

STUDY

CARING LEADERSHIP AND TEACHER WELL-BEING: PERCEPTUAL DIFFERENCES BETWEEN LESS AND MORE EXPERIENCED TEACHERS

Marek Matouš Bula^a, Milan Pol^b,
Bohumíra Lazarová^b, Tereza Hrušková^c

^a Department of Pedagogy, Faculty of Education, Masaryk University, Brno, Czech Republic

^b Department of Educational Sciences, Faculty of Arts, Masaryk University, Brno, Czech Republic

^c Department of Psychology, Faculty of Arts, Masaryk University, Brno, Czech Republic

ABSTRACT

Teacher well-being (TWB) is a key contributor to teachers' professional commitment and job satisfaction and to student achievement. Research has highlighted the influence of leadership, workplace relationships, and financial reward on TWB; the interrelationships between these factors remain underexplored. This study employs network analysis to explore the structural relationships between TWB, caring leadership, co-worker support, and compensation, with a particular focus on differences in perceptions as a function of teaching experience. A latent network analysis was conducted on survey data from 520 Czech primary and secondary school teachers, with the aim of examining the structural relationships between latent constructs. Additionally, an item-level network analysis explored the associations between TWB and caring leadership at a more detailed level. The results suggest that caring leadership is a central construct that facilitates the connection between TWB and workplace relationships. Notably, while most relationships were positive, weaker links were found between payment and other variables, suggesting their peripheral role in shaping TWB. Furthermore, a distinction was observed between less and more experienced teachers, with the former group perceiving stronger associations between caring leadership and well-being. The findings emphasize the pivotal role of caring leadership in promoting TWB and highlight how teaching experience shapes perceptions of workplace support.

KEYWORDS

teacher well-being; caring leadership; network analysis; teaching experience; school connectedness; job satisfaction

CORRESPONDING AUTHOR

Marek Matouš Bula, Faculty of Education, Masaryk University, Poříčí 7/9, 639 00 Brno, Czech Republic

e-mail: marekmatous.bula@gmail.com

1 Caring leadership and teacher well-being: Perceptual differences between less experienced and experienced teachers

Teaching is widely recognized as an emotionally demanding profession (Gray et al., 2017). It is an inherently stressful and multifaceted job that requires educators to foster students' personal and academic growth (Johnson et al., 2014). Teacher well-being (TWB) is at risk due to escalating accountability requirements, the increasing complexity of student needs, parental pressures, and demands from school leadership (Pelletier et al., 2002; Pressley, 2021). The increasing demands of teaching are leading to high teacher attrition rates worldwide, with the main causes including job dissatisfaction, lack of recognition and rewards, and burnout (OECD, 2020).

In addition to addressing the negative symptoms of mental illness or burnout, TWB has become a critical area of concern for schools and society, as it plays a key role in the quality of teaching, student outcomes, and the effective functioning of educational systems (Duckworth et al., 2009). Low TWB poses significant barriers to school development and educational reform and is associated with increased teacher absenteeism (Parker et al., 2012). Conversely, high TWB has been associated with numerous benefits, including greater professional commitment, lower stress levels, increased work engagement, and improved overall mental health (Burić et al., 2021; Gray et al., 2017; Heidari et al., 2022; Vazi et al., 2013). In addition, TWB has a significant impact on students by promoting their well-being, engagement, and academic success (Maricuțoiu et al., 2023).

1.1 Well-being

The concept of well-being is multifaceted and evolving, with scholars offering various definitions. A seminal work in this area is Keyes's (2002) discussion of "well-being as the presence of positive mental health," a concept that McDowell (2010) later developed into the "hedonic well-being" model. As outlined by Huta and Ryan (2010), this approach emphasizes the pursuit of pleasure and happiness, with the principles of seeking comfort and gratification. Hedonic well-being was based on the subjective well-being

proposed by Diener et al. (1999), including positive affect, reduced negative affect, and overall life satisfaction, noting that it is transient and rooted in the present moment (Waterman, 2007). The eudaimonic perspective, grounded in humanistic theories, emphasizes living meaningfully and fulfilling human potential (Lambert et al., 2015). This approach ties happiness to personal growth and virtue-driven actions. Ryff (1989) introduced a psychological well-being model as the first eudaimonic well-being approach. This model is based on six dimensions: autonomy, environmental mastery, personal growth, positive relationships, purpose in life, and self-acceptance. This framework, further supported by lifespan theories of flourishing (Ryff & Singer, 2000), demonstrates the impact of well-being on reducing mortality (Chida & Steptoe, 2008).

Although hedonic and eudaimonic approaches overlap in some areas, they diverge in others, prompting the emergence of combined models such as the one by Seligman (2011). Contemporary research has increasingly come to view well-being as a multidimensional concept, extending beyond mere happiness and life satisfaction to encompass a broader range of aspects of human flourishing (Marsh et al., 2020).

1.2 Teacher well-being

The OECD (2020) defines teacher well-being (TWB) as a multidimensional concept encompassing cognitive, emotional, health, and social conditions intrinsic to their work and profession. It reflects teachers' responses to workload pressures, school culture, and relationships with students. However, recent meta-analyses have emphasized the absence of a unifying conceptualization of TWB (Dreer, 2023; Hascher & Waber, 2021; Zhou et al., 2024). Specifically, in their meta-analysis of 98 studies, Hascher and Waber (2021) noted significant variations in the definition and operationalization of TWB, with researchers often selecting specific subdimensions tailored to their study samples. Despite this inconsistency, these meta-analyses have provided valuable insights into the predictors and correlates of TWB.

Zhou et al. (2024) found that autonomous motivation is pivotal in fostering hedonic and overall well-being, surpassing other significant predictors. For eudaimonic well-being, the strongest influences were hope and the quality of social connections; work-life balance and the satisfaction of competence needs were identified as key drivers of general and occupational well-being, respectively. Among the various outcomes linked to well-being, job satisfaction was most strongly associated with hedonic and eudaimonic dimensions; occupational commitment was the primary consequence of overall well-being. Their study also highlighted a notable link between teaching experience and well-being, suggesting that greater professional longevity strengthens teachers' emotional ties to their role. Hascher and Waber (2021) emphasized the

foundational importance of social relationships as a factor in shaping TWB. The researchers also identified a gap in current research regarding factors unique to the teaching profession, such as specific job demands and the role of teacher education standards, which they argued require greater research attention. Similarly, Dreer (2023) underscored the importance of advanced analytical methods, including longitudinal studies, in exploring the outcomes of TWB. His findings revealed that TWB contributes to better sleep, stronger professional retention intentions, enhanced self-efficacy, and improved student classroom experiences, ultimately benefiting student outcomes.

In this study, we adopt the approach of Hascher and Waber (2021), who conceptualized TWB as the interaction between the individual and the environment, structured into objective and subjective variables. Subjective variables are categorized into three groups: general individual factors, such as personality traits and health; work-related individual factors, including teaching efficacy, job satisfaction, and pay level satisfaction; and work-related contextual factors, such as school leadership and positive relationships. Objective variables encompass general individual factors, such as age and gender; work-related individual factors, including teaching experience and employment status; and work-related contextual factors, including urbanization and classroom size.

Having established the conceptual underpinnings of TWB, the discussion turns to its evolution over the course of educators' careers. TWB exhibits systematic variation across stages of professional experience. As teachers progress in their careers, they characteristically cultivate more robust personal resources, such as sophisticated coping mechanisms and elevated self-efficacy, and gain access to augmented job resources, including supportive leadership and robust peer networks. These resources serve to mitigate the harmful effects of job demands (Hakanen et al., 2006). Nevertheless, empirical findings on the influence of teaching tenure on well-being are inconsistent, and no clear consensus has emerged regarding whether this relationship follows a linear trajectory. For instance, Jellis et al. (2021) reported that the organizational and student-interaction dimensions of well-being generally improve as teachers accrue years of experience, whereas workload-related well-being declines during mid-career before gradually recovering among the most seasoned educators. In a similar vein, Royer and Moreau's (2016) study documented a U-shaped developmental pattern in the psychological well-being of early childhood educators. This pattern exhibited a nadir during intermediate career stages, followed by an uptick later in the career, despite facets of professional self-efficacy remaining stable. In contrast, Fernández-Berrocal et al. (2017) found a linear decrease in positive affect with increasing teaching tenure. This relationship was evident only among those with average or low mood-repair abilities.

1.3 Caring leadership

School leaders have a key impact on TWB, as their actions affect not only the organizational running of the school, but also relationships and communication in the workplace. Many authors have suggested that leadership may have a role to play in cultivating organizational cultures that foster well-being for all (Cherkowski, 2018; Laine et al., 2017; Wallo & Lundquist, 2020).

Although it is difficult to compare the results of individual studies focused on leadership and well-being and present a unified picture due to different methodological approaches, it seems that transformational leadership and supportive styles of leadership are associated with employee health and well-being, especially in relation to work-related health outcomes such as job satisfaction and work engagement (Holten et al., 2018; Nielsen & Daniels, 2012; Wallo & Lundqvist, 2020).

Little research has focused on caring leadership, which is the main point of our interest. Caring leadership has been described as a style that promotes a sense of care in the organization, based on Watson's caring science and principles (2008). This approach involves being heart-centered and authentically present, in the moment and in the work, which ultimately is a process of being and becoming (Williams et al., 2011). This leadership style was originally researched in work environments with a "caring" mission (hospitals, children's services, early years settings), with the aim of improving educational, health, and social outcomes for children (Siraj-Blatchford & Hallet, 2014).

Van der Vyver et al. (2014a, b) focused on caring leadership in schools and emphasized the following key determinants of principals' care and explained them in more detail with reference to a number of authors: psychological (i.e., emotional intelligence, interest in people, concern, attention and compassion, respect, morality, etc.), organizational/workplace (i.e., organizational climate in the school, a safe working environment, job security, physical infrastructure, provision of resources, etc.), and management (i.e., trust, empowerment, recognition, protection of rights, righteousness, listening, accessibility, consistency, etc.). On this basis, they constructed the 59-item Caring School Leadership Questionnaire (CSLQ) (van der Vyver et al., 2014a).

A different perspective on caring leadership was offered by Louis et al. (2016), who primarily relied on the basic elements of care and were exclusively interested in the behavior of the principal – attention, motivating transition, situational awareness, mutuality, authenticity. They started from the concept of "active caring" in leadership, resulting in affirmations of being cared for by individuals and relevant communities, and created a tool to measure it. "Principal caring" meets, according to the authors, meets three conditions: (1) What leaders do is based on authentic knowledge and understanding of the cared for and the needs of the cared for, developed out of sufficient

attentiveness to and involvement with the cared for; (2) The caring actions of school leaders are motivated by advancing the success and personal well-being of the cared for; and (3) Where possible, the school leaders' caring is recognized and acknowledged by the ones cared for (Louis et al., 2016).

The same authors confirmed the importance of caring and caring school leadership for the success and well-being of both teachers and students in schools. Significant positive relationships among caring principal leadership, teachers' sense of collective responsibility, and student academic support were found. In addition, statistically significant but weak relationships were apparent between caring principal leadership and student academic support and between teachers' collective responsibility and student achievement.

