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Linking supportive school leadership and teacher resilience: The mediating role of job resources

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Employee resilience is commonly understood as a process that protects against distressing conditions and helps employees to cope with stress factors, to survive and adapt to changing work environments. Over the past few years Lithuanian teachers have had to deal with unexpected *force majeure* situations, such as the COVID-19 pandemic, a large influx of Ukrainian refugee pupils, ongoing school related issues, such as the introduction of new curricula, full inclusion of children with special needs, reorganizations, and increasing workloads. Our study based on the four-dimensional Teacher Resilience Framework and Job Demands-Resources theory aimed to examine relationships between supportive leadership, job resources and teacher resilience, and to reveal the mediating role of job resources in the relationships between supportive leadership and teacher resilience. A cross-sectional research sample included 455 Lithuanian teachers working in elementary and secondary schools. Data were collected using a self-administered online survey. The study identified that supportive leadership and job resources, i.e., feedback, autonomy, opportunities for development, and social support – were positively related with teacher resilience and its four dimensions. The mediation analysis established an indirect impact of supportive leadership on resilience types *via* job resources, however, the role of work resources as mediators differed depending on resilience type. The results complement studies analyzing the role of work environments in resilience, such as personal capability studies. They suggest that supportive school leadership and job characteristics as contextual resources available at the workplace should be considered when planning and implementing interventions aimed at strengthening teacher resilience.

KEYWORDS

teacher, resilience, supportive leadership, job resources, mediation

Introduction

Challenging is an apt adjective to describe the conditions of the world in which we live. Insecurity touches all aspects of our lives so individuals, communities and nations need to further develop resources that will help them adapt or avoid the impact of negative circumstances. Society is only as resilient as its individual members, which explains why research on factors that support and enhance psychological resilience has increased in recent years (Baskin and Bartlett, 2021; Ang et al., 2022; Lacomba-Trejo et al., 2022). In a general sense, resilience characterizes the ability to constructively react to challenges and adverse conditions. Circumstances and situations may be the same for everyone, as in the case of the COVID-19 pandemic, but they also vary depending on social environments or the particulars of a certain profession.

The demands of the teaching profession have changed significantly during the last few decades. Almost 30 years ago Hargreaves (1994) warned of increased professionalization (an expansion of the teacher's role and expected skills) and intensification (an expectation that teachers must respond to greater pressures under conditions that are not improving). Recent research on work intensification reveals that this predicament has not been resolved (Piovezan and Ri, 2019; Hauseman, 2020; Swapp, 2020). Lithuanian teachers have had to deal with situations that affect their motivation, well-being, emotions, and relationships. Most obvious is the COVID-19 pandemic that affects all aspects of teaching and learning. An added geopolitical stressor in Lithuania has been the Russian occupation of Ukraine in February of 2022. The war has not only affected the population's sense of security but has also impacted the educational system. At the time of this writing more than 16,000 Ukrainian refugee children (age 7–17) have entered schools in Lithuania - a country of less than 3 million. In addition to these major stressors, there are ongoing school related issues, such as the introduction of new curricula in 2023, reorganizations, workloads, full inclusion of pupils with special needs by 2024, and others (Bendrųjų programų atnaujinimo gairės [Guidelines for updating general programs], 2019; Lietuvos Respublikos švietimo įstatymo pakeitimas, 2020). Consequently, workplaces create specific profession-related conditions that function as factors which enhance or threaten employee resilience. Therefore, research on resilience within an organizational context has become especially relevant.

Contextual resilience research is especially applicable in the teaching profession since educators have a dual task—they must be versatile and effective in solving complex work situations, and also help their students cultivate resilience and adaptation to dynamic learning content and environments. In addition to profession-related factors, teachers work in the *milieu* of particular schools that have established their own unique culture, climate, school leadership styles, job requirements, and provision of work resources. Consequently, recent research on teacher resilience has focused more on the external conditions that may affect teachers' work rather than on personal traits or abilities.

In our study we analyze supportive school leadership and job resources as factors of the work environment which may have an impact on teacher resilience. We applied the research-based Teacher Resilience Framework created by Mansfield et al. (2012), the supportive leadership concept (House, 1971, 1996), and the Job Demands–Resources Theory (Bakker and Demerouti, 2007, 2017) for the analysis of job resources. The teacher resilience phenomenon encompasses professional, emotional, motivational, and social resilience, and as yet limited research in this area reveals that work environment factors may be of varying significance for the different types of resistance (i.e., Chen and Chi-Kin Lee, 2022). The analysis of teacher resilience as a complex phenomenon shaped by the four dimensions allows for the identification of a broader range of relevant factors than a generalized resilience indicator.

Furthermore, we analyze supportive school leadership and job resources as two-level contextual teacher resilience factors. School leadership implies the highest level of school leadership and is a more generalized, broader phenomenon than the job characteristics or conditions that make up the teachers' proximate work environment. School principals and other administrators organize, structure, and strengthen the various job level resources necessary for teachers' work and may therefore influence teachers' resilience not only directly, but also through resources, which can be examined as mediating factors in the relationship between supportive leadership and teacher resilience. More precisely, job resources as mediators may explain the indirect relationship between supportive school leadership and teacher resilience.

Considering the above-mentioned assumptions, our research aim is twofold: firstly, to examine the relationships between supportive leadership, job resources and teacher resilience, and, secondly, to reveal the mediating role of job resources for the relationships between supportive leadership and teacher resilience.

Theoretical framework and literature review

Teacher resilience

Block and Kremen (1996) claimed that those who display high resilience behave with more competence and confidence in an uncertain world. In the field of life-span development, resilience has been conceptualized as a "reserve capacity" referring to the modifiability and plasticity of adults to effectively respond to the challenges of life (Staudinger et al., 1993). Luthans (2002) defined resilience as "the positive psychological capacity to rebound, to bounce back from adversity, uncertainty, conflict, failure or even positive change, progress and increased responsibility" (p. 702). Employee resilience has been understood as a process that protects against distressing conditions and helps employees to cope with stress factors, to survive and adapt to changing work environments

(Näswall et al., 2019; Daniilidou et al., 2020). Cooke et al. (2019) define employee resilience as "one of the positive emotions that will enhance employees' ability to cope in adverse conditions, such as work intensification, organizational change, and work stress" (p. 695). In the school context teacher resilience has been described as "the capacity to maintain equilibrium and a sense of commitment and agency in the everyday worlds in which teachers work" (Gu and Day, 2013, p. 26).

The traditional conceptualization of individual resilience as a personal ability to "bounce back" does not adequately take into account how workplace context affects resilience. Ungar et al. (2013) argue that human resilience development studies should not focus on resilience as a separate trait or state but on a process that accentuates reciprocity between a person and the environment. The notion of a set of inner capacities that make someone resistant to adversity gave way to an ecological, process-oriented understanding of resilience. "We find support for a 'decentered' understanding of resilience in which changing the odds stacked against the individual contributes far more to changes in outcomes than the capacity of individuals themselves to change" (p. 357). Highlighting interactions with the environment extends the concept of resilience beyond individual capacity and encourages researchers to examine resilience not only from an individual perspective, but also from a contextual or external environmental perspective (Wang et al., 2022). Research suggests that personal resilience can be fostered in workplace environments that proactively support employees (Kuntz et al., 2017). According to Mansfield et al. (2012), teacher resilience is linked with specific school contexts, which makes analysis of factors enabling teacher resilience in the school environment particularly relevant. This shifts the responsibility for developing resilience away from the individual teachers to the schools and systems in which they work (Beltman, 2021; Falecki and Mann, 2021).

