest

challenges that they face, reporting that they do not receive the necessary support to work with so many children. In other countries, ECE teachers also reported feeling exhausted from supporting multiple children that need them throughout their working hours (e.g., Grant et al., 2019; Totenhagen et al., 2016; Whitebook et al., 2018). Recent research in the United States of America (USA) demonstrates that even though ECE teachers report work engagement, they also report stress and increasing difficulty in teaching in ECE (Kwon et al., 2020). As a result, high turnover among ECE teachers in the USA has been attributed to low pay, lack of benefits, and lack of educational resources (Kwon et al., 2020; Wells, 2017). Portuguese ECE teachers' age is also perceived as being associated with increased difficulties in managing the group of children (Aguiar & Aguiar, 2022). As revealed by OECD (2020), in 2018, 42% of ECE teachers in Portugal were over 50 years, and only 1% were under 30 years.

Overall, teaching, as a career, is highly complex. It involves multiple relationships, challenges, and demands that test the personal resources and ability to cope of individuals (Timms & Brough, 2012). ECE teachers struggle with many job hindering conditions (e.g., class size, lack of support), reporting increased demands associated with unbalanced group characteristics (e.g., too many children), and unavailability of job and personal resources to help them manage those demands (Aguiar & Aguiar, 2022; Hakanen et al., 2006). Therefore, ECE teachers may need help to better manage their working conditions and responsibilities. Such support may be obtained through ECE staff with leadership roles (e.g., ECE coordinators). According to Schaufeli (2015), leaders have the ability to allocate job demands and resources to their workers. Therefore, ECE coordinators that adopt good leadership practices, such as transformational leadership, may contribute to the development of personal resources and impact positively teachers' motivation, performance (Bass, 1985), and work engagement (Meng et al., 2022).

To understand the needs of ECE teachers and ensure they have effective work conditions, we must study personal characteristics and professional conditions that support teachers and promote positive personal and organizational outcomes (Lipscomb et al., 2021a). Accordingly, the Job Demands-Resources Model (Bakker & Demerouti, 2006) may offer an essential framework for understanding the working conditions of the ECE workforce (Lipscomb et al., 2021). Thus, this study aims to examine if ECE teachers' self-efficacy and work engagement mediate the association between their perceptions about ECE coordinators' transformational leadership and children's autonomy support by ECE teachers. Additionally, we will also examine if psychological

climate moderates the relationship between ECE teachers' perception of ECE coordinators' transformational leadership and ECE teachers' self-efficacy and work engagement. Data on these associations may inform interventions that support ECE teachers' work conditions and the quality of their practices. To meet this goal, we focused on ECE teachers who work with children between the ages of 3 and 6 and do not have coordination responsibilities.

1.1. The Job Demands-Resources Model

The Job Demands-Resources Model (JD-R) was developed by Demerouti et al. (2001) and assumes that each occupation may have some factors associated with job strain or motivation. These factors can be divided into job demands and job resources. Job demands include “those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs” (Bakker & Demerouti, 2006, p. 312). Job resources include “those physical, psychological, social, or organizational aspects of the job that are either/or: a) functional in achieving work goals; b) reduce job demands and the associated physiological and psychological costs; c) stimulate personal growth, learning, and development” (Bakker & Demerouti, 2006, p. 312).

Previous studies have supported the notion that job demands are the principal predictors of job strain (Bakker et al., 2003; Bakker et al., 2004), and job resources are the predominant predictors of work engagement (e.g., Hakanen et al., 2006). Additionally, the JD-R model proposes that two different psychological processes are responsible for job strain and motivation. In the straining process, the health impairment process, unsuccessfully designed jobs can cause work overload and emotional needs, exhausting employees' mental and physical resources (Bakker & Demerouti, 2006). In the motivational process, job resources may have an intrinsic motivational role because they foster workers' growth, learning, and development, leading to high work engagement and excellent performance (Bakker & Demerouti, 2006). On the other hand, job resources may also have an extrinsic motivational role because, based on the effort-recovery model (Meijman & Mulder, 1998), job environments that provide many resources foster the willingness of the individual to dedicate effort and abilities to the task, and the job will likely be finished successfully. In other words, resources include those characteristics of the work environment that facilitate and enrich people's working

lives (Bakker & Demerouti, 2006). Consequently, the JD-R model offers a perspective in which having considerable resources is associated with work engagement, having supportive colleagues, receiving resources from the leader, and an increased likelihood of being successful in work. Overall, it is fundamental that organizations develop mechanisms to prevent emotional strain through the promotion of conditions that enhance motivation and commitment (Schaufeli & Salanova, 2007).

Importantly, research on the JD-R model has been more focused on job characteristics and, consequently, employees' personal resources, which can be crucial determinants of their adjustment to work environments (Hobfoll, 1989; Judge et al., 1997), have been less explored. Personal resources are aspects of the individual that are generally linked to resilience and refer to individuals' ability to successfully control and influence their environment (Hobfoll et al., 2003). Some examples of personal resources are self-efficacy, optimism, and self-esteem (Schaufeli & Taris, 2014). However, while people's perceptions of and adaptation to environments change depending on their levels of personal resources, their personal resources are also dependent on environmental factors (Bandura, 2000), creating a bidirectional relationship.

Work based on JD-R model (Lipscomb et al., 2021) reported that ECE teachers' professional support and sense of self-efficacy predicted higher levels of work engagement. Additionally, the researchers noted that providing ECE teachers with the resources that they require to perform their duties successfully and the belief they can make a meaningful difference in the lives of children may help them engage in their work with passion, dedication, and positive energy. In the end, encouraging teachers to be engaged in their work may also help children develop (Lipscomb et al., 2021).

1.2. Children's autonomy support

Children show better academic and social skills, behavior, and student-teacher relationships when they attended higher-quality ECE (Lerkkanen et al., 2016; Schuitema et al., 2016; Stipek & Ogana, 2000). According to Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2000, 2020), people have three basic psychological needs that sustain motivation growth and development – autonomy, competence, and relatedness. Autonomy corresponds to a sense of choice and internal perceived locus of causality in one's undertakings. The autonomous person feels that the actions emanate from the self and reflect who she/he is instead of being the result of external pressures (Deci & Ryan, 1985; Ryan & Deci, 2000, 2020). Competence refers to a sense of mastery

and efficacy in one's activities (Deci & Ryan, 1985; Ryan & Deci, 2000, 2020). Lastly, relatedness refers to the extent to which a person feels connected to others and belongs to a community (Deci & Ryan, 1985; Ryan & Deci, 2000, 2020). Therefore, according to SDT, teachers influence student motivation by supporting students' basic needs of autonomy, competence, and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2000), namely by encouraging student autonomy, providing structure for learning, and by being interpersonally involved (Connell & Wellborn, 1991). Hence, students' perceptions of autonomy support are positively associated with their autonomous motivation, interest, involvement, and achievement (e.g., Jang et al., 2012; Vansteenkiste et al., 2012).

Teachers support children's autonomy by listening and respecting their ideas, providing choices, emphasizing the relevance of content, encouraging initiative, and stimulating them to explore their interests (Assor et al., 2002; Grolnick & Pomerantz, 2009; Reeve & Jang, 2006; Skinner & Belmont, 1993; Skinner et al., 2005). Furthermore, autonomy-supportive teacher practices have been summarized into 3 categories: (i) supporting inner motivational resources, (ii) relying on non-controlling informational language, and (iii) identifying children's perspectives (Jang et al., 2010; Reeve et al., 2004; Reeve & Jang, 2006). In early childhood, autonomy is associated with development of self-organization and self-responsibility skills (Koteva-Mojsovska & Banchotovska, 2019). As a result, children are more likely to feel self-directed and express their views and opinions, which will be valued and considered in their interactions with adults (Skinner et al., 2005). Grolnick and Seal (2007) found that autonomy supportive ECE teachers are more likely to have children who are more engaged and intrinsically motivated in classroom activities. Therefore, autonomy support contributes to children's persistence and motivation in learning tasks (Davis, 2003), a sense of ability to direct their behaviors, and feelings of competence and acceptance (Ryan & Deci, 2000).