Caring leadership as a method of principal support may be regarded as the variable having the biggest impact in increasing job satisfaction and reducing the risk of experiencing burnout (Bakker & Bal, 2010; Hakanen et al., 2006).

1.4 Present study

This study examines the relationships between TWB, caring leadership, coworker support, and payment in a sample of Czech primary and secondary school teachers. Utilizing network analysis, the investigation encompasses the structural connections between these constructs, with a view to elucidating their influence on teacher perceptions of their professional environment. Specifically, the study will analyze the interrelatedness of TWB and caring leadership, and the interaction of these factors with coworker relationships and payment.

Furthermore, acknowledging the paucity of consensus on how TWB develops across a career, the objective of the present study is twofold: to elucidate the differences in well-being perceptions at successive stages of professional tenure, and to deepen scholarly understanding by identifying the principal sources of the well-being characteristics of each stage. To address these objectives, the following research questions have been identified:

1. What is the nature of the interaction between TWB, caring leadership, coworkers, and payment?
2. How does TWB relate to caring leadership?
3. How do perceptions of TWB and caring leadership vary according to the length of teaching experience?

2 Methods

2.1 Sample

The data for this study was collected via an online survey distributed to a multitude of primary and secondary schools, in addition to teacher networks dispersed throughout the Czech Republic. The schools were not selected according to any specific criteria. Due to the open and decentralized nature of the recruitment strategy employed, no data about the number of participating schools was collated, and consequently the response rate could not be ascertained. Furthermore, due to the variation in the number of respondents at each school, the data were not analyzed at the school level. The sample consisted solely of in-service teachers, and participation was entirely voluntary. This dataset is a subset of a larger international survey conducted as part of the “Global Perspectives on Teachers’ Wellbeing and Mental Health Following the COVID-19 Pandemic” research project. In accordance with the study’s focus, the design was conceived with the intention of capturing teachers’ individual perceptions as opposed to school-aggregated characteristics.

The final dataset includes responses from 527 teachers ($N = 527$) employed in primary and secondary schools in the Czech Republic. Of these participants, a significant majority were female ($n = 420$, 80.8%); one stated a different gender; and six did not want to state their gender. The age of the participants ranged from 20 to 71 years, with a mean age of 48.25 years ($M = 48.25$, $SD = 9.96$). Three participants did not report their age. The distribution across age cohorts was as follows: 20–25 years ($n = 10$), 25–35 years ($n = 49$), 36–45 years ($n = 136$), 46–55 years ($n = 176$), and 56+ years ($n = 153$). The length of teaching experience among the participants varied between 1 and 50 years, with an average of 20.73 years ($M = 20.73$, $SD = 11.63$) and a median of 21 years; eight participants did not report their years of experience. The distribution of teaching experience was 0–10 years ($n = 131$), 11–20 years ($n = 124$), and 21+ years ($n = 264$). Concerning the type of school, 413 teachers reported that they were employed in mainstream primary and secondary schools, 27 in special schools, and 87 in other institutions (e.g., gymnasia, high schools, vocational schools, and kindergartens). With regard to the school level, 143 teachers were employed in primary schools, 241 in secondary schools, and 143 in other school types (e.g., high schools and gymnasia). The size of the school varied considerably: the data set includes 83 teachers working in schools with fewer than 200 students, 271 teachers working in schools with 200–500 students, and 170 teachers working in schools with over 500 students; 3 teachers did not report this information. With regard to the governance of schools, the vast majority of respondents were employed in state-funded schools ($n = 493$), with smaller proportions working in private ($n = 23$) and parochial ($n = 11$) schools.

2.2 Instruments

Following the conceptual framework established by Hascher and Waber (2021), a distinction is drawn between the subjective and objective dimensions of TWB. The subjective dimension is measured by three validated instruments. The Teacher Subjective Wellbeing Questionnaire (Renshaw et al., 2015) is a tool designed to assess teaching efficacy and school connectedness. The Caring Principal Leadership measure scale (Louis et al., 2016) is intended to evaluate core elements of care in leadership. The payment and coworkers subscales of the Job Satisfaction Survey (Spector, 1985) provided a more detailed evaluation of specific facets of job satisfaction. The objective dimension is captured via demographic and contextual items such as age, gender, years of teaching experience, employment status, school urbanization, and class size, collected through a brief demographic questionnaire.

2.2.1 Teacher Subjective Well-Being Questionnaire

The Teacher Subjective Wellbeing Questionnaire (TSWQ) was developed by Renshaw et al. (2015) to assess the subjective well-being of teachers in relation to their professional environment. The TSWQ is an eight-item questionnaire evaluated on a Likert scale (1 = almost never, 4 = almost always), designed to evaluate key job-related aspects of TWB.

The TSWQ is divided into two subscales: school connectedness and teaching efficacy. The school connectedness subscale measures the degree to which teachers feel supported and integrated within their school community, reflecting their emotional and social bonds with the institution. An example item from this subscale is, “I feel like people at this school care about me.” The teaching efficacy subscale assesses teacher confidence in their ability to effectively teach and manage their classrooms, capturing their professional self-perception and competence. An example item from this subscale is, “I am good at helping students learn new things.” These subscale scores can be interpreted independently as standalone indicators of specific dimensions of well-being. Alternatively, the scores can be combined to generate an overall teacher subjective well-being composite score. The translation and cultural adaptation of the instrument followed the guidelines proposed by Beaton et al. (2000) to ensure cross-cultural equivalence and validity. The reliability of the adapted scale measured by McDonald’s omega was .81 for overall TSWQ, .79 for subscale teaching efficacy, and 0.74 for school connectedness.

2.2.2 Caring Principal Leadership measure

The Caring Principal Leadership measure scale (Louis et al., 2016) is based on the core elements of care in leadership. Mutuality was replaced by trust (two items), situationality (two items), authenticity (two items), motivational displacement (one item), and attentiveness (one item). The Caring Principal

Leadership measure scale uses a Likert scale for respondents to rate their agreement with each statement, typically on a scale from 1 (strongly disagree) to 6 (strongly agree). An example item from this scale is, “My school administrator develops an atmosphere of caring and trust.”

For this study, we focused specifically on the dimension of principal caring leadership in the survey. This dimension measures the extent to which school leaders are perceived as supportive, trustworthy, and attentive to the needs of their staff, reflecting essential qualities of caring leadership such as attentiveness, motivational displacement, and authenticity. The items in this dimension evaluate how effectively principals support teachers in managing classroom challenges, involve them in decision-making processes, and provide consistent and trustworthy leadership. By focusing on principal caring leadership, the survey offers valuable insights into the ways in which school leadership practices embody the principles of caring leadership, contributing to a nurturing and supportive educational environment. The Cronbach’s alpha for this measure was .93.

2.2.3 Job Satisfaction Survey

The Job Satisfaction Survey (JSS) is a widely utilized instrument developed by Spector (1985) to evaluate employee attitudes toward various aspects of their job. It includes 36 items across nine facets, each assessed using a Likert scale ranging from 1 (disagree very much) to 6 (agree very much). For the purposes of this study, the focus was exclusively on two subscales: payment and coworkers.

The payment subscale assesses employee satisfaction with their compensation, reflecting perceptions of fairness and adequacy in payment. An example item from this subscale is, “I feel unappreciated by the organization when I think about what they pay me.” The coworkers subscale evaluates satisfaction with workplace relationships, including the sense of collaboration and support among colleagues. An example item from this subscale is, “I find I have to work harder at my job because of the incompetence of people I work with.” Both subscales consist of four items each and provide a focused view of job satisfaction related to these specific facets. Our translation and cultural adaptation of the instrument followed the guidelines proposed by Beaton et al. (2000) to ensure cross-cultural equivalence and validity. The reliability of the adapted subscales measured by McDonald’s omega were .75 for payment and .71 for coworkers.

2.3 Statistical analysis

Descriptive statistics were conducted using the R software (version 4.2.3; R Core Team, 2020), utilizing the Psych package (Revelle, 2025). To account for the skewed distribution of the used scales, Spearman correlation coefficients were calculated, following the recommendations of de Winter et al. (2016).

Moreover, we divided the sample into two subgroups according to length of practice. We chose the median length of practice as the dividing value. Differences between these two groups were assessed using the Mann-Whitney-Wilcoxon test, with effect sizes estimated using Cliff's Delta (Cliff, 1993), providing a measure of the magnitude of differences in the context of the study. All analyses were performed using data in a raw format.

2.3.1 Network analysis

The network approach provides a framework for representing and understanding the interactions between elements of a phenomenon, offering insights into their structure and the consequences of their interconnections. In contrast to conventional correlation analyses, which emphasize two-way relationships between variables, the network approach captures the complexity of multivariate systems by modeling reciprocal influences and indirect effects. In network analysis, phenomena are modeled as structures comprising nodes and edges, with nodes representing variables and edges representing the relationships between these variables. Nodes can correspond to individual scale items, subscales, composite measures, or latent variables depending on the data's suitability for addressing the research questions. The network edges illustrate the statistical connections between the nodes, reflecting various types of relationships. This approach enables the simultaneous interpretation of the relationships between different elements, their reciprocal influences, and the broader structure of their interconnections.

The graphical representation of a network reveals structural relationships between nodes and enables further analysis of its properties, thereby facilitating the acquisition of insights into the centrality of specific nodes, the density or sparsity of the structure, and the presence of clusters or isolated nodes. A salient feature of network analysis is its capacity to quantify the importance of nodes through centrality measures, which evaluate their relative influence within the network. Centrality indices summarize relationships and highlight the roles of nodes based on their connections. Common measures include strength centrality, which identifies nodes with the strongest associations; closeness centrality, which reflects how efficiently a node can influence or be influenced by others, indicating its accessibility and capacity to interact within the network; and betweenness centrality, which assesses a node's role as a bridge connecting other nodes. These measures provide insights into the network dynamics and help identify key variables for further study.

The network analysis was performed in two stages, based on the primary research questions: a latent network analysis encompassing all constructs investigated in this study and an item-level network analysis focusing on TWB and caring leadership.

In the first stage, we constructed a latent network model in order to examine the relationships between latent constructs representing different dimensions of TWB and leadership. This approach permits the identification of underlying structures by modeling direct associations between latent variables while accounting for measurement error (Epskamp et al., 2017). In order to achieve this, we specified a confirmatory factor model, defining five latent variables: teaching efficacy, school connectedness, caring leadership, coworkers, and payment. The factor loadings were constrained in accordance with a predefined measurement structure, thereby ensuring that each observed variable loaded exclusively onto its respective factor. The estimation was performed using full information maximum likelihood, a method that effectively handles missing data by leveraging all available information (Enders, 2010). The latent network model was then estimated using the “ggm” package, which applies a Gaussian graphical model framework to latent constructs (Epskamp & Fried, 2018). To refine the model, a pruning procedure was employed that systematically removed weak edges based on an alpha threshold of 0.05 (Epskamp, 2020).