Recently, however, there has been less of a dichotomy between personal traits and environmental contexts in resilience research. We see a return to research focusing on personality, cognitive, affective, and health-based traits or characteristics, suggesting a possible mixed model of resilience that includes latent factors of trait resilience, such as recovery, sustainability, adaptability, and social cohesion (Maltby and Hall, 2022). Consequently, as noted by Masten (2021), integrated resilience research that includes multiple levels and factors of analysis, including personal characteristics and aspects of the teachers' work environment are particularly relevant. Mansfield et al. (2016) on whose work we base our conception of teacher resilience for this study reflect this mixed approach. They consider the specifics of the teaching profession and include three aspects in the concept of resilience. Firstly, it is a personal capacity to accumulate internal and external resources and to use them in complex or challenging situations. Secondly, resilience functions as a dynamic process of interaction between the individual and the environment. The third encompasses these two aspects and manifests itself through resilience outcomes that are meaningful for the teacher, the teaching process, and the school as an organization. This includes coping with stressful events (Seville et al., 2008), academic performance (Day and Gu, 2014; Banerjee et al., 2019; Karabıyık, 2020), classroom management (Brown et al., 2021), job satisfaction (Polat and Iskender, 2018), teacher professionalism (Sheridan et al., 2022), wellbeing (Hascher et al., 2021a), organizational commitment (Polat and Iskender, 2018) and work engagement (Xie, 2021).

More than a decade ago Mansfield et al. (2012) conducted research with 200 respondents to identify dimensions that describe teacher resilience. This resulted in an often-cited framework that includes 23 aspects grouped into four overarching dimensions. *The professional dimension* involves aspects concerning the practice of teaching, such as commitment to students, organized time management, effective teaching skills, reflection, flexibility, and adaptability. *The emotional dimension* describes a teacher who does not take things personally, bounces back, has a sense of humor, copes with stress and job demands, manages emotions, cares for their own wellbeing, and enjoys teaching. *The motivational dimension* describes a teacher who is positive and optimistic, persistent, focusing on learning and improvement, likes challenges, maintains motivation and enthusiasm, has confidence and self-belief, sets realistic expectations and goals. *The social dimension* relates to interpersonal and communication skills and involves solving problems, building support and relationships, seeking help, and taking advice.

The Teacher Resilience Framework provides the possibility for examining teacher resilience as a multidimensional phenomenon, with each component or dimension incorporating specific personal capacities, competencies, and behaviors. It provides a systematic basis for researchers to explore the implications of resilience for individual and organizational outcomes (Daniilidou et al., 2020; Gratacós et al., 2021), to develop and implement teacher resilience development programs (Mansfield et al., 2016; Mansfield, 2020), and to study the personal and contextual factors of teacher resilience and its different types. A review of the research suggests that the outcomes and value of resilience for teachers and teaching processes are examined more often, but there is a lack of research examining the role of school and job-related factors in teacher resilience (Gu and Day, 2013). According to Näswall et al. (2019) to be resilient, employees need a supportive work environment, which protects and enhances resilient behaviors. Such a work environment includes not only the job resources needed to carry out direct functions, but also the management of the school (Beltman et al., 2011; Ainsworth and Oldfield, 2019). Therefore, in this study we focus our attention on potential contextual antecedents of teacher resilience (and its dimensions) that shape the teachers' work environment: (1) supportive school level leadership and (2) four types of job resources: feedback, autonomy, opportunities for development and support from colleagues.

Supportive school leadership and teacher resilience

School-level leadership as a contextual factor defines the school environment and work processes that take place there: the

formation of climate, culture, implementation of human resource management practices, organization of teaching and other teacher work processes, and providing teachers with necessary work resources (Kelley et al., 2005; Velasco et al., 2012; Ainsworth and Oldfield, 2019; Atasoy, 2020; Kalkan et al., 2020; Shah, 2020). Studies confirm that school leadership is positively related to teachers' job satisfaction, organizational commitment, psychological empowerment, self-efficacy, and predicts lower employee turnover rates or retention decisions (Boyd et al., 2011; Vrhovnik et al., 2018; Sakız et al., 2020; Thomas et al., 2020; Berkovich and Bogler, 2021). "Teachers, students, parents, support personnel are the fabric of the school. Leaders are weavers of the fabric of resiliency initiatives" (Henry and Milstein, 2006, p. 8, cited in Gu and Day, 2013, p. 39). According to Gu and Day (2013), educational literature has consistently suggested that in-school management support and leadership trust are key positive influences on teacher motivation and resilience. Between 58 and 93% of highly committed teachers who participated in their research perceived leadership recognition and support in the organizational setting as significant.

Day and Gu (2014) emphasize the key role of the school leader in enabling "collective efficacy and shared beliefs of professional control, influence and responsibility" (p. 11) and provide evidence that the professional values and visions of school principals are factors in creating organizational conditions for a collective sense of teacher efficacy and resilience. Giles (2006) cited in Gu and Day (2013, p. 38) describes the ability of school principals to buffer the effects of external changes, such as increasingly standardized reform by creating supportive working conditions that foster success for school personnel. This cannot be realized through an autocratic management style as school leaders need to give teachers autonomy and greater control over their professional lives. As Boyd et al. (2011) pointed out, administrative support of school leaders facilitates the work of teachers, helps to improve teaching, and can take different forms, including providing teachers with necessary work resources.

The start of research on supportive leadership has been associated with the Path-Goal Theory, whose authors describe a supportive leader as a "friendly and approachable leader who shows concern for the status, well-being and needs of subordinates" (House and Mitchell, 1975, p. 3). Banai and Reisel (2007) characterize supportive leadership as "helping facilitate goal accomplishment by guiding subordinates to be effective and learn in their roles" (p. 466). They present the results of an empirical study conducted in six countries which fully or partially confirmed the importance of supportive leadership and job characteristics for lowering levels of workers' personal and social alienation. Dayanti et al. (2022) review 16 publications on supportive leadership published from 2015 to 2020 and conclude that the term is most often used to describe leadership that helps subordinates to satisfy personal and work-related needs. Such leaders look after the well-being of employees, create a positive, comfortable, supportive work climate and relationships, and provide material, emotional, instrumental, and other support needed to do the work. Mullen et al. (2021) in their systematic review of 91 scientific publications allotted factors influencing teacher resilience into individual and contextual categories and concluded that administrative support and meaningful participation in decision-making were the most important contextual factors.

Research reveals that supportive school leaders and administrations enable teacher resilience and well-being by helping them adapt and get the job done effectively. As Skaalvik and Skaalvik (2018) state, supportive social relations with colleagues and the school administration may serve as a resource for teacher resilience, strengthen it, and thus indirectly help teachers manage situations requiring immediate solutions. Research also has shown that teachers who were disconnected from students and colleagues during the COVID-19 pandemic were more likely to leave the profession and more in need of supportive leadership (Fox and Walter, 2022). Supportive leaders created intentional opportunities for collaboration among colleagues, allowed flexibility in teaching approaches or schedules, and provided professional development to adapt to online learning making teachers feel supported and cared for.

It should also be noted that much of the research on teacher resilience focuses on novice teachers and highlights the role of school leaders and work environments for their resilience. For example, Peters and Pearce (2012) conducted qualitative research aimed at revealing conditions that promote early career teachers' resilience and retention and revealed that school leaders play a central role in providing formal and informal support. However, careers develop beyond the socialization period, so even later, teachers may find themselves in situations requiring quick reactions that are difficult to plan and prepare for in advance. The importance of resilience is therefore not diminished in later stages of a career. Yet despite arguments highlighting the role of supportive leadership as a school-level contextual factor in teacher resilience, this connection has been developed much more in business organizations than in educational institutions (Cooke et al., 2019). As Gu and Day (2013) stated, the role of leadership support for maintaining and strengthening teacher resilience has not been researched sufficiently.

Job resources and teacher resilience

Job attributes required for teaching and teacher performance form a group of external factors relevant for resilience, referred to as job resources and are explored in detail in the Job Demands-Resources (JD-R) theory. This is a well-known and widely used theoretical approach that divides job characteristics into two categories: demands and resources, which differ in their impact on employees and their jobs (Bakker and Demerouti, 2007, 2017). Demands require employees' physical, mental, or emotional efforts, whereas job resources help attain work-related goals, reduce stress caused by job requirements, and promote personal growth (Demerouti et al., 2001; Hakanen et al., 2006).