According to Portuguese Governmental Law No. 241/2001, ECE teachers should promote children's autonomy and their inclusion in society, considering the complex and diverse characteristics of the educational learning environment. Additionally, the Portuguese inspection handbook for ECE settings includes a section covering the topics on which inspectors should seek children's views. These include their preferred activities, their freedom to choose play activities, and their interactions with education staff (European Commission/EACEA/Eurydice, 2019).

Importantly, children's autonomy support is a rarely examined dimension of teacher-child relationships (Cadima et al., 2018). Stipek et al. (1995) found that when teachers

created a nurturing social climate in their classrooms, attending to children's individual needs and supporting their initiatives, children had higher scores in various motivation measures. Further, they suggested that in classrooms where teachers place greater emphasis on providing choices for children, children select more challenging and stimulating activities (Stipek et al., 1995). Therefore, it is crucial to give children opportunities to direct their learning (e.g., Cadima et al., 2018; Perry et al., 2007), as autonomy support influences self-regulation skills (Cadima et al., 2018) and positively predicts children's social self-concept (Leflot et al., 2010). This means that teachers can promote self-regulation skills by providing adequate levels of autonomy and responsibility, such as respecting child's opinions and ideas and supporting their interests (Cadima et al., 2018). Nevertheless, ECE teachers' practices can be directly or indirectly influenced by diverse factors, including organizational or personal variables. An organizational variable that may impact indirectly children's autonomy support by teachers is the ECE coordinator leadership.

1.3. Transformational leadership in the ECE settings

Leadership is fundamental for workers' well-being and performance (Tummers & Bakker, 2021). While there are different types of leadership, this study focuses on transformational leadership (TFL), one of the most frequently used leadership theories (Gawke et al., 2017). TFL has four separate dimensions: (1) idealized influence, when the leader provides a vision and a sense of mission and gains the respect and trust of workers; (2) inspirational motivation, when the leader has high expectations and expresses important purposes in more straightforward ways; (3) intellectual stimulation, when the leader can show workers new visions and rational solutions; and (4) individualized consideration, when the leader pays close attention to worker differences and needs (Avolio et al., 1991; Bass, 1990; Bass & Avolio, 1994). Therefore, TFL occurs when the leader promotes motivation and change of attitudes among workers, to inspire them to achieve their goals (Bass, 1990; Neves & Coimbra, 2018). Consequently, the transformational leader is seen as someone who is charismatic, respectful, and trustworthy (Bass, 1990; Neves & Coimbra, 2018).

According to the JD-R model, leaders define the allocation of job demands and resources to their workers (Schaufeli, 2015). As it happens, transformational leaders provide specific job resources, namely by strengthening workers' personal resources, and diminishing job hindering demands (Diebig et al., 2017; Hentrich et al., 2017). For

instance, leaders may provide social support by encouraging workers to use resources effectively (Harms et al., 2017).

When considering high-quality ECE, good leadership is also essential. Leaders of ECE settings face many different tasks, including organizing educational provisions and managing human and financial resources (European Commission/EACEA/Eurydice, 2019). Rodd (1997) identified the following tasks as the most common in the ECE coordinator role: managing and supervising staff; contact with parents and others; staff support and development; managing the budget; and coordinating role. As a result, it was identified as a job with more focus on management than leadership (Muijs et al., 2004). However, leaders of center-based ECE settings in European Countries are required to have previous experience in early childhood education and care (ECEC) or education (e.g., Spain and Italy), or specific leadership training (e.g., Austria and Wales), or both (e.g., France and Switzerland) (European Commission/EACEA/Eurydice, 2019). Nevertheless, all leaders of ECE settings must be qualified at the bachelor's level, at least. In Portugal, even though a master's degree is needed to be an ECE teacher, there are no minimum requisites to be an ECE coordinator, besides having a licentiate degree (European Commission/EACEA/Eurydice, 2019). However, when choosing or selecting an ECE coordinator priority should be given to ECE teachers with a master's degree (European Commission/EACEA/Eurydice, 2019).

According to Bloom (2000), ECE coordinators must have appropriate knowledge (namely in group dynamics, organizational theory, and child development), skills (technical, human, and financial), and attitudes (such as moral purpose). A 16-month Early Childhood Leadership Training Program (Bloom & Sheerer, 1992) studied the dimensions of the ECE care center director's role (e.g., personal and professional knowledge, ECE programming, leadership style, organizational theory, child development, parent and community relations, legal and fiscal issues, public policy, advocacy, research, and technology) and found that observed classroom process quality increased in ECE settings where the leadership was involved in the training program, when compared with the group not involved. Another program, Taking Charge of Change, focused on leadership skills and organizational climate and found improvements in centers' classroom process quality and organizational climate (Bloom & Bella, 2005). Overall, ECE coordinators who adopt transformational leadership practices encourage teachers to communicate their ideas, opinions, and cognitive judgment, fostering problem-solving in the educational environment (Bass, 1985), while still inspiring them

to look for novel approaches to pressing issues and to view the world from fresh angles (Avolio et al., 1988; Bass, 1985, 1990).

Not only the leader has the power of decreasing job demands and provide resources to their workers, but a leader with transformational practices can also promote motivation and change of attitudes among workers, and inspire them (Bass, 1990; Neves & Coimbra, 2018), while providing job resources, increasing their personal resources, and decreasing potentially hindering job demands (Diebig et al., 2017; Hentrich et al., 2017). Moreover, research shows that transformational leadership is positively associated with teachers' work engagement (Meng et al., 2022) and with teachers' performance and motivation (Bass, 1985). Therefore, considering that ECE teachers have diverse job demands, we propose that an ECE coordinator who uses transformational leadership practices can help decrease ECE teachers job demands, increase their work engagement, and inspire them to use better teaching practices, which consequently, and indirectly, may impact positively children's development. For example, an ECE coordinator who trusts ECE teachers, is likely to allow them to make their own decisions and not overload them, enabling them to be autonomous and plan their own classes. As a result, these ECE teachers may adopt more autonomous and effective behaviors, including children's autonomy support. Overall, we will examine this potential indirect effect of transformational leadership on children's autonomy support, considering the mediating role of teachers' self-efficacy and work engagement, as explained below.

1.4. The mediating role of self-efficacy

When considering research in ECE and elementary school, interactions with teachers play an essential role in children's development and adjustment to the school context (e.g., Davis, 2003; Juvonen & Wentzel, 1996; Ladd, 1990; Mantzicopoulos, 2005; Pianta et al., 2003). Derived from Bandura's (1997) Social Cognitive Theory (SCT), self-efficacy refers to one's belief about the capacity to accomplish a task or cope with environmental demands. Thus, self-efficacy is an individual's belief about his/her capabilities to organize and execute a necessary action to achieve specific goals and duties, and overcome challenges (Bandura, 1977). Self-efficacious people are expected to deal more effectively with difficulties, recover more rapidly from various issues and setbacks, and attain valued outcomes through persistence (Judge et al., 2000; Yakin & Erdil, 2012). Hence, according to SCT, self-efficacy affects both people's cognitions and emotions (Pajares, 1997), which explains people's behaviors and the antecedents and results of such

behaviors (Vera et al., 2012). As a result, SCT efficacy beliefs are seen as predictors of human behavior, motivation, and how we feel in several contexts, including the workplace (Vera et al., 2012). Furthermore, research has also shown that low levels of self-efficacy are associated with early retirement (Vera et al., 2012).

Tschannen-Moran et al. (1998) defined teacher self-efficacy as the extent to which teachers believe their efforts will positively affect their students' capacities to engage in successful behavior, resulting in positive achievement. Skaalvik and Skaalvik (2007) defined teacher self-efficacy as "individual teachers' beliefs about their own abilities to plan, organize, and carry out activities required to attain given educational goals" (p. 612). In other words, teachers' self-efficacy is the belief that they have the necessary capabilities to help students learn. Consequently, self-efficacious teachers dedicate more effort to teach, persist longer when facing obstacles, and are more likely to embrace innovative teaching methods (Tschannen-Moran et al., 1998). Fantuzzo et al. (2012) showed that ECE teachers with higher self-efficacy spent more time communicating with parents and teaching cognitive and social-emotional skills to children. Therefore, teacher beliefs can help explain individual differences in teachers' educational practices (Perren et al., 2017).