In the second stage, we employed a Gaussian graphical model to estimate an undirected network model, as this method is suitable for ordinal data (Epskamp, 2016). The analysis was conducted using the “bootnet” package (BootNet, n. d.), which offers a comprehensive range of tools for network analysis. To estimate the network model, we applied the least absolute shrinkage and selection operator (LASSO—see Tibshirani, 1996). LASSO is a regularization technique that reduces false-positive connections by setting very small edges to zero, resulting in a sparse network where spurious connections are removed. LASSO generates a series of networks ranging from fully connected to entirely unconnected and selects the optimal network by maximizing the fit to the data. In this study, LASSO regularization was employed in conjunction with the extended Bayesian information criteria model selection, which aims to minimize the extended Bayesian information criteria by removing superfluous edges (Chen & Chen, 2008). This methodological approach has proven effective in recovering the true network structure, particularly in scenarios in which the underlying network is sparse (Epskamp & Fried, 2018). Furthermore, this approach ensures the reliability of the results, even under conditions of reduced node-to-participant ratios, with ratios as low as 1:10 (Epskamp et al., 2018). To further refine the estimation, a non-paranormal transformation was employed to account for the ordinal nature of the data.

To assess the accuracy and stability of the estimated network parameters, we performed bootstrapping procedures using the bootnet package (Epskamp & Fried, 2018). Bootstrapping (Efron, 1979) provides confidence intervals for edge weights, allowing for an assessment of their variability and robustness. In addition, the stability of centrality indices was tested by systematically resampling the data and re-estimating the network after removing subsets of

cases. This procedure ensures that centrality rankings remain consistent and are not overly influenced by sample-specific variations. High correlations between resampled networks indicate stable estimates, increasing the reliability of our findings (Epskamp & Fried, 2018).

3 Results

3.1 Descriptive statistics and differences by length of teaching experience

Descriptive statistics for all measures are presented in Table 1. The distributions of well-being and caring leadership measures approximated a normal distribution, but the perception of coworkers and payment were skewed to the right. Spearman's correlation coefficients for aggregated measures, detailed in Table 2, were almost statistically significant, with the strongest associations occurring between the perception of school connectedness and caring leadership.

Table 1
Descriptive statistics of raw scores

item	<i>N</i>	<i>M</i>	<i>SD</i>	min	max	skew	kurtosis
WB1	516	2.49	0.69	1	4	-0.77	-0.30
WB2	515	2.23	0.59	1	3	-0.10	-0.46
WB3	516	2.35	0.75	1	4	-0.31	-0.66
WB4	516	2.48	0.56	1	3	-0.46	-0.84
WB5	515	2.14	0.76	1	4	0.21	-0.39
WB6	515	2.15	0.69	1	4	-0.05	-0.59
WB7	514	2.33	0.68	1	4	-0.40	-0.67
WB8	514	2.27	0.57	1	4	0.01	-0.41
V1	469	4.06	1.57	1	6	-0.47	-0.95
V2	469	4.58	1.30	1	6	-0.89	0.10
V3	469	4.29	1.44	1	6	-0.64	-0.52
V4	469	4.13	1.49	1	6	-0.51	-0.77
V5	469	4.67	1.30	1	6	-0.94	0.26
V6	469	4.46	1.60	1	6	-0.80	-0.57
V7	469	4.29	1.42	1	6	-0.63	-0.58
V8	469	4.36	1.40	1	6	-0.64	-0.57
U7	495	4.94	1.00	1	6	-0.96	0.91
U16	494	3.88	1.58	1	6	-0.27	-1.14
U25	495	4.78	1.09	1	6	-0.76	0.22
U34	495	4.02	1.55	1	6	-0.52	-0.87
U1	495	3.73	1.26	1	6	-0.41	-0.43
U10	494	2.74	1.44	1	6	0.47	-0.75
U19	494	3.75	1.53	1	6	-0.17	-1.06
U28	496	2.82	1.37	1	6	0.32	-0.84

Table 2
Spearman correlation coefficients for aggregated measures

Aggregated variable	1 TWB Teaching efficacy	2 TWB School connectedness	3 Caring leadership	4 Coworkers	5 Payment
1	1 (516)***				
2	0.468 (516)***	1 (516)***			
3	0.216 (467)***	0.551 (467)***	1 (469)***		
4	0.070 (495)	0.428 (495)***	0.468 (467)***	1 (495)***	
5	0.015 (495)	0.232 (495)***	0.364 (468)***	0.298 (495)***	1 (496)***

Note. The value in parentheses indicates the number of records used to calculate the correlation coefficient. * $p < 0.05$, ** $p < 0.001$.

The teaching staff were divided into two groups based on experience, with the sample mean of 21 years serving as the cut-off point. This threshold corresponds to the midpoint of the distribution of our sample and aligns with the experiential turning point identified by Royer and Moreau (2016). This resulted in a group of less experienced teachers ($N = 255$) and a group of more experienced teachers ($N = 264$). The findings, presented in Table 3, indicate that the more experienced group perceived significantly higher levels of teaching effectiveness, exhibiting a small effect size. Additionally, the more experienced group exhibited higher levels of perceived school belonging and caring leadership. However, these variables had negligible effect sizes. No significant differences were observed in areas of perceiving co-workers and compensation; the effect sizes for these variables were insignificant.

Table 3
Differences by length of teaching experience

Aggregated variable	Mean <21 year	Mean >21 year	p-value	W-statistic	Cliff's Delta
TWB: Teaching efficacy	-0.187	0.200	0.000	25210	0.224
TWB: School connectedness	-0.100	0.122	0.009	28203	0.132
Caring leadership	-0.126	0.121	0.007	22895	0.146
Coworkers	0.021	-0.015	0.490	30951	-0.036
Payment	0.027	-0.022	0.594	30834	-0.028

3.2 Latent network analysis

The latent network model demonstrated adequate fit indices (CFI = 0.94, TLI = 0.94, RMSEA = 0.049). Network visualization (Figure 1) underscored the relative importance and interrelationships between variables, with the strongest relationship observed between school connectedness and teaching efficacy, validating their status as a subscale of TWB. These variables represent two distinct constructs, capturing different aspects of TWB. In contrast, the latent variable coworkers emerged as a central construct that established connections with the other variables despite its negative relationship with teaching efficacy. Payment showed weaker links to the other variables, suggesting a less significant role in the network.

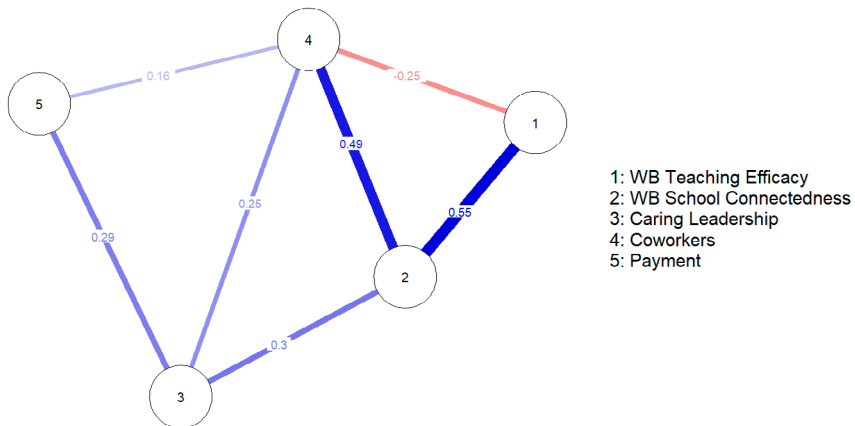


Figure 1
Latent network model

The centrality analysis yielded further insights into the role of the five latent variables. School connectedness exhibited the highest centrality strength, suggesting robust links to the other variables. Conversely, payment had the lowest strength of centrality, indicating its peripheral role in the network. Regarding the centrality of closeness, school connectedness ranked highest, reflecting its capacity to minimize the average path length to other nodes. Teaching efficacy and caring leadership demonstrated moderate levels of closeness; payment once again had the lowest level of closeness, thereby highlighting its limited accessibility within the network. The results of the study indicated that the betweenness centrality identified school connectedness as the most influential intermediary within the network, facilitating indirect connections between other variables. Caring leadership followed as the second most influential construct. The remaining variables, including teaching efficacy, coworkers, and payment, exhibited minimal or negligible betweenness centrality, underscoring their limited roles in bridging other nodes.

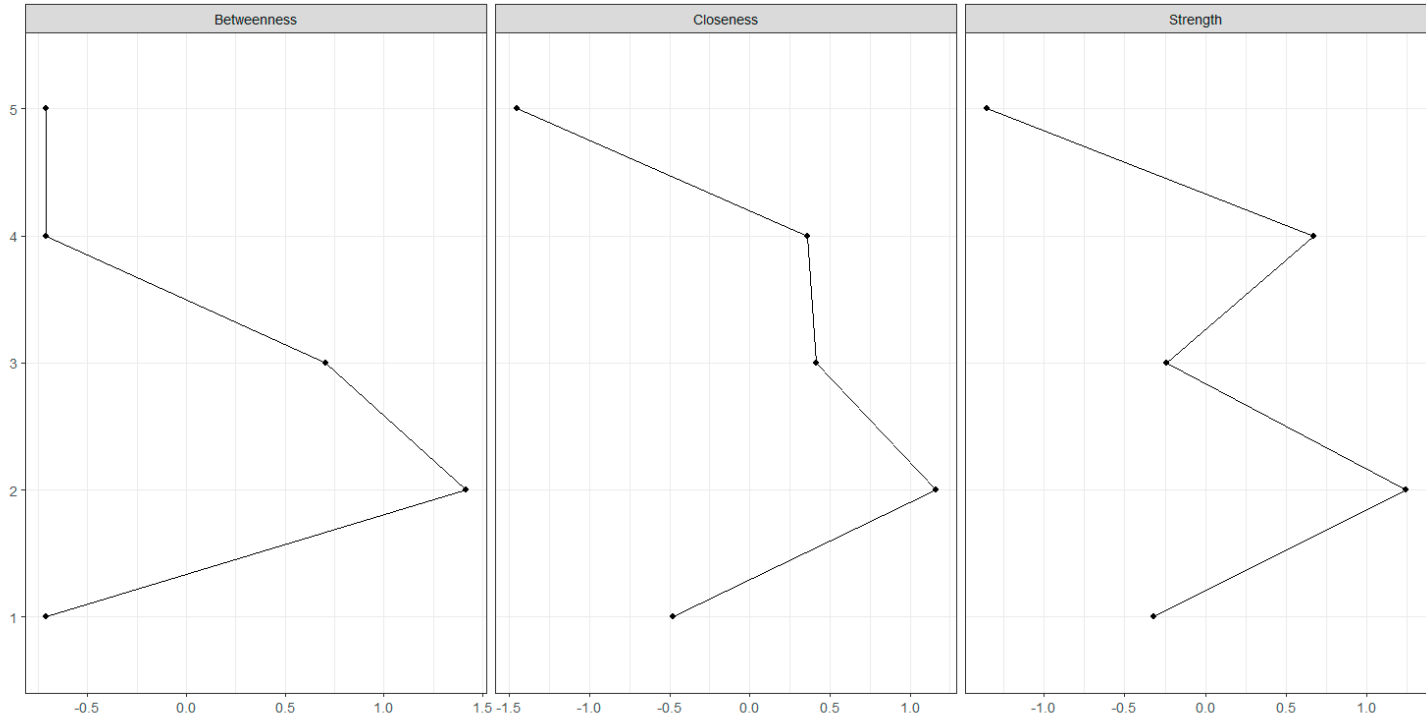


Figure 2
Centrality measures of the latent network model

3.3 Network analysis of items of teacher well-being and caring leadership measure scales

As illustrated in Figures 3 and 5, both networks demonstrate a similar overall structure, comprising two distinct clusters. The first cluster has well-being variables (WB nodes); the second cluster has caring leadership variables (V nodes). Within the well-being cluster, the variables are further categorized into subgroups based on the subscales of the TWB measure utilized: teacher efficacy (WB2, WB4, WB6, WB8) and school connectedness (WB1, WB3, WB5, WB7). Despite these similarities in structure, the networks differ in partial correlations and measures of centrality (Table 4).