These include autonomy, opportunities for development, job control, performance feedback, participation in decision making, career opportunities, positive and supportive relations with colleagues, and school climate (Hakanen et al., 2006; Bakker et al., 2010; Simbula et al., 2011; Collie et al., 2012). The theory proposes that a lack of job resources needed to fulfill job demands potentially leads to burnout, while sufficient resources lead to greater motivation and engagement (Bakker et al., 2014).

The resources or reserve for resilience lie in job characteristics, which are termed job resources. This reserve can increase, but it can also be depleted, so it must be constantly replenished and renewed. It can be strengthened by the information teachers receive about how the work is going and what results are being achieved (performance feedback), by prospects for making autonomous decisions about how to do the work (autonomy), provision of conditions for enhancing professional competences (opportunities for development), and the positive relationships and support provided by colleagues (social support and cooperation).

More specifically, feedback from supervisors, school leaders or the work itself enables teachers to better meet the demands of the job, provides information about the processes and results of assigned activities, shows which skills and areas of professional knowledge need to be strengthened to perform effectively (Bakker and Demerouti, 2007; Sommer and Kulkarni, 2012; Mullen et al., 2021). Autonomy at work specifies how much freedom at work is allowed, provides possibilities to plan and control execution of assignments, to participate in decision-making regarding work, and to choose appropriate work methods (Bakker et al., 2005; Morgeson et al., 2005; Mullen et al., 2021). Opportunities for development describe available organizational and workplace measures that support teachers' professional learning, improvement of competencies, and continuous professional development (Bobek, 2002; Bakker et al., 2005; Day and Gu, 2007). Social support encompasses the immediate social environment at work, opportunities for assistance from colleagues when needed, and chances to turn to them for advice when job-related difficulties arise, as well as experiencing colleague support and recognition (Bakker and Demerouti, 2007; Kangas-Dick and O'Shaughnessy, 2020).

In some studies, job resources are treated as a composite measure in relation to work engagement, burnout, and other individual and organizational outcomes (Schaufeli and Bakker, 2004; Salanova et al., 2008; Xanthopoulou et al., 2009). However, in the context of our study it is important to point out that these four types of resources–performance feedback, autonomous control of job aspects or decision making, opportunities to update professional knowledge, collaborative and supportive relations with colleagues–differ in their content and target distinct work-related aspects. By analyzing them separately, we could explore the implications of particular resources in more detail for both overall resilience, and for each resilience type. So far, similar studies are not extensive. A recent example is a study of 407 teachers by Chen and Chi-Kin Lee (2022) that examined relations between job demands and job resources as independent and teacher well-being and job performance as dependent variables. Four resilience domains were examined based on the Mansfield et al. (2012) Teacher Resilience Framework and were intended to mediate these relations. The study found that job resources vary in their impact on specific teacher resilience domains: decision latitude positively affects professional, while school support–emotional, motivational, and social resilience types. In our study each of the four job resources is also analyzed as a separate variable, as they may have different implications for the total resilience score and for each of the four teacher resilience types.

The mediating role of job resources

Within the theoretical assumptions of the Teacher Resilience Framework (Mansfield et al., 2012) and Job Demands–Resources theory (Bakker et al., 2014), we propose that supportive leadership as a school level factor and job resources as job level factors are related to and enable teacher resilience. More precisely, we expected that supportive school leadership and teachers' job resources would be positively related with a teacher's personal characteristic – resilience at work. These contextual factors can be examined at two levels. School principals as leaders together with the administrative staff are in charge of creating optimal work conditions for personnel, organizing and developing all types of necessary resources. Supportive school leadership is a component of school climate (Hart et al., 2000) and describes a broader contextual level of work environment compared to job resources which function as actual conditions for the performance of the teachers' direct activities. Based on the two-level structure of work environment factors we can expect that the school level attribute – supportive school leadership may foster teacher resilience at work not only directly, but through job resources that function as an intermediate (mediating) mechanism that explains the relationship between supportive leadership and teacher resilience. Leaders are responsible for and are involved in organizing internal school systems and processes which ensure the provision of feedback at work, promotion of teacher autonomy, strengthening opportunities for growth and professional development, and encouraging reciprocal support among colleagues. This in turn may strengthen teachers' resilience.

To summarize, in this study we examine relationships among supportive school leadership, job resources (feedback, autonomy, opportunities for development, and support from colleagues) and teacher resilience, defined by five indicators: overall resilience, as well as professional, motivational, emotional, and social resilience types. Four research objectives are presented below:

1. To analyze relationships between supportive leadership and teacher resilience.
2. To analyze relationships between supportive leadership and teacher job resources.
3. To examine relationships between job resources and teacher resilience.

4. To determine the mediating role of job resources (feedback, autonomy, opportunities for development, social support) for the relationships between supportive leadership and teacher resilience and its dimensions.

The expected relationships between study variables are presented in the Research model (Figure 1).

Material and methods

Sample and data collection

Data were collected using non probability convenience sampling. The main criterion for the participants' inclusion in the study was working in teacher positions in elementary or secondary schools. The sample consisted of 455 teachers working in schools located in cities, towns, and villages of Lithuania. The sample included 416 women (91.4%), 23 men (5.1%), and 16 (3.5%) respondents did not specify their gender. Respondents' age ranged from 20 to 67 years with an average age of 50.4 years (SD = 9.6). Tenure in their current institution ranged from 1 to 43 years, the average tenure was 18.3 years (SD = 12.1). In terms of teaching experience, 3.5% of the participants have been teaching for 0–2 years, 7.5% for 3–9 years, 12.1% for 10–19 years and 76.9% of the participants have been teaching for 20 years or more. Most of the study participants (79.8%) were working in schools located in cities and 94.9% had a university degree.

The self-administered online survey was conducted in March and April of 2022 and circulated *via* pollmill.com but was not publicly available online. Information about the study, the invitation to participate in the study and the questionnaire access internet link were distributed by e-mails or direct contacts with teachers through professional contacts, social networks, professional development seminars and conferences, professional networks for educators. We also asked school principals to disseminate information about the study at their schools. The questionnaire included a cover letter explaining the aim and other relevant information about the study. Respondents were assured that the study observes ethical requirements, that participation in the study was voluntary and they could withdraw from the survey at any time. The anonymity and confidentiality of the answers was guaranteed since no information was requested that would allow for the identification of the participants. We stated that all answers would be analyzed in a summarized form and used for research purposes only. Teachers who work in more than one school were asked to respond about their main workplace. Since the survey was conducted *via* the Internet, all questionnaires were fully completed and there were no missing data in the database. Therefore, responses of all teachers were included in the final data set.