Additionally, based on the JD-R model, self-efficacy is the most powerful personal resource (Vera et al., 2012; Wattoo et al., 2019) and can act as a motivating mechanism. Fives and Buehl (2012) considered teachers' self-efficacy as a motivational construct that guides teachers' goals, their dedication to achieving those goals, and their persistence and task engagement. Moreover, evidence suggests that ECE teachers' self-efficacy is flexible and can be enhanced through effective professional development and support from leaders (Ciyer et al., 2010; Pas et al., 2012; Von Suchodoletz et al., 2018). Eden (1990) suggested that transformational leaders may promote self-efficacy in their workers by expressing high expectations, leading workers to believe they can deal with challenges effectively. Sutton and Woodman (1989) found that leaders expressed higher expectations for workers they believed to have high potential. Consequently, these workers reported higher levels of self-efficacy. In addition, Xie et al. (2022) studied 14,121 middle school teachers in China to understand the role that teacher-perceived principal leadership played in teacher self-efficacy. The results revealed that teacher collaboration mediated this relationship.

Therefore, self-efficacious beliefs are likely to impact the relationship between teachers and children, and these interactions play an important role in children's

development (Davis, 2003). Likewise, not only self-efficacy has been used as a mediator in the relationship between job resources and organizational outcomes (Xanthopoulou et al., 2007, 2009), but has also been identified as a personal resource that influences directly and indirectly children's development (Gist & Mitchell, 1992; Lipscomb et al., 2021). Thus, we assume that coordinators who manifest high expectations regarding their ECE teachers (i.e. transformational leaders), are more likely to promote self-efficacious beliefs in ECE teachers, and these teachers are more likely to believe that they have the necessary capabilities to help children learn and adopt more innovative practices, such as autonomy support, which may contribute positively to children's autonomy and development (Lipscomb et al., 2021). Therefore, we hypothesized:

H1: ECE teachers' self-efficacy mediates the relationship between ECE coordinators' transformational leadership and children's autonomy support by ECE teachers.

1.5. The mediating role of work engagement

Work engagement has been defined as a condition of optimal worker well-being that is associated with greater worker contentment, input, and productivity (Timms & Brough, 2012). In addition, work engagement fulfills basic psychological needs, such as autonomy, competence, and relatedness (May et al., 2004; Ryan & Deci, 2000, 2001). According to Schaufeli and Bakker (2004a), work engagement comprises three dimensions: vigour, dedication, and absorption. Vigour refers to keenness to invest effort because the individual is resilient and has considerable energy, persisting in the face of difficulties. Dedication refers to a sense of fulfillment and pride in one's work. Lastly, absorption refers to when people are happily involved in their work and do not notice the passage of time.

The JD-R model (Bakker & Demerouti, 2006; Demerouti et al., 2001) posits that work engagement can be predicted by balance (and burnout by imbalance) between demands and resources within the work environment. Across professions, job and personal resources have emerged as significant predictors of work engagement. More precisely, job resources, such as social support and feedback from the leader (Bakker et al., 2008; Schaufeli & Bakker, 2004a) predict work engagement in several professions, including teachers.

Research in education settings demonstrates that transformational leadership is one of the aspects that significantly influences teachers' motivation and performance (Bass,

1985) and is positively associated with work engagement (Meng et al., 2022). However, we are unaware of any studies on the relationship between transformational leadership and work engagement in ECE settings. Despite this gap, Thoonen et al. (2011) studied elementary teachers and found that transformational leadership practices stimulate teachers' professional learning and motivation and improve school organizational conditions. Further, Bae et al. (2013) studied teachers in career and technical education (i.e., focusing on teaching specific career skills to students in middle school, high school, and post-secondary institutions) and discovered that transformational leadership was positively associated with work engagement.

Overall, transformational leadership has already been identified as a predictor of work engagement in educational settings (Meng et al., 2022), but to the best of our knowledge, there are no studies examining the associations between ECE teachers' work engagement and children's autonomy support by teachers. Nevertheless, research does suggest that engaged ECE teachers demonstrate more dedication, passion, and positive energy in their workday (Lipscomb et al., 2021). For this reason, identifying factors contributing to ECE teachers' work engagement is emerging as a focus of research and may be imperative to increase teacher retention and well-being, and high-quality teacher-child interactions that support children's development (Lipscomb et al., 2021). We assume that ECE coordinators who stimulate ECE teachers' professional development and their sense of purpose and mission (i.e., transformational leaders) may contribute to teachers' work engagement and, thus, teachers are more likely to be professionally satisfied and committed. Consequently, these positive outcomes may contribute to the adoption of better practices (Lipscomb et al., 2021), including children's autonomy support. Therefore, we hypothesized:

H2: ECE teachers' work engagement mediates the relationship between ECE coordinators' transformational leadership and children's autonomy support by ECE teachers.

1.6. The moderating role of psychological climate

In addition to the proposed relationships, where transformational leadership is hypothesized to influence children's autonomy support through specific mediators, we also examined the extent to which an organizational factor may moderate this association. Specifically, we focused on psychological climate.

Psychological climate was defined by James and James (1989) as the perception of the individual employee of the psychological effects of the work environment on their personal well-being and includes four factors: (1) role stress and lack of harmony; (2) job challenge and autonomy; (3) leadership facilitation and support; and (4) work-group cooperation, friendliness, and warmth. When workers in a particular job agree on their perceptions of the effects of their work environment, their perceptions can be compiled to describe the organizational climate in which they work (Jones & James, 1979; Joyce & Slocum, 1984). Relatedly, organizational climate was defined by Litwin and Stringer (1968; cit in Veziroglu-Celik & Yildiz, 2018) as “a set of measurable characteristics that are directly or indirectly perceived by people living and working in the workplace, and that are supposed to affect their motivations and behavior” (p. 89). Most studies represent organizational climate by psychological climate mean scores (James et al., 2008), and organizational climate has been shown to influence individual and organizational outcomes (James et al., 1990; James & Jones, 1974). James and James (1989) suggested that valuations of work environments are provided directly by measures of psychological climate.

In educational contexts, the organizational climate concerns teachers’ perceptions of the school environment (Croft & Halpin, 1962; Dutta & Sahney, 2016). As a result, it has been described as a set of internal psychological factors influencing how school members describe and understand their work environment (Hoy & Miskel, 2008). Therefore, it includes the quality of the interpersonal relationships between all members of the school community, collaboration between the staff, supportive behaviors from the administration, availability of resources, and quality of teaching and learning practices (Cohen et al., 2009). Bloom (2010) identified ten components of organizational climate in ECE, including collegiality, director support, decision-making, goal consensus, task orientation, and physical environment (for more information, see Bloom, 2010). Overall, individual ECE teachers’ perception of the above-mentioned characteristics represents their psychological climate.

Research has found evidence that psychological climate may be associated with teachers’ self-efficacy. Skaalvik and Skaalvik (2010) found that teachers’ self-efficacy is influenced by school resources and support, and Aldridge and Fraser (2016) and Reaves and Cozzens (2018) found that school climate is associated with teacher self-efficacy. Therefore, we expect that the association between transformational leadership and ECE teachers’ self-efficacy is likely to be contingent upon the level of psychological climate

in the ECE setting. We assume that the association between coordinators' transformational leadership practices and teachers' self-efficacy beliefs is strengthened when the perception of ECE teachers about the psychological climate is positive and hindered when the perception of ECE teachers about the psychological climate is negative. The combination of two positive organizational resources, in this case, transformational leadership and psychological climate, is likely to strengthen ECE teachers' self-efficacy, based on the accumulation of positive conditions. Therefore, we hypothesized:

H3: Psychological climate moderates the relationship between ECE coordinators' transformational leadership and ECE teachers' self-efficacy; specifically, transformational leadership and ECE teachers' self-efficacy are more strongly related when psychological climate is higher.