Bootstrap analysis assessed the accuracy and stability of the network for both groups (Appendix, Figures A1–A4). Edge weight accuracy analysis showed that stronger edges were more stable; weaker edges showed greater variability. Centrality stability analysis showed that strength centrality remained robust across subsamples; betweenness and closeness decreased with sample reduction. These patterns were consistent across teachers with shorter and longer teaching experience, supporting the reliability of edge weights and strength centrality in both groups. These results suggest that the network structure is sufficiently stable and interpretable, particularly when focusing on edge weights and strength centrality. Betweenness and closeness centrality showed less stability; strength centrality remained robust, supporting its use as the primary metric. Overall, the results suggest that the network is reliable and interpretable, although caution should be exercised when considering less stable indicators.

Table 4

Partial correlations of network models of TWB and caring leadership

Shorter teaching experiences			Longer teaching experiences		
Variable 1	Variable 2	Partial correlation	Variable 1	Variable 2	Partial correlation
V1	V2	0.04	V1	V2	0.08
V1	V3	0.2	V1	V3	0.17
V1	V4	0.24	V1	V4	0.17
V1	V5	0.13	V1	V5	0.18
V1	V6	0.18	V1	V6	0.06
V1	V7	0.11	V1	V7	0.16
V1	V8	0.14	V1	V8	0.21
V2	V3	0.14	V2	V3	0.19
V2	V4	0.17	V2	V4	0.18
V2	V5	0.15	V2	V5	0.01

V2	V6	0.12	V2	V6	0.2
V2	V8	0.12	V2	V7	0.14
V3	V4	0.18	V2	V8	0.05
V3	V5	0.09	V3	V4	0.15
V3	V6	0.02	V3	V5	0.23
V3	V7	0.08	V3	V6	0.01
V3	V8	0.23	V3	V8	0.13
V4	V5	0.18	V4	V5	0.06
V4	V6	0.03	V4	V6	0.12
V4	V7	0.08	V4	V7	0.06
V4	V8	0.08	V4	V8	0.2
V5	V6	0.17	V5	V6	0.2
V5	V7	0.14	V5	V7	0.07
V5	V8	0.15	V5	V8	0.18
V6	V7	0.17	V6	V7	0.17
V6	V8	0.09	V6	V8	0.06
V7	V8	0.32	V7	V8	0.34
WB1	WB3	0.24	WB1	WB3	0.29
WB1	WB5	0.14	WB1	WB5	0.21
WB1	WB7	0.22	WB1	WB7	0.01
WB1	V1	0.03	WB1	V1	0.02
WB1	V3	0.01	WB1	V2	0.02
WB1	V4	0.02	WB1	V6	0.05
WB1	V5	0.06	WB1	V7	0.03
WB2	WB4	0.2	WB2	WB4	0.26
WB2	WB6	0.22	WB2	WB6	0.24
WB2	WB8	0.29	WB2	WB8	0.23
WB2	WB1	0.08	WB2	WB3	0.06
WB2	WB3	0.1	WB2	WB5	0.02
WB2	WB7	0.06	WB2	WB7	0.09
WB2	V1	-0.01	WB3	WB5	0.2
WB3	WB5	0.25	WB3	WB7	0.24
WB3	WB7	0.02	WB3	V3	0.04
WB3	V2	0.06	WB4	WB6	0.2
WB3	V5	0.01	WB4	WB8	0.19
WB3	V8	0.02	WB4	WB3	0.09
WB4	WB6	0.07	WB4	WB5	0.08
WB4	WB8	0.33	WB4	V4	-0.02
WB4	WB3	0.09	WB4	V5	0.04
WB4	WB5	0.14	WB4	V8	-0.01
WB4	V1	-0.02	WB5	WB7	0.14
WB4	V2	0.02	WB5	V4	0.05

WB5	WB7	0.26	WB6	WB8	0.24
WB5	V2	-0.04	WB6	WB3	0.03
WB5	V6	0.01	WB6	WB5	0.07
WB6	WB8	0.22	WB6	WB7	0.12
WB6	WB1	0.09	WB7	V7	0.08
WB6	WB5	0.06	WB7	V8	0.02
WB6	WB7	0.06	WB8	WB1	0.01
WB6	V5	-0.09	WB8	WB5	0.09
WB7	V1	0.02	WB8	WB7	0.04
WB7	V5	0.06	WB8	V3	-0.01
WB8	WB7	0.14	-	-	-
WB8	V4	0.01	-	-	-
WB8	V7	0.04	-	-	-

3.3.1 The network model: teachers with shorter teaching experiences

In the network representing the responses of teachers with less experience (Figure 3), the well-being variables form a tightly connected cluster with strong links between nodes. In particular, WB4 (*I am good at helping students learn new things*) and WB8 (*I feel like my teaching is effective and helpful*) within the teacher effectiveness subcluster show the strongest links. Within the caring leadership cluster, nodes such as V5 (*In general, I believe my principal's motives and intentions are good*), V7 (*If my principal promised to do something, they would follow through*), V1 (*My school administrator develops an atmosphere of caring and trust*), and V4 (*When teachers are struggling, our principal provides support for them*) are central due to their strong interconnections. However, the links between the well-being and caring leadership clusters are weaker.

While most partial correlations in the network are positive, three negative correlations were observed exclusively between TWB and caring leadership variables. The transfer of influence between the TWB and caring leadership clusters is primarily mediated by the relationship between WB6 (*I have accomplished a lot as a teacher*) and V5 (*In general, I believe that my principal's motives and intentions are good*). This relationship is notable for its negative partial correlation, a finding consistent with the raw data, which indicates a negative nonsignificant correlation ($r = -0.04, p = 0.57$).

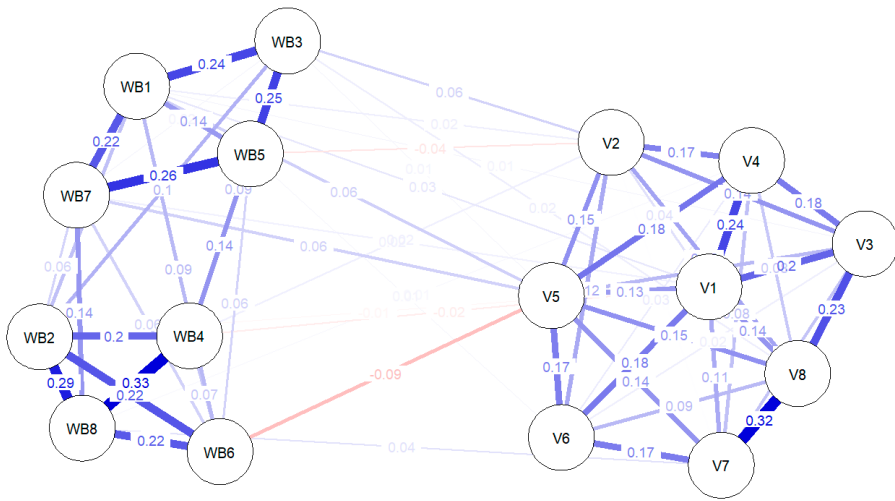


Figure 3

Network model: Teachers with shorter teaching experiences

The analysis further revealed that V5 (*In general, I believe that my principal's motives and intentions are good*) and WB6 (*I have accomplished a lot as a teacher*) exhibited the highest closeness centrality within their respective clusters, suggesting their ability to facilitate network interactions by minimizing the average distance to other nodes (see Figure 4). In contrast, nodes such as WB3 (*I can really be myself at this school*) and V3 (*My school administrator ensures wide participation in decisions about school improvement*) demonstrated lower closeness centrality, reflecting their more peripheral position. Betweenness centrality further underscored the critical role of V5 (*In general, I believe that my principal's motives and intentions are good*) and WB6 (*I have accomplished a lot as a teacher*) as intermediaries that act as bridges, connecting clusters and enhancing overall network connectivity. In contrast, nodes such as V6 (*I feel free to discuss work problems with my principal without fear of having it used against me later*) and V7 (*If my principal promised to do something, they would follow through*) exhibited minimal betweenness centrality, indicating their limited role in inter-cluster interactions. The strength centrality analysis identified nodes V8 (*Our principal is responsive to the needs and concerns expressed by community members*) and V5 (*In general, I believe that my principal's motives and intentions are good*) as the most strongly connected nodes, highlighting their importance ensuring its overall cohesion and preventing fragmentation. Notably, WB8 (*I feel like my teaching is effective and helpful*) has the highest value of strength centrality in TWB clusters. In contrast, WB3 (*I can really be myself at this school*) showed the lowest strength centrality, highlighting its peripheral role. The analysis