Measurements

The survey included demographic questions about the respondents' age, gender, education, tenure in their current

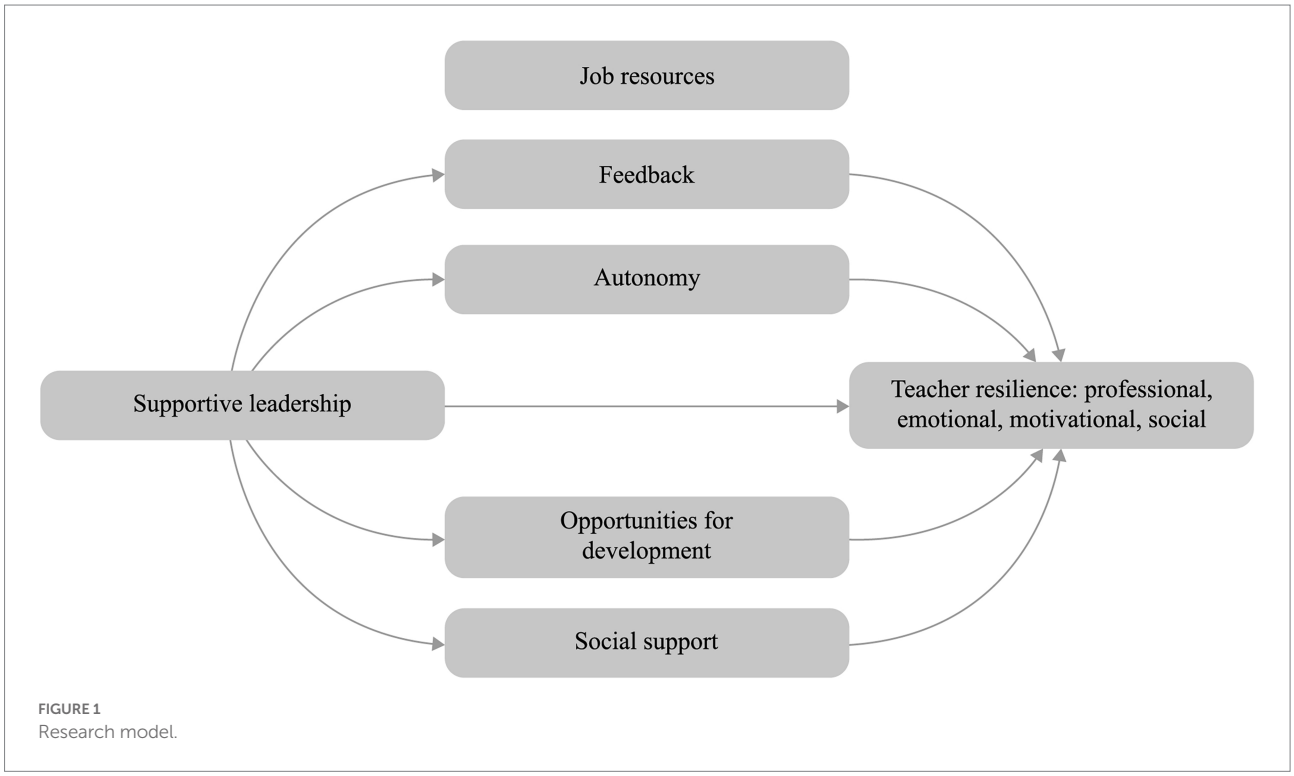

FIGURE 1
Research model.

institution, school location, and scales measuring research variables.

Teacher *resilience* was measured using the multidimensional Teacher Resilience Questionnaire–Version 1.5 developed by Mansfield and Wosnitza (2015). This instrument was applied in other countries as well, for instance in Greece (Daniilidou et al., 2020), and in Germany, Ireland, Malta, and Portugal (Peixoto et al., 2018). An instrument based on the Teacher Resilience Framework has not yet been applied in Lithuanian research. The scale is comprised of 26 items, divided into four subscales: professional (six items), emotional (four items), motivational (12 items) and social resilience (four items). Since this scale has not been previously used with Lithuanian teachers construct validity of the questionnaire was tested using Principal component factoring with Varimax rotation. Four factors based on eigenvalues greater than 1.0 were extracted. These factors correspond with the previously described four-dimensional framework of teacher resilience (Mansfield et al., 2012; Peixoto et al., 2018), however three items loaded not onto the intended factors, but on other factors. We removed these three items and performed the factor analysis once again. A four-factor structure was obtained, whose Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.937, Bartlett's Test of Sphericity: Approx. chi-square = 5,593,685, $df = 0.325$, $p = 0.000$. Thus, the final list included 23 items distributed in four subscales. The Professional Resilience subscale consisted of four items (e.g., *I reflect on my teaching and learning to make future plans)*, factor loadings 0,405–0,786, Cronbach's $\alpha = 0.786$. The Emotional Resilience subscale included four items (e.g., *When I feel upset or angry at school I can manage to stay calm)*, factor loadings 0,554–0,771, Cronbach's $\alpha = 0.723$. The Motivational Resilience subscale included 11 items (e.g., *At school I focus on building my strengths more than focusing on my limitations)*, factor loadings 0,413–0,676, Cronbach's $\alpha = 0.890$. And, finally, the Social Resilience subscale consisted of four items (e.g., *I am good at building relationships in new school environments)*, factor loadings 0,459–0,748, Cronbach's $\alpha = 0.724$. A high reliability indicator was also set for the total resilience scale (Cronbach's $\alpha = 0.923$). Answers to the items were assessed using a 5-point Likert-type scale, in which 1-point means "strongly disagree" and 5– "strongly agree."

Supportive school leadership was assessed with the Supportive Leadership Scale from the School Organizational Health Questionnaire (Hart et al., 2000). The scale consisted of five items, (e.g., *I am able to approach the administration in this school to discuss concerns or grievances*). Respondents answered the scale items using a 5-point Likert-type scale, ranging from 1– "strongly disagree" to 5– "strongly agree." The scale's Cronbach's $\alpha = 0.890$.

Job resources (feedback, autonomy, opportunities for development and social support) were measured using scales from the Job Demands-Resources Questionnaire, developed by Bakker (2014). Feedback was assessed using three items, (e.g., *My job offers me opportunities to find out how well I do my work*), and the scale's reliability coefficient Cronbach's $\alpha = 0.864$. Three items were used to measure autonomy (e.g., *Do you have control over how your work is carried out?*), Cronbach's $\alpha = 0.762$. Opportunities for development were assessed using three items (e.g., *My work offers me the possibility to learn new things*), Cronbach's $\alpha = 0.876$. And finally, three items were used to measure social support (e.g., *Can you count on your colleagues to support you, if difficulties arise in your work?*), Cronbach's $\alpha = 0.851$. Answers regarding feedback, autonomy and social support scale items were assessed using a 5-point Likert-type scale, ranging from 1– "never" to 5– "very often." Participants rated their agreement to opportunities for development scale items using a 5-point Likert-type scale, ranging from 1– "strongly disagree" to 5– "strongly agree." All the research questionnaire items were translated from English to Lithuanian and translations were verified by English and Lithuanian language linguists.

Statistical analyses

We analyzed means, standard deviations, Pearson correlations, Student's *t*-tests, Anova-tests, Cronbach's α, simple and multiple regression models using the IBM Statistical Package for the Social Sciences (SPSS 27). Multiple-mediator models we performed using PROCESS Macro version 4.0 developed by Hayes (2013). Principal component analysis with Varimax rotation was applied to examine the structure of the Teacher Resilience Questionnaire and item distribution to the subscales. Cronbach's α coefficients were calculated to check the reliability of all scales included in the survey. Linear regression models were used to examine prognostic relationships between supportive leadership and teacher resilience scores and between supportive leadership and four types of job resources. Multiple regression models were explored to analyze the impact of four job resources on every teacher resilience type. We also examined five multiple-mediator models with supportive leadership as an independent variable, four job resources (feedback, autonomy, opportunities for development and social support) as mediators and the teacher resilience total score, professional, motivational, emotional, and social dimensions as separate dependent variables. 95% confidence intervals were estimated by using the bootstrapping technique with 5,000 bootstrap samples. The indirect effect through the mediating variable was confirmed if the effect's 95% confidence interval did not include 0.

Results

Presentation of the research results corresponds to the objectives of the study: descriptive statistics of the study variables are presented first, followed by the results on the relationships between variables, and finally five multiple-mediator models are presented. In each model, the dependent variable is one of the types of resilience, supportive leadership is included as an independent variable, and the mediators are the four job resources.

TABLE 1 Means, standard deviations, scales' reliability indicators, and correlations between study variables (n=455).