According to the JD-R model, organizational climate has been identified as one of the job resources that may support work engagement (Ancarani et al., 2018). Although there are only a few studies on the topic, a connection was found between climate models that promote employee well-being, growth, and empowerment within the organization and work engagement (Ancarani et al., 2018). Therefore, we assume that the positive association between ECE coordinators' transformational leadership practices and ECE teachers' work engagement, is stronger when teachers' perceptions of the psychological climate are more positive, and weaker when ECE teachers' perceptions about the psychological climate are negative. The combination of two positive organizational resources, in this case, transformational leadership and psychological climate, is likely to strengthen ECE teachers' work engagement based on the accumulation of positive conditions. Therefore, we hypothesized:

H4: Psychological climate moderates the relationship between ECE coordinators' transformational leadership and ECE teachers' work engagement; specifically, coordinators' transformational leadership and ECE teachers' work engagement are more strongly related when psychological climate is higher.

Finally, based on the previous literature and hypotheses, we hypothesized the following moderated mediations:

H5a: Psychological climate moderates the indirect effect of transformational leadership on children's autonomy support through self-efficacy, that is, the relationship

between transformational leadership and children's autonomy support mediated by self-efficacy is stronger when psychological climate is higher, and weaker when psychological climate is lower (moderated mediation).

H5b: Psychological climate moderates the indirect effect of transformational leadership on children's autonomy support through work engagement, that is, the relationship between transformational leadership and children's autonomy support mediated by work engagement is stronger when psychological climate is higher, and weaker when psychological climate is lower (moderated mediation).

To summarize, Figure 1 represents the hypotheses model of this study:

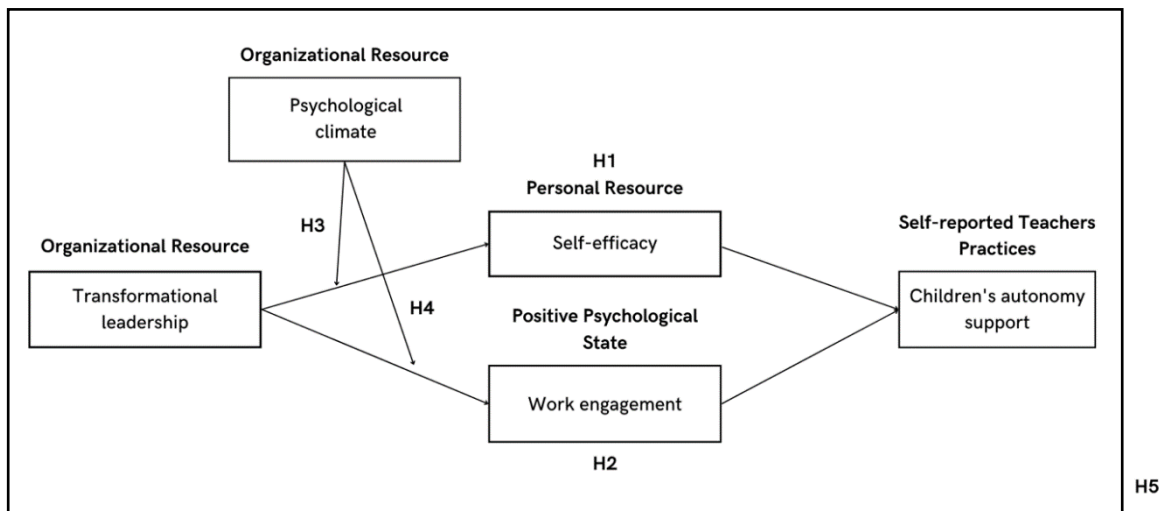


Figure 1 - Hypotheses Model

Chapter II – Methods

2.1. Participants

Two hundred and eighty-four ECE teachers (277 women, five men, and two participants who rather not say), aged between 23 and 65 years ($M = 47.74$, $SD = 9.80$) from Portuguese ECE settings, were included in the study. ECE teachers had between six months and 45 years of experience in the ECE field ($M = 23.59$, $SD = 10.73$) and 64.1% had a licentiate degree, 13% had a post-graduation, 22.2% had a master's degree, and 0.7% had a doctorate. Approximately 45.8% worked in public ECE settings (within school clusters, which include institutions offering all levels of instruction from early childhood to secondary education), and 54.2% worked in private ECE settings. In addition, 45.8% had a permanent contract and 40.5% had temporary contracts. Referring to the region, 25.4% of the ECE teachers worked in the north of Portugal, 31.7% worked in the center, 34.9% worked in the Lisbon metropolitan area, 3.2% worked in Alentejo, 4.6% worked in Algarve, and 0.4% worked in the Madeira autonomous region. Additionally, participant ECE teachers classified the socioeconomic context of their setting as high (2.1%), medium-high (20.4%), medium (35.9%), medium-low (34.5%), and low (7%). Finally, the number of children per classroom varied between 3 and 26 children, with 28.5% of teachers reporting 25 children in their classroom and 16.5% reporting 20 children in the classroom.

2.2. Measures

Children's autonomy support. The Teacher as Social Context Questionnaire (TASC; Wellborn et al., 1992; cit in Cadima et al., 2018) was adapted for the Portuguese population by Lemos and Cadima (2013) and used in this study to measure ECE teachers' behavior toward children in their classroom (Cadima et al., 2018). The TASC is composed of three subscales, teachers' involvement (e.g., "I enjoy the time I spend with the children of this class"), structure (e.g., "I show the children of this class different ways to solve problems"), and autonomy support (e.g., "I explain to the children of this class why we learn certain things in school") (Iglesias-García et al., 2020). In this study, we only used the autonomy support subscale, with a total of 12 items, measured on a 4-point scale (0 = *not at all true*, 1 = *not very true*, 2 = *something true*, 3 = *very true*) (Cadima et al., 2018; Iglesias-García et al., 2020; Leflot et al., 2010). Note that items 2, 3, 4, 5, 6, 8 and 9 are formulated negatively (e.g., "I can't let the children do things their own way")

and, thus, were reverse-coded. In addition, similarly to Iglesias-García et al. (2020), each item addressed the practices targeting all children in the classroom (vs. single children). Based on Cronbach's alpha, one item was excluded (e.g., "It is difficult to explain to the children why what we do in ECE is important"). The positive and reverse-coded negative items were averaged to obtain a final score ($\alpha = .78$), with higher scores representing higher levels of autonomy support (Cadima et al., 2018; Leflot et al., 2010).

Transformational leadership. The Transformational Leadership Questionnaire (TLQ) (Avolio & Bass, 2004) was adapted for the Portuguese population by Neves and Coimbra (2018) and was used to determine the extent to which transformational-leadership behaviors and leadership results of ECE coordinators were reported by ECE teachers. ECE teachers were asked to report on their cluster preschool education coordinator, if they worked in a public ECE setting, or on their pedagogical coordinator, if they worked in a private ECE setting. TLQ is composed of three subscales, transformational leadership (e.g., "Looks for different perspectives when solving problems"), transactional leadership (e.g., "It focuses its full attention on dealing with errors, complaints and failures"), and laissez-faire leadership (e.g., "Waits for something to go wrong before acting") (Neves & Coimbra, 2018). In this study, we only used the transformational leadership subscale, with a total of 13 items, measured on a 5-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree or disagree*, 4 = *agree*, 5 = *strongly agree*) (Neves & Coimbra, 2018). The mean of the 13 items was used to obtain a score for transformational leadership ($\alpha = .91$). Higher scores on the TLQ represent higher transformational leadership of ECE coordinators, based on the perception of ECE teachers.

Self-efficacy. The Ohio State Teacher Efficacy Scale (OSTES; Tschannen-Moran & Hoy, 2001) was adapted for the Portuguese population by Dias (2011; available in Bonjardim, 2012) and was used to measure ECE teachers' self-efficacy. The OSTES is composed of three subscales, namely, efficacy for instructional strategies (e.g., "To what extent you can use a variety of assessment strategies?"), efficacy for classroom management (e.g., "How much can you do to get children to follow classroom rules?"), and efficacy for student engagement (e.g., "How much can you do to help children value learning?") (Tschannen-Moran & Hoy, 2001). We used the short form, which includes four items in each subscale, in a total of 12 items, measured on a 9-point scale (1 = *nothing*, 3 = *very little*, 5 = *some influence*, 7 = *quite a bit*, 9 = *a great deal*) (Tschannen-Moran & Hoy,

2001). In this study, the mean of the 12 items ($\alpha = .95$) was used to obtain a single score for teacher efficacy. Higher scores on the efficacy scale represent higher self-efficacy (Tschannen-Moran & Hoy, 2001).