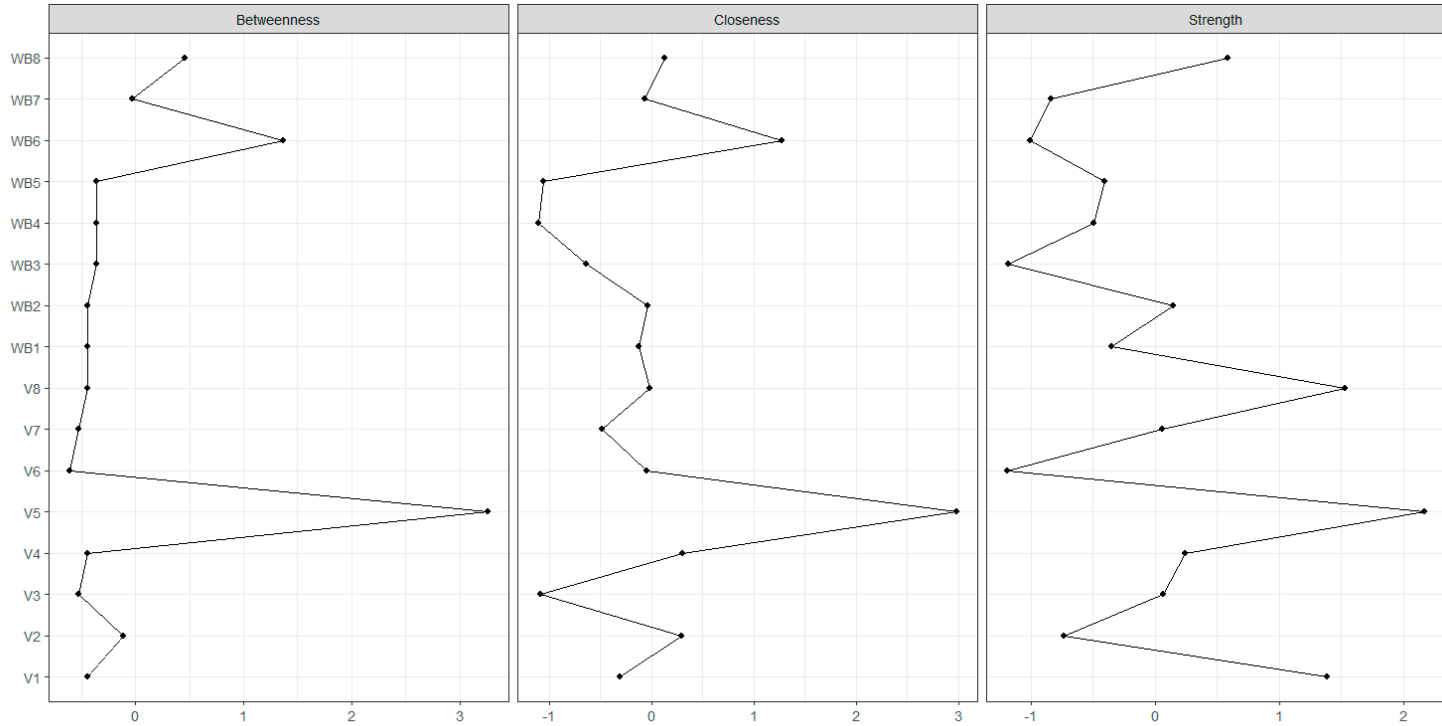


Figure 4
Measures of centrality of the network model formed by teachers with shorter teaching experience

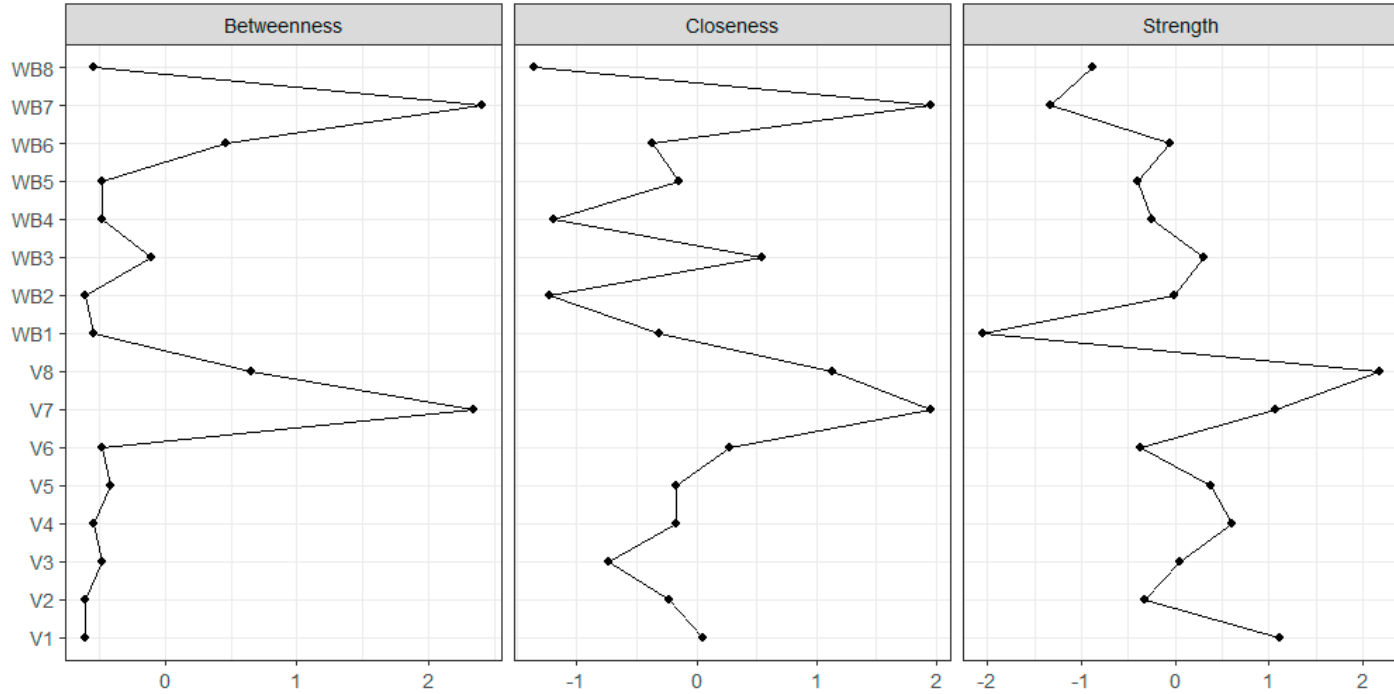


Figure 6
Measures of centrality of the network model formed by teachers with longer teaching experience

The analysis of the closeness centrality (Figure 6) revealed that WB7 (*I am treated with respect at this school*) and V7 (*If my principal promised to do something, they would follow through*) have the highest values, indicating their ability to facilitate network interactions by minimizing the average distance to other nodes. These nodes enable efficient interconnection within clusters. In contrast, nodes WB8 (*I feel like my teaching is effective and helpful*) and WB2 (*I am a successful teacher*) exhibit lower values of the centrality of proximity, placing them at the periphery of the network with less impact on overall availability. Betweenness centrality further highlights the mediating role of WB7 (*I am treated with respect at this school*) and V7 (*If my principal promised to do something, they would follow through*) as bridges between two clusters, making them critical for facilitating connections between clusters. In contrast, WB2 (*I am a successful teacher*) exhibits negligible betweenness centrality, reflecting its localized role with minimal impact on cluster connectivity. The strength centrality analysis identifies V8 (*Our principal is responsive to the needs and concerns expressed by community members*) as the node with the highest cumulative connection weight. From well-being clusters, WB3 (*I can really be myself at this school*) has the highest strength centrality values. Conversely, WB1 (*I feel like I belong at this school*) shows the lowest centrality strength, highlighting its peripheral position within the well-being cluster. In a manner consistent with the initial network, all well-being variables demonstrate lower centrality strength compared to caring leadership variables, suggesting their less integrated role in the overall network structure.

4 Discussion

This study examined the relationships between TWB, caring leadership, coworker support, and payment, focusing on differences based on teaching experience. The study found that school connectedness and teaching efficacy emerged as central components of TWB; caring leadership played a key role in mediating workplace relationships. Furthermore, the study revealed that experienced teachers perceived a stronger correlation between caring leadership and TWB; early-career teachers placed greater emphasis on teaching efficacy. The findings further suggest that remuneration plays a less significant role in shaping TWB than relational factors, as indicated by its weak integration within the network. These findings underscore the pivotal role of school connectedness and leadership in fostering TWB. The study emphasizes the necessity for leadership strategies that enhance the school as a stronger community, where there is a greater likelihood of teachers developing a stronger connection to the school (Sergiovanni, 1994).

4.1 *What is the interaction between teacher well-being, caring leadership, coworkers, and payment?*

The results of our survey confirm the centrality of teachers' relationship to school (school connectedness), which, in addition to performance areas (teaching effectiveness, self-efficacy), contributes to the healthy functioning of teachers. These are important components of TWB (Renshaw et al., 2015; Wessels, & Wood, 2019; Yang et al., 2022). In particular, the relationship of teachers to the school seems to connect the other factors we examine and keeps the network of variables coherent.

A strong position in the network of factors examined by us, and thus a supportive relationship to school connectedness, is also held by the latent variable coworkers (the role of coworkers is evoked by item WB5 – *I feel like people at this school care about me*). Other research suggests that teacher relationships with other school staff might have a larger impact on their sense of connectedness to the school (Yang et al., 2022). It is clear that similar to the feeling of school connectedness, the feeling of positive school climate, positive relationships between teachers, and the perception of cooperation and peer support at school have positive relationships with the feeling of TWB (Jones et al., 2019; Wigford, & Higgins, 2019).

Interestingly, some studies have been more moderate and presented an ambivalent relationship in this context (Ilgan et al., 2015). The results of Czech research focused more on factors of teacher burnout (Kollerová et al., 2023) did not emphasize the significantly positive effects of social support on the level of teacher exhaustion, which can be considered a negative factor limiting TWB. On the other hand, that study mentioned the supportive role of the school leaders (school management). Their data was carefully interpreted with reference to the specific characteristics of teaching in the Czech Republic, where teachers traditionally work rather independently (even alone), and do not rely much on the support of colleagues.

A positive climate, or positive and supportive relationships with colleagues (coworkers in our research), can be considered factors and strong players in the overall feeling of TWB and especially in the feeling of school connectedness. These links deserve a deeper examination, for example using qualitative research. The results of such a survey could facilitate an understanding of what specific forms of peer cooperation and support play a key role in the support of TWB.

In the network of variables, we also paid attention to teacher satisfaction with their financial remuneration, which in the Czech environment traditionally attracts the attention of the professional and lay public and is generally considered an important component of job satisfaction. However, teaching is often considered a “mission” and teachers often enter the profession

with low expectations in terms of remuneration or the financial situation in education in general. The financial situation in education and the level of remuneration of teachers often differ significantly from country to country. Therefore, the results of research from the school environment are not consistent. While the research of Veronese et al. (2018) confirms a positive relationship between TWB and salary, another study found a negative relationship between TWB and the economic situation of teachers or schools (cf. Brouskeli et al., 2018; Jones et al., 2019). The results of our research show that the latent variable payment stands rather apart from the whole network (well-being, caring leadership, and coworkers) and is not significant. Based on these results, it is possible to believe that other factors are more important for TWB, but a certain role of remuneration cannot be underestimated. A comparative analysis of the importance of different salary levels among other well-being supporting factors could bring interesting results.

4.2 How does teacher well-being relate to caring leadership?

The concept of caring leadership is a key variable in our research. We found that this variable plays an important role in the network of well-being, coworkers, payment and thus confirms the importance of caring from school management, especially for the feeling of school connectedness. However, the links also point to the relationship between caring leadership and the feeling of collegial cooperation (coworkers) and evaluation (payment), although it can be assessed as rather weak.

The relationship between leadership style and school climate has traditionally attracted the attention of a number of researchers; in recent years, the positive effects of transformational and transactional leadership styles have been discussed. A number of studies confirmed the influence of school management on the relationship of employees to the school or on their sense of well-being (e.g., Leithwood & Sun, 2012). Similarly, van der Vyver et al. (2020) concluded that transformational and transactional leadership styles positively contribute to teachers' professional well-being, whereas laissez-faire leadership has a negative influence. It is therefore clear that supportive attention paid to teachers by the management plays a positive role. The use of transformational and transactional leadership styles results in teachers reporting positive job-related affective well-being, which can, in turn, influence teachers to remain in the profession due to their experience of enhanced professional well-being (van der Vyver et al., 2020).