Study variables		1	2	3	4	5	6	7	8	9	10
1	Teacher resilience (TR) total	(0.923)									
2	TR professional	0.814**	(0.786)								
3	TR emotional	0.728**	0.523**	(0.723)							
4	TR motivational	0.939**	0.692**	0.542**	(0.890)						
5	TR social	0.787**	0.593**	0.437**	0.675**	(0.724)					
6	Supportive leadership	0.401**	0.338**	0.317**	0.367**	0.297**	(0.890)				
7	Feedback	0.377**	0.323**	0.337**	0.334**	0.258**	0.589**	(0.864)			
8	Autonomy	0.437**	0.368**	0.391**	0.406**	0.252**	0.527**	0.463**	(0.762)		
9	Opportunities for development	0.519**	0.438**	0.317**	0.516**	0.392**	0.531**	0.422**	0.418**	(0.876)	
10	Social support	0.373**	0.319**	0.282**	0.304**	0.389**	0.451**	0.465**	0.463**	0.401**	(0.851)
M		3,873	4.047	3.421	3.959	3.915	3.604	3.854	3.997	4.062	4.007
SD		0.453	0.509	0.651	0.504	0.531	0.761	0.876	0.736	0.603	0.764

**$p < 0.001$. TR, Teacher resilience; M, mean; SD, standard deviation; Cronbach's α coefficients are presented in the diagonal.

Descriptive statistics

Means, standard deviations, scales' reliability estimates and intercorrelations among the study variables are reported in Table 1.

Correlations between variables reveal that relationships among all types of resilience, supportive leadership and four job resources are significant and positive. Correlations between total resilience and school variables range from $r = 0.373$ ($p < 0.01$) for support from colleagues to $r = 0.519$ ($p < 0.001$) regarding opportunities for development. Supportive leadership correlates most strongly with motivational resilience, feedback – with emotional resilience, autonomy and opportunities for development with motivational resilience, and social support from colleagues with social resilience. These results indicate that as perceived school level leadership and job resources increase, all resilience types increase as well. The correlations do not identify the direction of the relationship, so it is possible that the opposite effect is also true: as teachers' resilience increases, they tend to value support from school leaders and the work resources we analyzed more highly.

The relationship of the background factors, including age, gender, education, tenure in their current institution, and school location with study variables were determined using correlational analysis for age and tenure, Student's t-test for the comparison of means between gender groups, and the Anova test for groups differing in education level and school location. It was determined that age and tenure were significantly related with just one job characteristic – feedback ($r = 0.157$, $p < 0.01$ for age and $r = 0.190$, $p < 0.01$ for tenure). Comparing variables among groups according to gender, education level and school location did not indicate statistically significant differences, therefore, demographic factors were not included in the further analysis.

Relationships between supportive leadership and teacher resilience

Addressing the first research objective, we calculated five linear regression models to test predicting relationships between supportive leadership as an independent variable and teacher resilience types as dependent variables. The results revealed that all models were statistically significant. Supportive leadership positively predicted total teacher resilience and the model explained 16.1% of its variance ($\beta = 0.401$, $t = 9.314$, $p = 0.000$, $R^2 = 0.161$, $F(1,454) = 86.75$, $p < 0.001$). Similar results were obtained for all resilience types: supportive leadership was a significant predictor for professional resilience, the model explained 11.4% of variance ($\beta = 0.338$, $t = 7.651$, $p < 0.001$, $R^2 = 0.114$, $F(1,454) = 58.54$, $p < 0.001$). For emotional resilience the model explained 10.0% of variance ($\beta = 0.317$, $t = 7.118$, $p < 0.001$, $R^2 = 0.101$, $F(1,454) = 50.67$, $p < 0.001$), for motivational - 13,5% ($\beta = 0.367$, $t = 8.409$, $p < 0.001$, $R^2 = 0.135$, $F(1,454) = 70.72$, $p < 0.001$) and for social resilience – 8.8% ($\beta = 0.297$, $t = 6.613$, $p < 0.001$, $R^2 = 0.088$, $F(1,454) = 43.73$, $p < 0.001$). The effect of supportive leadership on dimensions of resilience was expressed differently: the regression model with supportive leadership as an independent factor explained 13.5% of motivational and just 8.8% of social resilience variance. When considering total teacher resilience this model explained 16.1% of total score variance.

Relationships between supportive leadership and job resources

In the next step and corresponding to the second objective, we tested five linear regression models to examine the impact of supportive leadership on each job resource. Results revealed that leadership was positively related with and accounted for teacher perception of all job resources: feedback ($\beta = 0.589$, $t = 15.512$, $p < 0.001$, $R^2 = 0.347$, $F(1,454) = 240.63$, $p < 0.001$),

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TABLE 2 Multiple regression models for job resources (feedback, autonomy, opportunities for development, and social support) predicting teacher resilience–total and its dimensions.

Independent variables	Dependent variables														
	TR total			TR professional			TR emotional			TR motivational			TR social		
	β	*t*	*p*	β	*t*	*p*	β	*t*	*p*	β	*t*	*p*	β	*t*	*p*
Feedback	0.088	1.899	0.058	0.080	1.609	0.108	0.144	2.802	0.005	0.064	1.342	0.180	0.014	0.281	0.779
Autonomy	0.202	4.341	0.000	0.166	3.338	0.001	0.247	4.817	0.000	0.201	4.225	0.000	0.005	0.101	0.920
Opportunities for development	0.359	8.055	0.000	0.301	6.308	0.000	0.134	2.720	0.007	0.397	8.705	0.000	0.276	5.670	0.000
Social support	0.095	2.049	0.041	0.084	1.694	0.091	0.047	0.922	0.357	0.022	0.469	0.639	0.270	5.340	0.000
	$R^2 = 0.343$			$R^2 = 0.246$			$R^2 = 0.201$			$R^2 = 0.314$			$R^2 = 0.218$		
	Adj $R^2 = 0.338$			*Adj* $R^2 =$. 239			*Adj* $R^2 =$. 194			*Adj* $R^2 = 0.308$			*Adj* $R^2 = 0.211$		
	$F(4.454) = 58.83$			$F(4.454) = 36.74$			$F(4.454) = 28.28$			$F(4.454) = 51{,}61$			$F(4.454) = 31{,}39$		
	$p = 0.000$			$p = 0.000$			$p = 0.000$			$p = 0.000$			$p = 0.000$		

TR, teacher resilience; VIF coefficients for all independent variables in every model did not exceed statistical level of 2.0.

autonomy ($\beta = 0.527$, $t = 13.185$, $p < 0.001$, $R^2 = 0.277$, $F(1,454) = 173.84$, $p < 0.001$), opportunities for development ($\beta = 0.531$, $t = 13.337$, $p < 0.001$, $R^2 = 0.282$, $F(1,454) = 177.87$, $p < 0.001$), and social support ($\beta = 0.451$, $t = 10.741$, $p < 0.001$, $R^2 = 0.203$, $F(1,454) = 115.37$, $p < 0.001$). Supportive school leadership explained 34.7% of the feedback, 27.7% of autonomy at work, 28.2% of the evaluation of opportunities for development and, finally, 20.3% of colleagues' social support variance. The results reveal that school level leader support is important in the teachers' positive evaluation of job resources and can reinforce them. Support from the administration indicates that school leaders provide necessary support for teaching personnel, create favorable conditions for communication between teachers and the administration, discuss with teachers their concerns or grievances and can be relied upon when the going gets tough. This in turn strengthens the job resources offered to teachers–possibilities to receive feedback at work, solve work issues and make work-related decisions independently (autonomously), creates more opportunities for professional development, and fosters a climate of cooperation among colleagues.

Relationships between job resources and teacher resilience

Regarding the third research objective we analyzed the potential of job resources to predict teacher resilience and its types by testing five multiple regression models. In each model one type of resilience was regressed on four types of resources: feedback, autonomy, opportunities for development and social support. Results are reported in Table 2.