Work engagement. The Utrecht Work Engagement Scale (UWES; Schaufeli & Bakker, 2004b) was validated for the Portuguese population by Martins (2013) and was used to measure ECE teachers' work engagement. UWES is composed of three dimensions, vigor (e.g., "At my work, I feel bursting with energy"), dedication (e.g., "My job inspires me"), and absorption (e.g., "I get carried away when I'm working") (Schaufeli & Bakker, 2004b). In this study, we used the reduced version, which includes three items for each dimension, in a total of nine items, measured on a 7-point Likert scale (0 = *never*, 1 = *almost never/a few times a year or less*, 2 = *rarely/once a month or less*, 3 = *sometimes/a few times a month*, 4 = *often/once a week*, 5 = *very often/a few times a week*, 6 = *always/every day*) (Schaufeli & Bakker, 2004b). The scores for ECE teachers' work engagement were calculated using the mean of the nine items ($\alpha = .94$). Higher scores represent higher work engagement (Schaufeli & Bakker, 2004b).

Psychological climate. To assess the perception of each ECE teacher about the organizational climate of their ECE setting, we measured ECE teachers' psychological climate using a scale from the Early Childhood Work Environment Survey (short form) (ECWES; Bloom, 2010), adapted by Slot et al. (2018). The psychological climate scale included a total of seven items (e.g., "Staff are encouraged to be creative and innovative in their job"), measured on a 5-point Likert scale (1 = *strongly disagree*, 2 = *slightly disagree*, 3 = *undecided*, 4 = *slightly agree*, 5 = *strongly agree*) (Maio et al., 2022), with the first item reverse-coded (e.g., "As a team, we are not able to cope well with difficult challenges"). The positive and reverse-coded negative items were averaged to obtain a final score ($\alpha = .85$), with higher scores representing higher levels of psychological climate.

2.3. Procedure

Prior to data collection, the study was submitted to and approved by the Ethics Commission at Iscte (i.e., Comissão de Ética do Iscte) (Reference No. 131/2022). The

study was also approved by the General Directorate of Education (i.e., Direção Geral da Educação).

We used a quantitative approach through a self-administered questionnaire composed of sociodemographic questions (e.g., age, years of experience in ECE, group size, socioeconomic context) and the previously mentioned scales. The questionnaire was created in Qualtrics (<https://www.qualtrics.com>), an online survey platform, and the participants also filled in the informed consent form online. No personal information from the participants (including IP address) was collected (i.e., the “Don’t record respondents’ IP Address, location data, and contact info” setting was activated). Afterwards, the survey was published and shared on social media platforms (e.g., Facebook, Instagram) to collect data and sent to ECE settings’ email contacts. To this effect, the Social Letter (e.g., Carta Social) publicly available website was consulted, and e-mails asking for collaboration were sent to all the schools/institutions that were in the category “Children and young people in preschool education establishment” (i.e., Crianças e jovens em estabelecimento de educação pré-escolar). The email issued included an overview of the research objectives, the participation criteria, and a request to the coordinator to share the survey with all the teachers who met the requirements (i.e., ECE teachers without coordination functions, working in classrooms serving children aged between 3 and 6 years of age). Data were collected once for each participant, with an estimated duration of 10 minutes, between January and March 2023.

2.4. Data analyses

IBM SPSS Statistics Version 28 was used for all statistical analyses. First, we performed descriptive analysis. Secondly, correlational analyses were performed by testing the associations between the main variables, through Pearson’s coefficient.

Regarding the mediation hypotheses, two mediation analyses (Model 4) were conducted using the PROCESS macro v.4.0. for SPSS (Hayes, 2021). The aim was to examine whether teachers’ self-efficacy and work engagement mediated the relationship between coordinators’ transformational leadership and children’s autonomy support. We used 95% confidence intervals (CI) for the indices and bootstrapping ($n = 5,000$) to examine the indirect effects. The parameter is considered statistically significant when the 95% bootstrapped confidence interval does not include zero.

Regarding the moderation hypotheses, two moderation analyses (Model 1) were conducted using the PROCESS macro v.4.0. for SPSS (Hayes, 2021). More specifically,

these analyses examined whether the relationships between coordinators' transformational leadership and teachers' self-efficacy and teachers' work engagement were moderated by teachers' psychological climate.

Finally, two moderated mediation analyses (Model 7) were conducted using the PROCESS macro v.4.0. for SPSS (Hayes, 2021). These analyses aimed to examine whether the indirect relationships between coordinators' transformational leadership and children's autonomy support through teachers' self-efficacy and work engagement were stronger or weaker as a function of teachers' psychological climate. We used 95% confidence intervals (CI) for the indices and bootstrapping ($n = 5,000$) to examine the indirect effects. The parameter is considered statistically significant when the 95% bootstrapped confidence interval does not include zero.

Chapter III – Results

3.1. Descriptive statistics

Table 1 summarizes the mean, standard deviation, minimum, and maximum of all the variables that were considered in this study.

Table 3.1.

Descriptive statistics for study variables

Variables	<i>M</i>	<i>SD</i>	Min.	Max.	<i>n</i>
1. Children's autonomy support	2.29	0.42	1.09	3	284
2. Coordinators' transformational leadership	3.59	0.88	1	5	284
3. Teachers' self-efficacy	7.22	1.05	1	9	284
4. Teachers' work engagement	4.68	1.04	0	6	284
5. Teachers' psychology climate	3.65	0.88	1	5	284
6. Socioeconomic context ^a	3.24	0.93	1	5	284
7. Years of experience in ECE	23.59	10.73	0.5	45	284
8. Children per classroom	20.57	4.53	3	26	281

Note. ^a 1 = high, 2 = medium-high, 3 = medium, 4 = medium-low, 5 = low

3.2. Correlation coefficients

Using the Pearson Coefficient (r), and considering $p \leq .05$ as the significance level, Table 2 shows the correlations between the variables. The strongest correlation found was between teachers' work engagement and teachers' self-efficacy ($r = .58, p < .001$), followed by coordinators' transformational leadership and teachers' psychological climate ($r = .54, p < .001$), and teachers' work engagement and teachers' psychological climate ($r = .49, p < .001$). The correlation between ECE coordinators' transformational leadership and ECE teachers' self-efficacy was positive and significant, although weak ($r = .17, p = .003$). As expected, the correlation between teachers' work engagement and children's autonomy support was positive, yet weak ($r = .20, p < .001$).

There was no correlation between the ECE setting socioeconomic context and any other variables, except for teachers' years of experience in ECE ($r = .20, p < .001$). In addition, there was a correlation between children per classroom and teachers' self-efficacy ($r = .15, p = .013$) and teachers' years of experience in ECE ($r = .19, p = .001$). Finally, there was a positive correlation between years of experience in ECE and children's autonomy support ($r = .20, p < .001$) and years of experience in ECE and

teachers' self-efficacy ($r = .21, p < .001$). Therefore, years of experience in the ECE field will be used as covariate in further analyses.

Table 3.2.

Pearson correlation coefficients between the study variables.

Variables	1	2	3	4	5	6	7
1. Children's autonomy support	-						
2. Coordinators' transformational leadership	.05	-					
3. Teachers' self-efficacy	.25***	.17*	-				
4. Teachers' work engagement	.20***	.26***	.58***	-			
5. Teachers' psychological climate	.11	.54***	.33***	.49***	-		
6. Socioeconomic context ^a	.09	.11	-.02	-.03	.02	-	
7. Years of experience in ECE	.20***	.00	.21***	.05	.05	.20***	-
8. Children per classroom	.05	.05	.15*	.09	.02	.03	.19**

Note. ^a 1 = high, 2 = medium-high, 3 = medium, 4 = medium-low, 5 = low.