In a meta-analysis of 98 studies of leadership styles, Shi et al. (2024) showed that leadership style significantly affects teachers' job and workplace satisfaction. According to these authors, ethical leadership and servant leadership, i.e., concepts that are close to the caring leadership of our focus,

can be considered the most influential. Similar conclusions were reached by multiple meta-analyses focused on leadership styles and teacher satisfaction (e.g., Cogaltay et al., 2016). This confirms the potential of caring leadership in the context we are dealing with.

4.3 What are the differences in perceiving teacher well-being with caring leadership according to the length of teaching experience?

Our research results indicated some differences in the perception of well-being between more and less experienced teachers, as well as in the perception of caring leadership (Table 3).

Previous research has yielded somewhat varied results in terms of differences in well-being or related concepts (job satisfaction, self-efficacy, work stress) between more and less experienced teachers. For example, contrary to the results of our research, Kini and Podolsky (2016) found positive consequences of greater experience by associating it with teacher effectiveness. As indicated by previous research, the relationship between the duration of teaching experience and teacher well-being is not consistent. The extant literature reports a range of outcomes, including positive, negative, and non-significant relationships (see Fernández-Berrocal et al., 2017; Taylor, & Tashakkori, 1995, etc.).

Our results indicate that feelings of self-efficacy are more important for the well-being of teachers with less experience (they positively mark WB6 and WB8); more experienced teachers seem to have a feeling of well-being that is more saturated by school connectedness (WB7 and WB3). It seems that performance and a sense of achievement are important for less experienced teachers; more experienced teachers prefer stability or attachment to the institution.

As far as the perception of caring leadership (in relation to well-being) is concerned, items V5 (*In general, I believe that my principal's motives and intentions are good*) and V8 (*Our principal is responsive to the needs and concerns expressed by community members*) were important for teachers with less experience; teachers with more experience did not consider V5 to be an important item, and item V8 remained in the foreground. These findings indicate other possible sources of motivation in more and less experienced teachers (extrinsic motivation and opportunities for teachers with less experience and stable work for teachers with more experience) that might be worth exploring more closely.

An ambiguous interpretation is evoked by the finding of a negative relationship between items WB6 and V5 for teachers with less experience. Less experienced teachers who rated themselves high on WB6 (*I have accomplished a lot as a teacher*) were not significantly convinced that the school principal had good motives and intentions (V5). The question remains why

this is only the case for the less experienced group of teachers. It is possible that teachers who believe that they have already achieved a lot in their profession (WB6) may be more critical of the school management, or that they are satisfied with their own motivation, or that they are already able to seek stimulation themselves without relying on the school management in this regard. Similarly, Layek and Koodamara (2024) found in their research that extensive work experience is generally more closely linked to intrinsic motivation rather than extrinsic motivation. This may mean that less experienced teachers value external motivation, recognition, and stimulation from school leadership more; more experienced teachers are motivated by their internal belief in the meaningfulness of their work and are more satisfied if the school leadership shows interest in them in the sense of caring leadership.

Based on the data, we conclude that for less experienced teachers, it is necessary to support their sense of success and teaching efficacy; for more experienced teachers, it is more important to support their feeling that their work makes sense and that they are being cared for – this is where caring leadership can play a significant role. The data from this research can help better understand the needs of both less experienced and more experienced teachers.

5 Limitations of the study

The concept of well-being is inherently subjective; self-efficacy, in particular, may be influenced by stable personality traits or by transient mood states during the data collection process. For instance, Fernández-Berrocal et al. (2017) demonstrated that a teacher's mood-repair ability can serve as a buffer or amplifier of the impact of years of experience on positive affect. Consequently, results across different surveys may vary, especially when sample sizes are small. Furthermore, the present study did not examine the influence of other key contextual factors, such as school type, class size, or overall school climate. Moreover, given that the analyses were conducted exclusively at the individual level and not at the school or classroom level, it is not possible to ascertain any potential disparities in well-being between schools or among classes. Participants were recruited via convenience sampling rather than random selection, which may have resulted in a sample that was more inclined to participate. It is important to note that the generalizability of our findings is constrained by the use of convenience sampling and by the exclusive focus on a Czech teacher population, which may limit the applicability of our findings to other educational contexts.

Acknowledgments

The research reported in this article is part of the “Global Perspectives on Teachers’ Wellbeing and Mental Health Following the COVID-19 Pandemic” project. The work of the first author was further supported by Masaryk University under Grant MUNI/1651/2024.

References

- Bakker, A. B., & Bal, P. M. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, *83*(1), 189–206.
<https://doi.org/10.1348/096317909X402596>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, *25*(24), 3186–3191.
<https://doi.org/10.1097/00007632-200012150-00014>
- Bootstrap methods for various network estimation routines [BootNet]. (n.d.). *CRAN Link*.
<http://cran.r-project.org/package=bootnet>
- Brouskeli, V., Kaltzi, V., & Loumakou, M. (2018). Resilience and occupational well-being of secondary education teachers in Greece. *Issues in Educational Research*, *28*(1), 43–60.
- Burić, I., Kim, L. E., & Hodis, F. (2021). Emotional labor profiles among teachers: Associations with positive affective, motivational, and well-being factors. *Journal of Educational Psychology*, *113*(6), 1227–1243.
<https://doi.org/10.1037/edu0000654>
- Chen, J., & Chen, Z. (2008). Extended Bayesian information criteria for model selection with large model spaces. *Biometrika*, *95*(3), 759–771.
<https://doi.org/10.1093/biomet/asn034>
- Cherkowski, S. (2018). Positive teacher leadership: Building mindsets and capacities to grow wellbeing. *International Journal of Teacher Leadership*, *9*(1), 63–78.
- Chida, Y., & Steptoe, A. (2008). Positive psychological well-being and mortality: A quantitative review of prospective observational studies. *Psychosomatic Medicine*, *70*(7), 741–756.
<https://doi.org/10.1097/PSY.0b013e31818105ba>
- Cliff, N. (1993). Dominance statistics: Ordinal analyses to answer ordinal questions. *Psychological Bulletin*, *114*(3), 494–509.
<https://doi.org/10.1037/0033-2909.114.3.494>
- Cogaltay, N., Yalcin, M., & Karadag, E. (2016). Educational leadership and job satisfaction of teachers: a meta-analysis study on the studies published between 2000 and 2016 in Turkey. *Eurasian Journal of Educational Research*, *16*(62), 255–282.
<https://doi.org/10.14689/ejer.2016.62.13>
- de Winter, J. C., Gosling, S. D., & Potter, J. (2016). Comparing the Pearson and Spearman correlation coefficients across distributions and sample sizes: A tutorial using simulations and empirical data. *Psychol Methods*, *21*(3), 273–290.
<https://doi.org/10.1037/met0000079>

- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*(2), 276–302.
<https://doi.org/10.1037/0033-2909.125.2.276>
- Dreer, B. (2023). On the outcomes of teacher wellbeing: A systematic review of research. *Frontiers in Psychology*, *14*, 1205179.
<https://doi.org/10.3389/fpsyg.2023.1205179>
- Duckworth, A. L., Quinn, P. D., & Seligman, M. E. (2009). Positive predictors of teacher effectiveness. *The Journal of Positive Psychology*, *4*(6), 540–547.
<https://doi.org/10.1080/17439760903157232>
- Efron, B. (1979). Computers and the theory of statistics: Thinking the unthinkable. *SIAM Review*, *21*(4), 460–480.
<https://doi.org/10.1137/1021092>
- Enders, C. K. (2010). *Applied missing data analysis*. Guilford Press.
- Epskamp, S. (2016). *Brief report on estimating regularized gaussian networks from continuous and ordinal data*. arXiv (Cornell University).
<https://doi.org/10.48550/arxiv.1606.05771>
- Epskamp, S. (2020). Psychometric network models from time-series and panel data. *Psychometrika*, *85*(1), 206–231.
<https://doi.org/10.1007/s11336-020-09697-3>
- Epskamp, S., Borsboom, D., & Fried, E. I. (2018). Estimating psychological networks and their accuracy: A tutorial paper. *Behavior Research Methods*, *50*(1), 195–212.
<https://doi.org/10.3758/s13428-017-0862-1>
- Epskamp, S., & Fried, E. I. (2018). A tutorial on regularized partial correlation networks. *Psychological Methods*, *23*(4), 617–634.
<https://doi.org/10.1037/met0000167>
- Epskamp, S., Rhemtulla, M., & Borsboom, D. (2017). Generalized network psychometrics: Combining network and latent variable models. *Psychometrika*, *82*(4), 904–927.
<https://doi.org/10.1007/s11336-017-9557-x>
- Fernández-Berrocal, P., Gutiérrez-Cobo, M. J., Rodríguez-Corrales, J., & Cabello, R. (2017). Teachers' affective well-being and teaching experience: The protective role of perceived emotional intelligence. *Frontiers in Psychology*, *8*, 2227.
<https://doi.org/10.3389/fpsyg.2017.02227>
- Gray, C., Wilcox, G., & Nordstokke, D. (2017). Teacher mental health, school climate, inclusive education and student learning: A review. *Canadian Psychology/Psychologie Canadienne*, *58*(3), 203–210.
<https://doi.org/10.1037/cap0000117>
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*(6), 495–513.
<https://doi.org/10.1016/j.jsp.2005.11.001>
- Hascher, T., & Waber, J. (2021). Teacher well-being: A systematic review of the research literature from the year 2000–2019. *Educational Research Review*, *34*, 100411.
<https://doi.org/10.1016/j.edurev.2021.100411>

- Heidari, M., HoseinPour, M. A., Ardebili, M., & Yoosefee, S. (2022). The association of the spiritual health and psychological well-being of teachers with their organizational commitment. *BMC Psychology*, *10*(1), 2–7.
<https://doi.org/10.1186/s40359-022-00768-x>
- Holten, A. L., Bollingtoft, A., Carneiro, I. G., & Borg, V. (2018). A within-country study of leadership perceptions and outcomes across native and immigrant employees: Questioning the universality of transformational leadership. *Journal of Management and Organization*, *24*(1), 145–162.
<https://doi.org/10.1017/jmo.2017.2>
- Huta, V., & Ryan, R. M. (2010). Pursuing pleasure or virtue: The differential and overlapping well-being benefits of hedonic and eudaimonic motives. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, *11*(6), 735–762.
<https://doi.org/10.1007/s10902-009-9171-4>
- Ilgan, A., Özü-Cengiz, O., Ata, A., & Akram, M. (2015). The relationship between teachers' psychological well-being and their quality of school work life. *The Journal of Happiness & Well-Being*, *3*(2), 159–181.
- Jellis, C., Williamson, J., & Suto, I. (2021). How well do we understand wellbeing? Teachers' experiences in an extraordinary educational era. *Research Matters: A Cambridge University Press & Assessment Publication*, *32*, 45–66.
<https://doi.org/10.17863/CAM.100416>
- Johnson, B., Down, B., Cornu, R. L., Peters, J., Sullivan, A., Pearce, J., & Hunter, J. (2014). Promoting early career teacher resilience: a framework for understanding and acting. *Teachers and Teaching*, *20*(5), 530–546.
<https://doi.org/10.1080/13540602.2014.937957>
- Jones, C., Hadley, F., Waniganayake, M., & Johnstone, M. (2019). Find your tribe! Early childhood educators defining and identifying key factors that support their workplace wellbeing. *Australasian Journal of Early Childhood*, *44*(4), 326–338.
<https://doi.org/10.1177/1836939119870906>
- Keyes, C. L. M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior*, *43*(2), 207–222.
<https://doi.org/10.2307/3090197>
- Kini, T., & Podolsky, A. (2016). *Does teaching experience increase teacher effectiveness? A review of the research*. Learning Policy Institute.
- Kollerová, L., Květon, P., Zábrodská, K., & Jánošová, P. (2023). Teacher exhaustion: The effects of disruptive student behaviors, victimization by workplace bullying, and social support from colleagues. *Social Psychology of Education*, *26*, 885–902.
<https://doi.org/10.1007/s11218-023-09779-x>
- Laine, S., Saaranen, T., Ryhänen, E., & Tossavainen, K. (2017). Occupational well-being and leadership in a school community. *Health Education*, *117*(1), 24–38.
<https://doi.org/10.1108/HE-02-2014-0021>
- Lambert, E. G., Barton-Bellessa, S. M., & Hogan, N. L. (2015). The consequences of emotional burnout among correctional staff. *Sage Open*, *5*(2).
<https://doi.org/10.1177/2158244015590444>