The results revealed that 33.8% of the teacher resilience total score was explained by analyzed job resources, apart from feedback, as the impact of feedback on the teacher resilience total score was non-significant ($p = 0.058$). Opportunities for development, autonomy, and social support made a significant contribution to change in the teacher resilience total indicator, with opportunity for development having the highest impact, compared with autonomy and social support. The next regression model with professional resilience as the dependent variable revealed that job resources explained 23.9% of the professional resilience variance. The impact of feedback and social support was non-significant, and just two work characteristics - opportunities for development and autonomy – explained the significant amount of the dependent variable variance. Similar results were obtained in relation to motivational resilience: job resources explained 30.8% of its variance, the contribution of opportunities for development was higher compared to autonomy and the impact of feedback and social support was non-significant. 19.4% of the emotional resilience variance was accounted for by job resources–feedback, opportunities for development and autonomy. It should be noted that emotional was the only resilience type predicted by feedback. Social support from colleagues was predicted by opportunities for development and social support, the impact of feedback and autonomy were non-significant, and in general, job resources accounted for 21.1% of the social resilience variance. Analysis from the perspective of job resources reveals that feedback significantly and directly predicts and enhances only emotional resilience. Social support from colleagues also predicts only one type of resilience – social. Autonomy at work is important for three types of resilience (professional, emotional, and motivational), and only opportunities for development (conditions to develop strengths, to grow, to learn new things) predicts and reinforces all four types of resilience.

TABLE 3 Mediation analysis results for the dependent teacher resilience–total.

Variables/effects	*b*	*SE*	*p*	*95% CI*		R^2	*F*	*p*
				LLCI	ULCI			
SL → F	0.678	0.044	<0.001	0.592	0.764	0.347	(1,453) = 240.630	0.026
SL → A	0.509	0.039	<0.001	0.433	0.585	0.277	(1,453) = 173.841	<0.001
SL → OD	0.420	0.032	<0.001	0.358	0.482	0.282	(1,453) = 115.372	<0.001
SL → SS	0.452	0.042	<0.001	0.370	0.535	0.203	(1,453) = 177.882	<0.001
SL → TRT (direct effect)	0.011	0.032	0.741	−0.052	0.073	0.344	(5,449) = 46.996	<0.001
SL → F → TRT	0.043	0.026	0.099	−0.008	0.094			
SL → A → TRT	0.122	0.030	<0.001	0.064	0.180			
SL → OD → TRT	0.267	0.035	<0.001	0.198	0.336			
SL → SS → TRT	0.055	0.028	0.046	0.001	0.110			
Total effect of SL on TRT	0.239	0.026	<0.001	0.188	0.289	0.161	(1,453) = 86.748	<0.001
Indirect*effect for F	0.029	0.018		−0.005	0.064			
Indirect*effect for A	0.062	0.016		0.033	0.095			
Indirect*effect for OD	0.112	0.017		0.080	0.148			
Indirect*effect for SS	0.025	0.012		0.002	0.050			

*Based on 5,000 bootstrap samples; TRT, teacher resilience – total; SL, supportive leadership; F, feedback; A, autonomy; OD, opportunities for development; SS, social support; b, unstandardized regression coefficients; SE, standard errors; CI, confidence interval for b.

The mediating role of job resources in the relationships between supportive leadership and teacher resilience

Regarding the fourth research objective, we tested direct and indirect relationships between supportive leadership, job resources, and resilience types. The mediating effects of job resources for the relationships between supportive leadership and teacher resilience and its dimensions were observed by applying Model 4 in Hayes Process Macro, Version 4.0 (2013) to five multiple-mediator models. Supportive leadership was included as an independent variable, job resources (feedback, autonomy, opportunity for development, and social support) as four parallel mediators and each resilience type was entered as the dependent variable in a separate mediation model. The results of the five mediation models are presented below. In all five models the information about prognostic relationships between supportive leadership as an independent variable and job resources as mediators is the same, so it is presented only in Table 3 and not repeated in Tables 4, 5.

Mediation analysis results for the dependent variable total teacher resilience are presented in Table 3.

The total effect of supportive leadership on the teacher resilience total score was significant, however, the amount of direct effect was very small and non-significant. Only an indirect effect of supportive leadership on teacher resilience *via* three of four job resources (autonomy, opportunities for development, and social support) as mediators remained. The role of feedback as a mediator in this model was non-significant. This means that leadership impacts teacher total resilience only indirectly *via* job resources apart from feedback. In other words, supportive leadership contributes to teacher resilience through strengthening the job resources directly related to everyday teachers' work–autonomy, opportunities for development, and social support.

Similar results were obtained when testing mediation models that included every resilience indicator as a separate dependent variable (see Tables 4, 5).

The total effects of leadership on all resilience types (professional, emotional, motivational, and social) were significant, however, the direct effects of leadership on all resilience dimensions were non-significant. Effects of supportive leadership on resilience types disappeared when mediators–job resources were taken into account.

The results also show that not all job resources were significant as intermediate variables (mediators) in predicting every resilience dimension. Supportive leadership impacted professional and motivational resilience *via* opportunities for development and job autonomy. Autonomy, opportunities for development, and feedback served as significant mediators for emotional resilience while opportunities for development and support from colleagues were revealed as mediators for social resilience. To conclude, all five mediation models supported full mediation indicating that supportive leadership only had an indirect effect on teacher resilience and its separate dimensions when job resources as mediating variables for these relationships were taken into account.

Discussion

Our research examined relationships among teacher resilience and external, contextual school characteristics–supportive school leadership and teacher job resources. We also sought to identify the mediating role of job resources for the relationships between

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TABLE 4 Mediation analysis results for dependent teacher resilience–professional and emotional.

TRP						*TRE*					
Variables/Effects	***b***	***SE***	***p***	***95% CI***		**Variables/Effects**	***b***	***SE***	***p***	***95% CI***	
				LLCI	**ULCI**					**LLCI**	**ULCI**
SL → TRP (direct effect)	0.007	0.038	0.851	−0.068	0.083	SL → TRE (direct effect)	0.017	0.051	0.741	−0.083	0.116
SL → F → TRP	0.045	0.031	0.153	−0.017	0.106	SL → F → TRE	0.102	0.041	0.013	0.022	0.183
SL → A → TRP	0.113	0.036	0.002	0.043	0.183	SL → A → TRE	0.215	0.047	<0.001	0.123	0.307
SL → OD → TRP	0.252	0.042	<0.001	0.169	0.335	SL → OD → TRE	0.139	0.056	0.013	0.029	0.248
SL → SS → TRP	0.055	0.033	0.097	−0.010	0.120	SL → SS → TRE	0.039	0.044	0.378	−0.047	0.124
$R^2 = 0.246$, $F(5,449) = 29.339$, $p < 0.001$						$R^2 = 0.201$, $F(5,449) = 22.599$, $p < 0.001$					
Total effect	0.226	0.029	<0.001	0.168	0.284	Total effect	0.271	0.038	<0.001	0.196	0.346
$R^2 = 0.114$, $F(1,453) = 58.538$, $p < 0.001$						$R^2 = 0.101$, $F(1,453) = 50.672$, $p < 0.001$					
Indirect*effect for F	0.030	0.022		−0.011	0.075	Indirect*effect for F	0.069	0.030		0.012	0.128
Indirect*effect for A	0.058	0.020		0.019	0.095	Indirect*effect for A	0.109	0.027		0.059	0.164
Indirect*effect for OD	0.106	0.020		0.070	0.146	Indirect*effect for OD	0.058	0.026		0.008	0.108
Indirect*effect for SS	0.025	0.016		−0.005	0.056	Indirect*effect for SS	0.017	0.020		−0.021	0.059

*Based on 5,000 bootstrap samples; TRP, teacher resilience – professional; TRE, teacher resilience – emotional; SL, supportive leadership; F, feedback; A, autonomy; OD, opportunities for development; SS, social support; b, unstandardized regression coefficients; SE, standard errors; CI, confidence interval for b.