* $p < .05$. ** $p < .01$. *** $p < .001$

3.3. Association between coordinators' transformational leadership and children's autonomy support through ECE teachers' self-efficacy

Regarding the first hypothesis, the linear model explained 7,3% ($R^2 = .073$) of the variance in children's autonomy support and was statistically significant ($F(2,281) = 11.04, p = < .001$). Coordinators' transformational leadership was positively associated with teachers' self-efficacy ($B = .21, t = 3.03, p = .003$), and teachers' self-efficacy was positively associated with children's autonomy support ($B = .09, t = 3.60, p = < .001$). Coordinators' transformational leadership was associated with children's autonomy support when mediated by teachers' self-efficacy (see Table 3.3). Years of experience were associated with teachers' self-efficacy ($B = .02, t = 3.59, p < .001$) and children's autonomy support ($B = .01, t = 2.74, p = .007$).

Table 3.3.

Mediation analysis: Coordinators' transformational leadership, children's autonomy support, and teachers' self-efficacy.

				R^2
Model 1: mediation variable on model	Outcome: Teachers' self-efficacy			.073
	Coeff.	SE	t	p
Coordinators' transformational leadership	.21	.07	3.03	.003
Years of experience in ECE	.02	.01	3.59	< .001
Model 2: outcome variable on model	Outcome: Children's autonomy support			.087
	Coeff.	SE	t	p
Coordinators' transformational leadership	.01	.03	.28	.78
Teachers' self-efficacy	0.9	.02	3.60	< .001
Years of experience in ECE	.01	.002	2.74	.007
<i>Indirect Effect Bootstrapping</i>				
	Coeff.	SE	LL 95% CI	UL 95% CI
Indirect Effect of coordinators' transformational leadership on children's autonomy support by teachers' self-efficacy	.02	.01	0.003	0.037

Note. $N = 284$. Non-standardized coefficients are reported. 5000 *bootstrap* samples; LL – lower limit; UL – upper limit; CI – Confidence interval.

3.4. Association between coordinators' transformational leadership and children's autonomy support through ECE teachers' work engagement

Regarding the second hypothesis, the linear model explained 6.9% ($R^2 = .069$) of the variance in children's autonomy support and was statistically significant ($F(2,281) = 10.43, p < .001$). Coordinators' transformational leadership was positively and significantly associated with teachers' work engagement ($B = .30, t = 4.47, p < .001$), and teachers' work engagement was positively and significantly associated with children's autonomy support ($B = .08, t = 3.16, p = .002$). Coordinators' transformational leadership was associated with children's autonomy support when mediated by teachers' work engagement (see Table 3.4). Years of experience were also positively associated with children's autonomy support ($B = .01, t = 3.37, p < .001$).

Table 3.4.

Mediation analysis: Coordinators' transformational leadership, children's autonomy support, and teachers' work engagement.

					<i>R</i> ²
Model 1: mediation variable on model	Outcome: Teachers' work engagement				.069
	Coeff.	SE	<i>t</i>	<i>p</i>	
Coordinators' transformational leadership	.30	.07	4.47	< .001	
Years of experience in ECE	.01	.01	.94	.35	
Model 2: outcome variable on model	Outcome: Children's autonomy support				.077
	Coeff.	SE	<i>t</i>	<i>p</i>	
Coordinators' transformational leadership	.00	.03	.09	.932	
Teachers' work engagement	.08	.02	3.16	.002	
Years of experience in ECE	.01	.00	3.37	.001	
<i>Indirect Effect Bootstrapping</i>					
	Coeff.	SE	LL 95% CI	UL 95% CI	
Indirect Effect of coordinators' transformational leadership on children's autonomy support by teachers' work engagement	.02	.01	.007	.044	

Note. $N = 284$. Non-standardized coefficients are reported. 5000 *bootstrap* samples; LL – lower limit; UL – upper limit; CI – Confidence interval.

3.5. Psychological climate moderating effect in the relation between coordinators' transformational leadership and ECE teachers' self-efficacy

Regarding the third hypothesis (see Table 3.5), the linear model explained 15.2% ($R^2 = .152$) of the variance in teachers' self-efficacy and was statistically significant ($F(4,279) = 12.53, p < .001$). Teachers' psychological climate was positively and significantly associated with teachers' self-efficacy ($B = .37, t = 4.62, p < .001$). However, an interaction effect between coordinators' transformational leadership and teachers' psychological climate was not found ($B = -.09, t = -1.29, p = .200$). Years of experience were associated with teachers' self-efficacy ($B = .02, t = 3.48, p = .001$).

Table 3.5.

Moderation analysis: Coordinators' transformational leadership, teachers' self-efficacy, and psychological climate.

					R^2
	Outcome: Teachers' self-efficacy				.152
	Coefficients	SE	t	p	
Coordinators' transformational leadership	-.01	.08	-.16	.873	
Teachers' psychological climate	.37	.08	4.62	< .001	
Coordinators' transformational leadership x Teachers' psychological climate	-.09	.07	-1.29	.200	
Years of experience in ECE	.02	.01	3.48	.001	

Note. $N = 284$. Non-standardized coefficients are reported.

3.6. Psychological climate moderating effect in the relation between coordinators' transformational leadership and ECE teachers' work engagement

Regarding the fourth hypothesis (see Table 3.6), the linear model explained 23.9% ($R^2 = .239$) of the variance in teachers' work engagement and was statistically significant ($F(4,279) = 21.87, p < .001$). Teachers' psychological climate was positively and significantly associated with teachers' work engagement ($B = .56, t = 7.53, p < .001$). However, an interaction effect between coordinators' transformational leadership and teachers' psychological climate was not found ($B = -.06, t = -.91, p = .363$).

Table 3.6.

Moderation analysis: Coordinators' transformational leadership, teachers' work engagement, and psychological climate.

					R^2
	Outcome: Teachers' work engagement				.239
	Coefficients	SE	t	p	
Coordinators' transformational leadership	-.01	.07	-.16	.873	
Teachers' psychological climate	.56	.07	7.53	< .001	
Coordinators' transformational leadership x Teachers' psychological climate	-.06	.07	-.91	.363	
Years of experience in ECE	.00	.01	.62	.536	

Note. $N = 284$. Non-standardized coefficients are reported.

3.7. The role of psychological climate in the association between coordinators' transformational leadership and children's autonomy support through teachers' self-efficacy

Psychological climate was not found to moderate the indirect association between coordinators' transformational leadership and children's autonomy (see Table 3.7). The overall moderated mediation model was not supported with the index of moderated mediation = -.01 (95% CI = -.027; .012), as zero within the CI indicates a non-significant moderating effect (Hayes, 2015).

Table 3.7.

Moderated Mediation Analysis: Coordinators' transformational leadership, children's autonomy support, teachers' self-efficacy, and psychological climate.

		R^2		
Model 1: moderation variable on model	Outcome: Teachers' self-efficacy	.152		
	Coeff.	SE	<i>t</i>	<i>p</i>
Coordinators' transformational leadership	.31	.25	1.23	.22
Teachers' psychological climate	.69	.25	2.79	.006
Coordinators' transformational leadership x Teachers' psychological climate	-.09	.07	-1.29	.20
Years of experience in ECE	.02	.01	3.48	.001
Model 2: mediation variable on model	Outcome: Children's autonomy support	.087		
	Coeff.	SE	<i>t</i>	<i>p</i>
Coordinators' transformational leadership	.01	.03	.28	.780
Teachers' self-efficacy	.09	.02	3.60	< .001
Years of experience in ECE	.01	.00	2.74	.007
<i>Indirect Effect Moderated Mediation</i>				
	Index	SE	LL 95% CI	UL 95% CI
Indirect Effect of coordinators' transformational leadership on children's autonomy support by teachers' self-efficacy moderated by teachers' psychological climate	-.01	.01	-.027	.012

Note. $N = 284$. Non-standardized coefficients are reported. 5000 *bootstrap* samples; LL – lower limit; UL – upper limit; CI – Confidence interval.

3.8. The role of psychological climate in the association between coordinators' transformational leadership and children's autonomy support through teachers' work engagement

The moderated mediation model was not supported with the index of moderated mediation = $-.004$ (95% CI = $-.019; .011$) (see Table 3.8). As zero was within the CI, this indicates a non-significant moderating effect (Hayes, 2015).

Table 3.8.