- Layek, D., & Koodamara, N. K. (2024). Motivation, work experience, and teacher performance: A comparative study. *Acta Psychologica*, *245*, 104217.
<https://doi.org/10.1016/j.actpsy.2024.104217>
- Leithwood, K., & Sun, J. (2012). The nature and effects of transformational school leadership: A meta-analytic review of unpublished research. *Educational Administration Quarterly*, *48*(3), 387–423.
<https://doi.org/10.1177/0013161X11436268>
- Louis, K. S., Murphy, J., & Smylie, M. (2016). Caring leadership in schools: Findings from exploratory analyses. *Educational Administration Quarterly*, *52*(2), 310–348.
<https://doi.org/10.1177/0013161X15627678>
- Maricuțoiu, L. P., Pap, Z., Ștefancu, E., Mladenovici, V., Valache, D. G., Popescu, B. D., Ilie, M., & Virgă, D. (2023). Is teachers' well-being associated with students' school experience? A meta-analysis of cross-sectional evidence. *Educational Psychology Review*, *35*(1).
<https://doi.org/10.1007/s10648-023-09721-9>
- Marsh, H. W., Huppert, F. A., Donald, J. N., Horwood, M. S., & Sahdra, B. K. (2020). *Well-being profile (WB-Pro, WB-Pro15, WB-Pro5)* [Database record]. APA PsycTests.
<https://doi.org/10.1037/t74547-000>
- McDowell, I. (2010). Measures of self-perceived well-being. *Journal of Psychosomatic Research*, *69*(1), 69–79.
<https://doi.org/10.1016/j.jpsychores.2009.07.002>
- Nielsen, K., & Daniels, K. (2012). Does shared and differentiated transformational leadership predict followers' working conditions and well-being? *Leadership Quarterly*, *23*(3), 383–397.
<https://doi.org/10.1016/j.leaqua.2011.09.001>
- OECD. (2020). *TALIS 2018 results (Volume II): Teachers and school leaders as valued professionals*. OECD Publishing.
https://www.oecd.org/en/publications/talis-2018-results-volume-ii_19cf08df-en.html
- Parker, P. D., Martin, A. J., Colmar, S., & Liem, G. A. (2012). Teachers' workplace well-being: Exploring a process model of goal orientation, coping behavior, engagement, and burnout. *Teaching and Teacher Education*, *28*(4), 503–513.
<https://doi.org/10.1016/j.tate.2012.01.001>
- Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, *94*(1), 186–196.
<https://doi.org/10.1037/0022-0663.94.1.186>
- Pressley, T. (2021). Factors contributing to teacher burnout during COVID-19. *Educational Researcher*, *50*(5), 325–327.
<https://doi.org/10.3102/0013189x211004138>
- Renshaw, T. L., Long, A. C. J., & Cook, C. R. (2015). Assessing teachers' positive psychological functioning at work: Development and validation of the teacher subjective well-being questionnaire. *School Psychology Quarterly*, *30*(2), 289–306.
<https://doi.org/10.1037/spq0000112>
- Revelle, W. (2025). *An introduction to the psych package*. Northwestern University.

- Royer, N., & Moreau, C. (2016). A survey of Canadian early childhood educators' psychological wellbeing at work. *Early Childhood Education Journal*, *44*(2), 135–146.
<https://doi.org/10.1007/s10643-015-0696-3>
- Ryff, C. D. (1989). *Psychological Well-Being Scale* [Database record]. APA PsycTests.
<https://doi.org/10.1037/t04262-000>
- Ryff, C. D., & Singer, B. (2000). Interpersonal flourishing: A positive health agenda for the new millennium. *Personality and Social Psychology Review*, *4*(1), 30–44.
https://doi.org/10.1207/S15327957PSPR0401_4
- Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. Free Press.
- Sergiovanni, T. J. (1994). *Building community in schools*. Jossey-Bass Inc.
- Shi, X., Fan, Qz., Zheng, X., Qiu, D., Sindakis, S., & Showkat, S. (2024). Optimal leadership styles for teacher satisfaction: A meta-analysis of the correlation between leadership styles and teacher job satisfaction. *Journal of Knowledge Economy*, *15*, 20459–20490.
<https://doi.org/10.1007/s13132-023-01697-9>
- Siraj-Blatchford, I., & Hallet, E. (2014). *Effective and caring leadership in the early years*. SAGE Publications Ltd.
<https://doi.org/10.4135/9781473957848>
- Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the Job Satisfaction Survey. *American Journal of Community Psychology*, *13*(6), 693–713.
<https://doi.org/10.1007/bf00929796>
- Taylor, D. L., & Tashakkori, A. (1995). Decision participation and school climate as predictors of job satisfaction and teachers' sense of efficacy. *Journal of Experimental Education*, *63*(3), 217–230.
<https://doi.org/10.1080/00220973.1995.9943810>
- Tibshirani, R. (1996). Regression shrinkage and selection via the lasso. *Journal of the Royal Statistical Society Series B (Statistical Methodology)*, *58*(1), 267–288.
<https://doi.org/10.1111/j.2517-6161.1996.tb02080.x>
- van der Vyver, C. P., Kok, T., & Conley, L.N. (2020). The relationship between teachers' professional wellbeing and principals' leadership behavior to improve teacher retention. *Perspectives in Education*. *38*(2), 86–102.
<http://dx.doi.org/10.18820/2519593X/pie.v38.i2.06>
- van der Vyver, C. P., van der Westhuizen, P., & Meyer, L.W. (2014a). The Caring School Leadership Questionnaire (CSLO). *South African Journal of Education*. *34*, 1–7.
<https://doi.org/10.15700/201409161048>
- van der Vyver, C. P., van der Westhuizen, P. C., & Meyer, L. W. (2014b). Caring school leadership: A South African study. *Educational Management Administration & Leadership*, *42*(1), 61–74.
<https://doi.org/10.1177/1741143213499257>
- Vazi, M. L., Ruiters, R. A., Van Den Borne, B., Martin, G., Dumont, K., & Reddy, P. S. (2013). The relationship between wellbeing indicators and teacher psychological stress in Eastern Cape public schools in South Africa. *SA Journal of Industrial Psychology*, *39*(1).
<https://doi.org/10.4102/sajip.v39i1.1042>

- Veronese, G., Pepe, A., Dagdukee, J., & Yaghi, S. (2018). Teaching in conflict settings: Dimensions of subjective wellbeing in Arab teachers living in Israel and Palestine. *International Journal of Educational Development*, *61*, 16–26.
<https://doi.org/10.1016/j.ijedudev.2017.11.009>
- Wallo, A., & Lundqvist, D. (2020). *Leadership for health and well-being – a systematic review*. REPORT 2020:5 Swedish Agency for Work Environment Expertise.
<https://acrobat.adobe.com/id/urn:aaid:sc:EU:7373ba14-1fb8-4bab-8849-02a48704e0bc>
- Waterman, A. S. (2007). Doing well: The relationship of identity status to three conceptions of well-being. *Identity: An International Journal of Theory and Research*, *7*(4), 289–307.
<https://doi.org/10.1080/15283480701600769>
- Watson, J. (2008). *Nursing: The philosophy and science of caring*. University Press of Colorado.
- Wessels, E., & Wood, L. (2019). Fostering teachers' experiences of well-being: A participatory action learning and action research approach. *South African Journal of Education*, *39*(1), 1–10.
<https://doi.org/10.15700/saje.v39n1a1619>.
- Wigford, A., & Higgins, A. (2019). Wellbeing in international schools: Teachers' perceptions. *Educational and Child Psychology*, *36*(4), 46–103.
<https://doi.org/10.53841/bpsecp.2019.36.4.46>
- Williams, R. L., McDowell, J. B., & Kautz, D. D. (2011). A caring leadership model for nursing's future. *International Journal for Human Caring*, *15*(1), 31–35.
<https://doi.org/10.20467/1091-5710.15.1.31>
- Yang, C., Chan, M. K., Nickerson, A. B., Jenkins, L., Xie, J. S., & Fredrick, S. S. (2022). Teacher victimization and teachers' subjective well-being: Does school climate matter? *Aggressive Behavior*, *48*(4), 379–392.
<https://doi.org/10.1002/ab.22030>
- Zhou, S., Slep, G. R., & Vella-Brodrick, D. A. (2024). Factors associated with teacher wellbeing: A meta-analysis. *Educational Psychology Review*, *36*(2).
<https://doi.org/10.1007/s10648-024-09886-x>

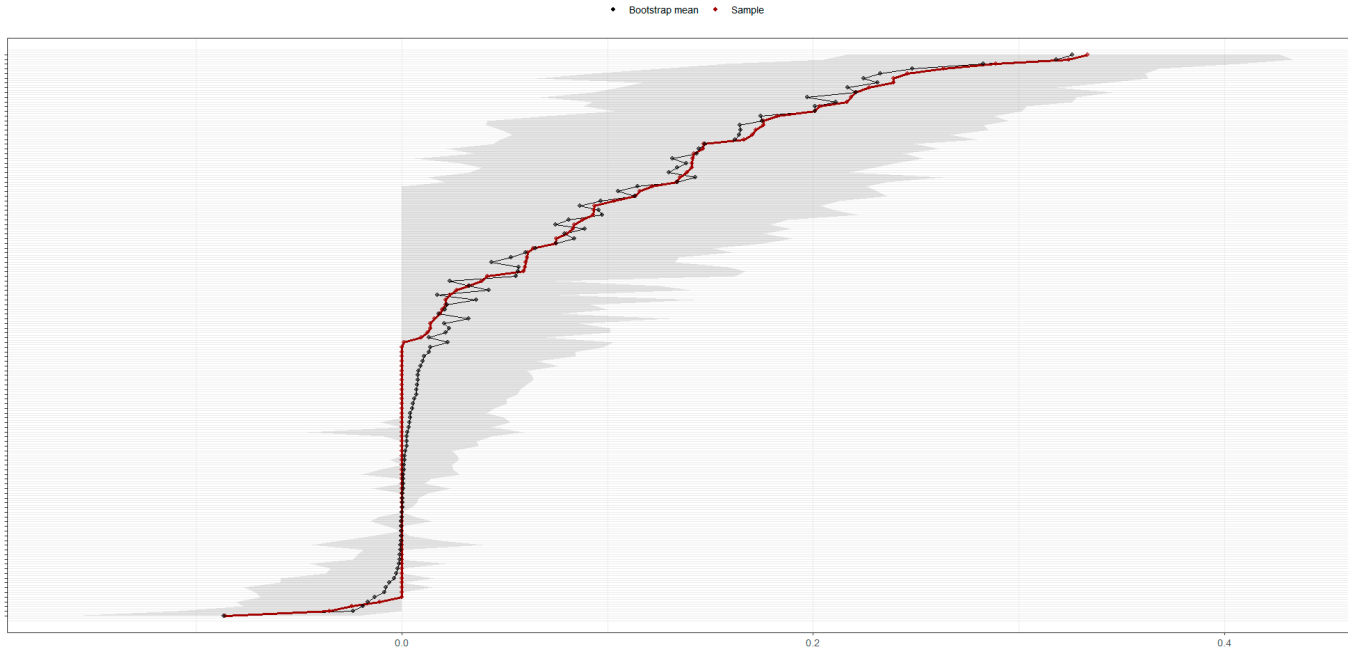


Figure A1
Network accuracy for less experienced teachers

Note. Bootstrapped 95% confidence intervals of the edge weights in the network for teachers with less teaching experience. The red line represents the observed edge weights; the gray areas indicate the 95% confidence intervals. Stronger edges exhibit greater stability; weaker edges show higher variability.