TABLE 5 Mediation analysis results for dependent teacher resilience–motivational and social.

TRM						*TRS*					
Variables/Effects	***b***	***SE***	***p***	***95% CI***		**Variables/Effects**	***b***	***SE***	***p***	***95% CI***	
				LLCI	**ULCI**					**LLCI**	**ULCI**
SL → TRM (direct effect)	0.046	0.036	0.900	−0.067	0.076	SL → TRS (direct effect)	0.024	0.041	0.553	−0.056	0.104
SL → F → TRM	0.561	0.029	0.229	−0.022	0.093	SL → F → TRS	0.002	0.033	0.961	−0.063	0.067
SL → A → TRM	0.137	0.034	< 0.001	0.070	0.203	SL → A → TRS	−0.002	0.038	0.961	−0.076	0.072
SL → OD → TRM	0.330	0.040	< 0.001	0.252	0.409	SL → OD → TRS	0.235	0.045	< 0.001	0.147	0.323
SL → SS → TRM	0.014	0.031	0.650	−0.047	0.076	SL → SS → TRS	0.185	0.035	< 0.001	0.116	0.254
$R^2 = 0.315$, $F(5,449) = 41.199$, $p < 0.001$						$R^2 = 0.219$, $F(5,449) = 25.145$, $p < 0.001$					
Total effect	0.243	0.029	< 0.001	0.186	0.300	Total effect	0.207	0.031	< 0.001	0.145	0.268
$R^2 = 0.135$, $F(1,453) = 70.716$, $p < 0.001$						$R^2 = 0.088$, $F(1,453) = 43.732$, $p < 0.001$					
Indirect*effect for F	0.024	0.021		−0.017	0.064	Indirect*effect for F	0.001	0.027		−0.049	0.056
Indirect*effect for A	0.069	0.018		0.035	0.107	Indirect*effect for A	−0.001	0.019		−0.038	0.036
Indirect*effect for OD	0.139	0.020		0.103	0.182	Indirect*effect for OD	0.099	0.022		0.058	0.146
Indirect*effect for SS	0.006	0.014		−0.020	0.034	Indirect*effect for SS	0.084	0.019		0.049	0.124

*Based on 5,000 bootstrap samples; TRM, teacher resilience – motivational; TRS, teacher resilience – social; SL, supportive leadership; F, feedback; A, autonomy; OD, opportunities for development; SS, social support; b, unstandardized regression coefficients; SE, standard errors; CI, confidence interval for b.

supportive leadership and teacher resilience. We analyzed the antecedents of teachers' resilience at two levels: the school-level dimension is linked to supportive school leadership, while the more direct work-related dimension is associated with job resources–feedback, autonomy, opportunities for development, and support from colleagues.

In recent years, research on employee resilience and accompanying assumptions has gained increasing attention (Kuntz et al., 2017; Wang et al., 2022), and is particularly relevant in the field of education (Mansfield et al., 2012; Beltman, 2021). Research on resilience as an intrinsic personal characteristic that regulates adaptive and proactive behavior in challenging or stressful situations is complemented and expanded by the view that an individual's resilience is in constant interaction with the work environment (Mansfield et al., 2016). Despite the relevance of this research in view of recent social, economic, labor, political and other changes, it is important to note the dearth of research on teacher resilience in Lithuania., The challenges of distance learning due to the pandemic and the additional responsibility of teaching Ukrainian children who have fled war have created conditions of cumulative risk and tension in which the importance of

resilience, a factor that regulates behavior and response to environmental influences, is particularly heightened.

Through the first research objective we sought to analyze relationships between supportive leadership and teacher resilience. It became a focus of the study due to findings on the reciprocity of work environments and teacher well-being, including resilience (Beltman et al., 2011; Ungar et al., 2013; Kuntz et al., 2017; Mullen et al., 2021). Findings indicated that supportive leadership directly accounted for 16% of teachers' resilience total score variance. Affable school management retains its positive impact on teachers "bouncing back," however, this effect is rather small.

The subsequent step of our analysis was directed at the interplay between supportive leadership and job resources. Results revealed that teachers who gave greater importance to support from school leaders also assigned higher value to job resources, supportive leadership implied that the administration provides support for teaching personnel, creates favorable conditions for communication between teachers and the administration, discussing teacher concerns and grievances, and the administration can be relied upon when things get tough. This was a significant factor in teachers' positive ranking of analyzed job resources and accounted for 20 to 35% of their variance. Other studies also reported that provision of opportunities for development facilitated teachers' adaptation and overcoming challenges (Hartshorne et al., 2020; König et al., 2020; Cheung, 2021).

The third objective was to examine relationships between teacher job resources and their resilience. The results revealed that feedback, autonomy, opportunities for development and support from colleagues strengthened all types of teacher resilience, but their effects were different: 33.8% of total resilience variance was explained by opportunities for development, autonomy, and social support. Opportunities for development had a higher impact on all dimensions of resilience compared to feedback, autonomy, and social support. Previous studies (Lundström, 2015; Fullan and Hargreaves, 2016) also emphasized that fostering personal growth and promoting teacher autonomy are central components of effective schools.

The significant impact of feedback on only the emotional dimension deserved separate attention. Considering that teaching itself is a highly emotionally charged profession (Schutz and Zembylas, 2009; cited in Mansfield et al., 2012, p. 394), our respondents' ability to capitalize on feedback for maintaining adequate emotional regulation, relying on one's own affective resources represented a highly valuable feature. This is in line with the current body of research which insists that most teachers value feedback from their colleagues (Hargreaves and Fullan, 2020). It helps them solve problems, reduces loneliness (Hascher et al., 2021b), and helps endure challenges (Drew and Sosnowski, 2019). These results bring to mind the model of relational resilience proposed by Jordan (2006). According to the author, resilience occurs in a relational context and is created through growth-fostering connections with others, when a person is appreciated, and feels empowering empathy. Jordan stated that this is was especially salient for women, and thus for our sample, which was almost exclusively made up of women (and reflective of the scarcity of men in the Lithuanian teacher population).

Based on the fourth study objective, we sought to verify the mediating role of job resources (feedback, autonomy, opportunities for development, social support) for the relationships between supportive leadership and teacher resilience and its dimensions. Our research found that leadership, although not strongly, directly reinforces all resilience types and explains from 8.8 percent of variance for social resilience up to 13.5 percent for the motivational dimension. However, when work resources are included as mediating variables, the supportive leadership direct effect on all resilience types disappears. In other words, job resources (autonomy, opportunities for development, social support, and feedback) mediated the links between supportive leadership and total teacher resilience as well as its four dimensions. We also specified which job resources were significant for every analyzed resilience type. Opportunities for development universally mediated the link between supportive leadership and all types of resilience (total, professional, motivational, emotional, and social). It was also established that professional and motivational resilience functioned together with autonomy; emotional resilience–together with autonomy and feedback; and social resilience—together with social support.

In summary, the direct impact of supportive leadership on teacher resilience is positive but not strong, yet school leadership can strengthen teacher resilience through the amplification of job resources. Each of the resources examined was significant for one or another type of resilience. In short, to strengthen teacher resilience supportive school leaders need to ensure opportunities for development, foster teachers' autonomy, feedback and sense of relatedness with colleagues. Particularly notable are opportunities for development, which directly impact and enhance the relationship between supportive school leadership and all four types of resilience. In a broad sense, our findings supported the contextual aspect of the Mansfield et al. (2012) framework of teacher resilience. This is in line with the findings of a systematic review by Mullen et al. (2021), which observed that meaningful participation in decisions and administrative support are important contextual factors of teacher resilience.