Moderated Mediation Analysis: Coordinators' transformational leadership, children's autonomy support, teachers' work engagement, and psychological climate.

					<i>R</i> ²
Model 1: moderation variable on model	Outcome: Teachers' work engagement				.239
	Coeff.	SE	<i>t</i>	<i>p</i>	
Coordinators' transformational leadership	-.20	.24	-.86	.392	
Teachers' psychological climate	.77	.23	3.35	.001	
Coordinators' transformational leadership x Teachers' psychological climate	-.06	.07	-.91	.363	
Years of experience in ECE	.00	.01	.62	.536	
Model 2: mediation variable on model	Outcome: Children's autonomy support				.077
	Coeff.	SE	<i>t</i>	<i>P</i>	
Coordinators' transformational leadership	.00	.03	.09	.932	
Teachers' work engagement	.08	.02	3.16	.002	
Years of experience in ECE	.01	.00	3.37	.001	
<i>Indirect Effect Moderated Mediation</i>					
	Index	SE	LL 95% CI	UL 95% CI	
Indirect Effect of coordinators' transformational leadership on children's autonomy support by teachers' work engagement moderated by teachers' psychological climate	-.004	.007	-.019	.011	

Note. $N = 284$. Non-standardized coefficients are reported. 5000 *bootstrap* samples; LL – lower limit; UL – upper limit; CI – Confidence interval.

Chapter IV – Discussion

The aim of this study was to analyze the mediating effect of ECE teachers' self-efficacy and work engagement in the relationship between ECE teachers' perceptions about ECE coordinators' transformational leadership and children's autonomy support by teachers, as well as the moderating effect of the ECE teachers' psychological climate in the relation between ECE teachers' perception of ECE coordinators' transformational leadership and ECE teachers' self-efficacy and work engagement.

4.1. The mediating role of self-efficacy, a personal resource

Regarding the first hypothesis, we anticipated that ECE teachers' self-efficacy mediated the relationship between ECE coordinators' transformational leadership and children's autonomy support by ECE teachers and our findings support this hypothesis. These results are consistent with previous findings, where transformational leadership was associated with self-efficacy in elementary school (e.g., Demir, 2008). Further, the relationship between teachers' self-efficacy and children's autonomy support is consistent with findings suggesting that ECE teachers with higher levels of self-efficacy tend to adopt more proactive and student-centred approaches, contributing to high-quality practice (Zee & Koomen, 2016). Importantly, our results suggest that coordinators that use transformational leadership practices, such as inspirational motivation, towards ECE teachers, are more likely to promote self-efficacy in ECE teachers, supporting them in believing in themselves and their own capabilities and, in turn, increasing the likelihood of teachers engaging in practices supporting children's autonomy. These associations were found after controlling teachers' years of experience in ECE, considering that previous research showed that teachers with more years of professional experience show higher levels of self-efficacy and higher stability in self-efficacy (Reyhing & Perren, 2021; George et al., 2018). Overall, these findings add to the evidence that self-efficacy is a powerful personal resource (Vera et al., 2012; Wattoo et al., 2019) and an important predictor of successful professional practices.

4.2. The mediating role of work engagement, a psychological state

Referring to the second hypothesis, we expected that ECE teachers' work engagement mediated the relationship between ECE coordinators' transformational leadership and children's autonomy support by ECE teachers and the results supported the hypothesized mediation. These results are consistent with other studies where transformational

leadership was positively associated with work engagement in educational (Bae et al., 2013; Meng et al., 2022) and non-educational settings (Bakker et al., 2008; Schaufeli & Bakker, 2004a). However, to the best of our knowledge, this is the first study that examined and supported this association in ECE settings. In addition, even though Lipscomb et al. (2021) found that work engagement was associated with the use of better practices, this was also the first study to examine and report an association between ECE teachers' work engagement and children's autonomy support. Therefore, our results suggest that transformational leadership practices, such as intellectual stimulation, towards ECE teachers, are associated with increased dedication, focus, and energy in teachers' work, which contributes to the adoption of better practices (Lipscomb et al., 2021), namely children's autonomy support.

4.3. The role of psychological climate, an organizational resource

We also hypothesized that ECE teachers' psychological climate moderated the relationship between ECE coordinators' transformational leadership and ECE teachers' self-efficacy (H3) and between ECE coordinators' transformational leadership and ECE teachers' work engagement (H4). Although we found correlations between the three variables in both hypotheses, our regression results did not support our expectations of moderation effects.

One possible explanation of these results is that ECE coordinators' transformational leadership is strongly correlated with ECE teachers' psychological climate, which may suggest some overlap or similarity between these variables, potentially limiting the role of psychological climate in adding to teachers' self-efficacy or work engagement when transformational leadership is high, as it touches upon aspects already addressed by transformational leadership. Previous research has suggested that the type of leadership is a predictor of psychological climate (Al-Shammari, 1992; Anggraini et al., 2018; Teddlie & Reynolds, 2000; Wang et al., 2019). Therefore, leadership style and organizational climate could be recognized as partially overlapping concepts (Al-Shammari, 1992). However, organizational climate appears to be independent of the leadership style, but because it includes leadership as one of its dimensions, some overlap between these constructs is likely to occur (Al-Shammari, 1992). Hence, when the level of coordinators' transformational leadership is high, we expect that the psychological climate will also be positive and, consequently, having a high level of teachers' psychological climate may not add to ECE teachers' self-efficacy or work engagement.

Similarly, when the level of transformational leadership is lower, we can expect that the psychological climate will also be more negative, and will not, therefore, have a compensatory effect. Otherwise, other factors may play a role in these relationships and further investigations are necessary.

Nevertheless, we found a positive relationship between teachers' psychological climate and self-efficacy, which is consistent with previous research (Aldridge & Fraser, 2016; Reaves & Cozzens, 2018). This suggests that when teachers perceive a positive and supportive work environment, their belief in their own personal skills and abilities is more likely to be higher. This finding is important because teachers' self-efficacy plays an important role in teachers' motivation, effort, and persistence in their work (Fives & Buehl, 2012; Tschannen-Moran et al., 1998). When teachers have higher levels of self-efficacy, they are more likely to take initiative, engage in proactive problem solving, and show a sense of dedication to their career (Tschannen-Moran et al., 1998). This can result in better teaching techniques, greater job satisfaction (Bargsted et al., 2019; Skaalvik & Skaalvik, 2014; Yakin & Erdil, 2012), and ultimately better outcomes for children.

Additionally, we found a positive association between ECE teachers' psychological climate and ECE teachers' work engagement. These findings corroborate previous literature, based on the JD-R model, suggesting that organizational climate may support and increase work engagement (Ancarani et al., 2018) and other previous research that found that higher ratings on organizational climate are associated with increases in work engagement (Albrecht et al., 2017; Ancarani et al., 2018; Fu et al., 2022) and in work commitment (Chan et al., 2008; Wagner, 2006). This finding suggests that when teachers perceive a more positive and supportive work environment, they are more likely to be engaged in their work (i.e., when a worker experiences contentment, input and productivity; Timms & Brought, 2012). These results are important because previous research also showed that engaged teachers are more likely to report higher levels of job satisfaction (Skaalvik & Skaalvik, 2014; Yakin & Erdil, 2012) and lower levels of turnover (Bal et al., 2013). Consequently, a group of engaged teachers also contributes to a more positive and supportive work environment. Therefore, a positive psychological climate characterized by supportive and collaborative relationships, open and clear communication, and possibilities for professional growth can enhance teachers' sense of community and job satisfaction. Considering the JD-R model, a supportive psychological environment is more likely to help ECE teachers maintain a healthy work-life balance and experience fewer levels of stress and burnout (Bakker et al., 2005).

We also anticipated that psychological climate moderated the indirect effect of transformational leadership on children's autonomy support through self-efficacy (H5a). Additionally, we expected that psychological climate moderated the indirect effect of transformational leadership on children's autonomy support through work engagement (H5b). The obtained results did not support these hypotheses, which suggests that the impact of transformational leadership on children's autonomy support, through the mediating mechanism of teachers' self-efficacy and work engagement, is not influenced by teachers' psychological climate.