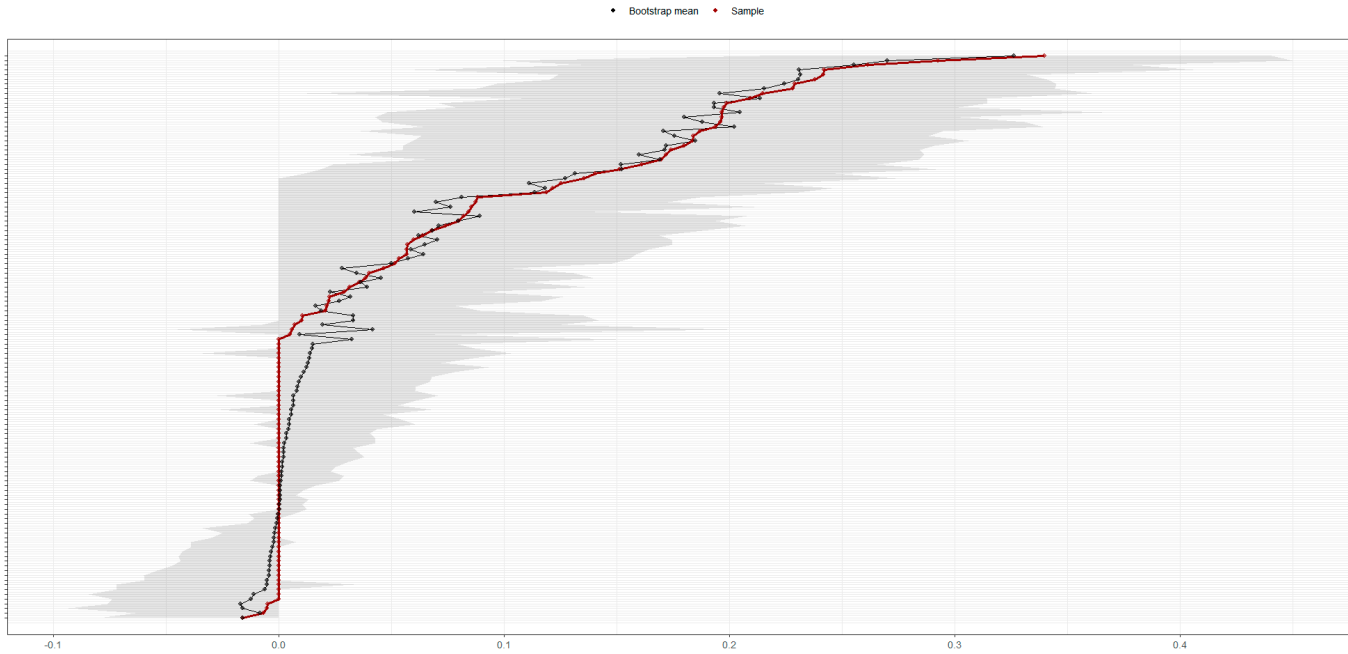


Figure A2

Network stability for less experienced teachers

Note. This graph shows the bootstrap subsetting to estimate the stability of the three centrality measures in the network for teachers with less teaching experience. The lines represent the average correlations between the centrality indices from the full dataset and those estimated from the subsampled networks.

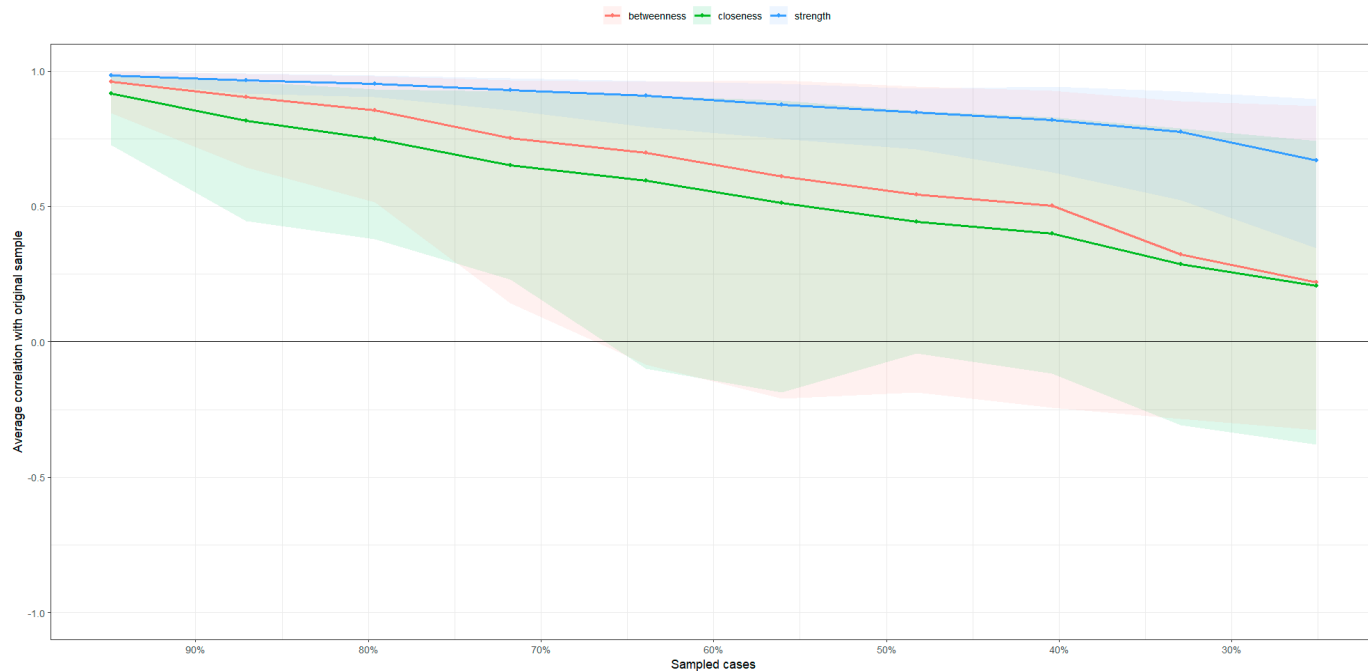


Figure A3

Network accuracy for more experienced teachers

Note. Bootstrapped 95% confidence intervals of edge weights in the network for teachers with longer teaching experience. The red line represents the observed edge weights; the gray areas indicate the 95% confidence intervals. Similar to the less experienced group, stronger edges show greater stability; weaker edges show greater variability.

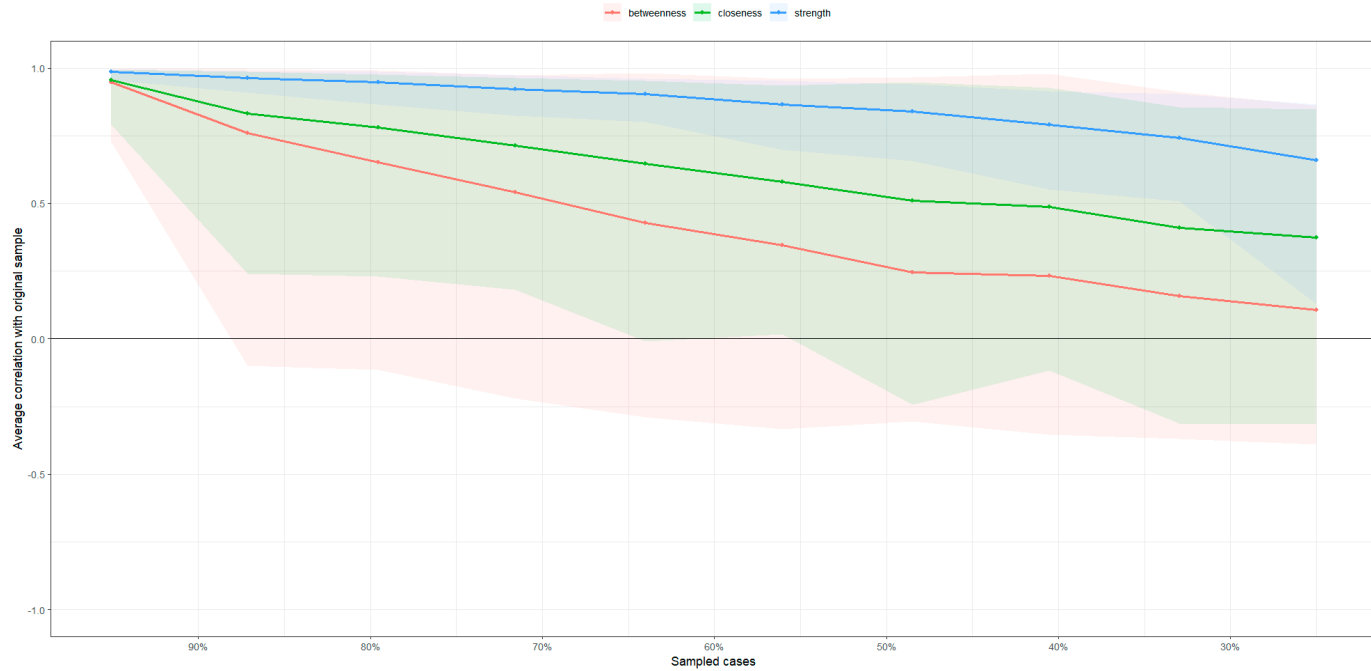


Figure A4
Network stability for more experienced teachers

Note. This graph shows the bootstrap subsetting to estimate the stability of the three centrality measures in the network for teachers with less teaching experience. The lines represent the average correlations between the centrality indices from the full dataset and those estimated from the subsampled networks.