Limitations

The generalization of our findings has several constraints. First, we did not consider the career stage of the teachers. In this study, only 6.7% of the sample could be classified as novice teachers with up to 2 years of teaching experience. That limited the possibility of making comparisons between career groups. A large proportion of the sample was made up of female teachers, which limited the possibility of comparing male and female groups. There is a need for larger studies in which there is a more even distribution of teachers by gender, seniority or other demographic aspects in the sample. Secondly, the interpretation of obtained

findings is limited as results relied solely on teachers' self-observation. In a cost-effective manner it provided a cross-sectional picture of teacher resilience. Moreover, self-observation data may have been influenced by the social desirability effect. Insights about teachers' resilience as a gradually unfolding process would be more substantial from a longitudinal study.

Finally, the data were provided by volunteers rather than systematically recruited respondents. Therefore, the results may be biased or skewed due to the higher motivation and involvement of the volunteers in the survey. This can be dealt with by seeking a representative sample of primary and secondary school teachers of various characteristics and from various locales in adequate proportions.

Implications

Theoretical implications

This study complements previous research in several aspects. First, the obtained results add to the research (albeit sparse) on factors of teacher resilience in the work environment. Second, two-level factors and the mechanism through which supportive leadership is related to teacher resilience is revealed, suggesting that job resources act as intermediate factors (mediators) in this relationship. Third, in this study, teacher resilience is analyzed using the Mansfield et al. (2012) theoretical framework on four dimensions of resilience, and the obtained results reveal the differentiated weight of school management and job resources for each particular resilience dimension.

Moreover, our obtained support for interpersonal sources of resilience encourages studying the phenomenon of collective resilience begun a decade ago, highlighting the power of continuous joint efforts to withstand adversities in school contexts (Ebersöhn, 2012). The recent pandemic crisis and other *force majeure* situations refocused researchers' attention on the process of collective resilience (Elcheroth and Drury, 2020; Reicher and Bauld, 2021).

Practical implications

The significance of school-level characteristics impacting teacher resilience may be useful in preparing pre-service teachers for work in uncertain and change-laden conditions. Increasingly, non-academic attributes (including resilience) have been deemed critical for teacher selection, but the reliability of commonly used methods to measure these attributes has been called into question, requiring further research (Sheridan et al., 2022). What has been called a "pedagogy of identity learning" in teacher education has been espoused as "a basis for preparing student teachers to become resilient in their work as teachers, for being recognized as a particular professional by others, and want to be inside and outside the classroom" (Beijaard and Meijer, 2017, p. 188). Building resilience as an inherent part of teacher professionalism helps cope with issues of work/life balance, excessive workload or stress (Richards et al., 2016).

Another potentially impacted group are school leaders who can provide targeted support for in-service teachers. Our study confirmed that supportive leadership and distinct work characteristics create prerequisites that are favorable for teacher resilience. This may result in higher retention of teachers in schools. Changes in the teacher labor market received labels such as "mass exodus," "crisis," "great resignation," especially after the first year of COVID-19 (Goldhaber and Theobald, 2022). From a practical point of view, the school environment should be constantly monitored on how teachers evaluate their work conditions. Their opinions should be taken into account in order to identify what particular support is needed. Resilience building on a school-level ought to be "a must" practice in educational institutions.

A growing body of research on teacher resilience raised the awareness of education policy makers. As a direct response to pandemic-induced turmoil, the Council of the European Union proposed to pay more attention to the well-being of general teachers, vocational teachers, school leaders, and other educational workers in order to reduce stress and prevent burnout, to provide greater training in resilience during initial teacher education and continuing professional development programs (Council Recommendation on Blended Learning Approaches for High-Quality and Inclusive Primary and Secondary Education, 2021). We argue that this approach should be proactive and integral, not reactive to major or minor upheavals. At the same time, our findings infer the question – at what expense should teacher resilience be fostered and cultivated? Are the resources unlimited and achievable? Do supportive school leaders themselves need to be supported? School communities should not oversimplify the development of teacher resilience. It is pragmatically important to search for new or constantly renewed means for teachers to "bounce back" from adversities. Therefore, when strengthening teacher resilience, two things are relevant–continuous monitoring and improvement of the school environment together with evidence-based training and development.

Implications for future research

In this research we examined only a part of the factors described in the Job Demands–Resources theory. Its original content is broader and encompasses a greater number of work-related as well as personal resources. Therefore, future research could include more factors of teachers' work environments, such as mental, emotional, physical job demands, school culture and classroom atmosphere as well as personal resources such as teacher's self-efficacy, proactivity and/or teaching dispositions. All of them are potential roots of teacher resilience.

Keeping in mind that teaching is nested in a particular culture and embodies the mindset of a given society, it would be worthwhile to confirm initial data on the validity of the Teacher Resilience Questionnaire–Version 1.5 (Mansfield and Wosnitza, 2015) in Lithuania. It appeared to be sufficiently reliable in our research but its structural equivalence should be verified by confirmatory factor analysis.

It is worthwhile to further delve into teacher resilience in specific contexts to look for patterns of resilience in the everyday work of teachers with various levels of expertise, teaching different school subjects, working in diverse classes with mainstream or specialized classes, etc. It is also relevant to study the significance of other leadership styles (e.g., transformational, empowering or distributive leadership) for the formation of resilience–enhancing conditions in schools. This would allow us to further authenticate how personal resilience takes on certain shapes across various styles of school management in different administrative settings. For that purpose, a quantitative variable–focused approach may be counterbalanced by a person–focused research strategy or mixed-methods design. Use of many data sources is advantageous in highlighting complementary perspectives (e.g., views of school principals, colleagues, or pupils). Such studies would bring incremental evidence to the social-ecological concept of psychological resilience, conceptualized by Gu (2021) and Ungar et al. (2013).

Additionally, the personalization of teachers' resilience in the form of distinct profiles or trajectories could saturate resilience cultivation programs with evidence-based content. Initial research on such programs (Dempsey et al., 2021; Ledger, 2021 to mention just a few examples) have shown that different aspects of resilience are relevant for different groups of teachers. In order to actively engage in targeted resilience education programs, teachers must bring a willingness to share positive experiences with others, to anticipate difficulties and ways of coping with them. Furthermore, a person-centered approach should be extended to school leaders as well. It has been noted that it is uncommon for school leaders to receive any kind of professional development to better support beginning teachers (Peters and Pearce, 2012). In light of these findings, we would echo the conclusion of Wood (2005) who called for increased support for principals in recognition of the important role they can play in enhancing teachers' resilience.

Conclusion

This study focuses on the relationships between teacher resilience, supportive school leadership, and job resources. In every era and in every society, the teaching profession has been an important driver of individual and societal progress. In recent years, and particularly in light of the COVID-19 pandemic's impact on education, scholars studying teachers' work have increasingly focused on schools as organizations, and factors in the school environment. Researchers highlight aspects of the environment and work processes that increase teachers' job satisfaction, improve their work engagement and organizational commitment, encourage initiative, innovative and proactive behavior. Resilience is one of the core latent personal capacities that helps teachers adapt under conditions of uncertainty, to "bounce back" in situations of stress or tension, and to deal constructively with difficult work issues. Resilience arises from the interaction between an individual and the environment. The school environment can present challenges during which resilience reserves are drained. However, resilience can be boosted, as the environment can create and provide the resources teachers need for resilience.

The results of the study reveal that supportive leadership and job resources (feedback, autonomy, opportunity for development, and support from colleagues) strengthen overall teacher resilience as well as its professional, motivational, emotional, and social types. Moreover, job resources function as mediators for the relationship between supportive leadership and teacher resilience. The results highlight the importance of the proximate work environment in developing and maintaining teacher resilience. They also confirm the role and responsibility of school leaders in forming and strengthening teachers' work resources. Results of the study can be useful for further research on the antecedents of teacher resilience in school contexts and for designing and implementing organizational conditions for its strengthening.

Data availability statement

The dataset generated for this study is available upon request from the corresponding author. Requests to access the datasets should be directed to dalia.bagdziuniene@fsf.vu.lt.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors listed have made a substantial, equal, direct, and intellectual contribution to the work, and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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