We note that previous studies found that ECE teachers with more professional experience reported decreased organizational climate, as they have more historical background to compare the diverse ECE settings where they have worked and may be more demanding about working conditions (Dennis & O'Connor, 2013; Veziroglu-Celik & Yildiz, 2018). However, we did not find a relationship between teachers' psychological climate and years of experience in this study.

Overall, the results of this study supported hypotheses 1 and 2, contributing to the understanding of the complex dynamics in the ECE setting and highlighting the potential role of leadership practices in supporting teachers' self-efficacy and work engagement, and, in turn, in fostering children's autonomy support practices by ECE teachers. On the contrary, it was not possible to confirm hypotheses 3, 4, 5a and 5b, as the results did not support the expected moderations and moderated mediations. Nevertheless, it is possible that other factors not considered in this study, such as individual differences or contextual variables (e.g., teacher collaboration and professional development opportunities), may play a role in these relationships.

4.4. Study limitations and future research

After a thorough analysis of the research process, several limitations have been identified. Therefore, these limitations will be presented, and proposals for future research will be made to overcome these limitations.

The first limitation is the use of only one method to collect data, specifically, relying exclusively on self-report measures to gather information. Relatedly, all data are based solely on the perspective of ECE teachers, which makes data susceptible to desirability biases (Iglesias-García et al., 2019) and to artefactual covariance as a result of common rater effects (Podsakoff et al., 2003). Additionally, there is one variable that is not exclusively about ECE teachers' behavior, namely the level of transformational

leadership exhibited by ECE coordinators. Although it is important to consider the perspective of ECE teachers about their ECE coordinators and their own performance in children's autonomy support, only considering their perception is a limitation of the study. The perceptions of ECE teachers can be influenced by their own opinion of ECE coordinators' personal characteristics and by their own relationship with ECE coordinators. To overcome these limitations in the future, it is recommended to use multiple data collection methods (e.g., surveys, interviews, and observation not only with ECE teachers but also with ECE coordinators, children, ECE teacher assistants, etc.) (Iglesias-García et al., 2019).

Secondly, this study only considered ECE teachers working with children between three and six years of age. Therefore, generalization is not possible to ECE teachers working with younger children (aged 0-3) nor to other education levels. To get beyond these restrictions in the future, other research should be made including more countries and educational levels.

Thirdly, the current study's cross-sectional design prevents inference of causal relationships between variables. To overcome this limitation, it is required that future research adopts experimental or longitudinal methodologies to investigate long-term and causal effects.

Fourthly, although the selected scales have been previously validated and used in similar research contexts, it is possible that the items used to measure ECE coordinators' transformational leadership (e.g., "Suggests new ways to complete tasks.") and ECE teachers' psychological climate (e.g., "Staff are encouraged to be creative and innovative in their job.") capture similar dimensions, which may have hindered the confirmation of the potential moderation effect of teachers' psychological climate. To overcome this limitation, further research could consider conducting an exploratory factor analysis to explore the underlying structure and possible overlap between coordinators' transformational leadership and teachers' psychological climate.

Finally, and considering the limited proportion of variance explained in children's autonomy support by teachers, future research could examine additional variables that may provide a deeper insight into the complex dynamics involved in increasing positive ECE teachers' experiences and outcomes. Specifically, we suggest that future investigations examine other organizational predictors of children's autonomy support (e.g., teachers' job autonomy) or other moderators of the relationship between ECE coordinators' transformational leadership and teachers' self-efficacy, such as teacher

collaboration and professional development opportunities, which have already been suggested as variables that are associated with self-efficacy (Cieyer et al., 2010; Chong & Kong, 2012; Pas et al., 2012; Von Suchodoletz et al., 2018). Also, it could be useful to examine other variables as moderators of the relationship between ECE coordinators' transformational leadership and work engagement, such as teacher collaboration and job autonomy, which have already been suggested as variables associated with work engagement (Bakker et al., 2008; Hargreaves, 2019; Skaalvik & Skaalvik, 2014; Zhang et al., 2021), as well as exploring the relationship between self-efficacy and work engagement (Lipscomb et al., 2021). In addition, while future research may continue to consider the impact of organizational variables on children's autonomy support exhibited by ECE teachers, other ECE teacher practices or even specific child outcomes could be also examined.

4.5. Practical implications and conclusions

In this section, the practical implications derived from the findings of this study will be discussed, including their implications to the educational quality of ECE settings. Our findings enhance the importance of promoting and fostering transformational leadership within ECE settings. In other European countries (e.g., Austria, Wales, France, and Switzerland), to be the coordinator of an ECE setting, it is necessary to have specific leadership training (European Commission/EACEA/Eurydice, 2019). However, to the best of our knowledge, in Portugal there are no minimum requisites to be an ECE coordinator, besides having a licentiate degree (European Commission/EACEA/Eurydice, 2019). Therefore, it may be important to investigate what education and/or training do ECE coordinators have in Portugal and how they are selected to become coordinators. In addition, considering that previous research confirmed that transformational leadership skills can be learned (Barling et al., 1996; Parry & Sinha, 2005), findings suggest the importance of designing and implementing trainings and workshops (Nielsen & Munir, 2009) focused on the four dimensions of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Avolio et al., 1991; Bass, 1990; Bass & Avolio, 1994). Therefore, the perspective that ECE is also an organization could be taken into consideration in the future, starting in the initial training of ECE teachers' and potential future ECE coordinators. Specifically, transformational leadership could be incorporated into the foundational training for individuals aspiring to become ECE teachers. Existing

literature suggests that the transformational leadership practices that are more likely to increase teachers' self-efficacy are the ones focused on inspirational motivation, as it happens when the coordinator expresses high expectations, which are more likely to support teachers believing themselves (Skaalvik & Skaalvik, 2007; Sutton & Woodman, 1989). On the other hand, to increase work engagement, the literature suggests transformational leadership practices focused on individualized consideration, such as providing social support and feedback (Bakker et al., 2008; Schaufeli & Bakker, 2004a).

Moreover, one of the key contributions of this study is the confirmation of the mediating role of ECE teachers' self-efficacy. The findings provide empirical evidence that self-efficacy serves as a crucial mechanism through which transformational leadership influences children's autonomy support. This insight highlights the importance of empowering teachers and building their confidence in their ability to create a supportive and autonomous learning environment for children, which can happen through professional development programs and interventions that focus on enhancing teachers' beliefs in their instructional capabilities.

Another significant contribution of this study is the confirmation of the mediating role of work engagement in the relationship between ECE coordinators' transformational leadership and children's autonomy support. This finding enhances the importance of promoting teachers' active involvement, enthusiasm, and dedication to their work. Strategies such as supportive supervision and recognition can be adopted to foster work engagement among ECE teachers, which may ultimately lead to improved educational outcomes for children. Additionally, coordinators can also benefit from these findings by focusing on developing transformational leadership practices that inspire and motivate teachers, fostering a positive and supportive work environment, and addressing the unique challenges faced by ECE teachers in Portugal.

Additionally, this study was conducted in Portugal, a European country, adding value to the existing literature, which is primarily based on studies conducted in the USA. By conducting the research in a different cultural context, this study contributes to a more diverse and comprehensive understanding of the topic.

Finally, this study and its findings also contribute to show that ECE settings are organizations. This study focused on the perceptions of ECE teachers about themselves, their coordinators, and the autonomy support that they provide to children, and the results revealed the role of organizational resources within ECE settings, such as transformational leadership and psychological climate. Further, these organizational

resources influence the personal resources of ECE teachers, such as self-efficacy and work engagement, which in turn influence children's autonomy support, as reported by teachers.

Overall, our results highlighted the existent dynamics between transformational leadership, psychological climate, self-efficacy, and work engagement, which are typically examined in other organizational contexts (i.e., companies and industry) and found significant relationships among these organizational variables in ECE, notably some of them being examined and confirmed for the first time. Therefore, ECE settings can and must be understood and studied as organizations, if we want to improve ECE teachers' working conditions and, consequently, the quality of education provided in ECE settings. In conclusion, by promoting effective leadership, empowering teachers, and creating supportive work environments, we can foster positive educational experiences for children and potentially contribute for their lifelong learning and development.

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