

Original Research

On the Relationship Between Teacher Stress, Student Age, and Social-Emotional Competence

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Abstract

Stress in teaching leads to many teachers suffering from burnout or leaving the profession. Therefore, it is important to identify specific correlates of teacher stress. The role of student age and social-emotional competence in teacher stress emergence is still unclear. To further clarify this relationship, 284 teachers were surveyed using a questionnaire that measured teacher stress, student year grade, and student social-emotional competence. Results show a strong negative relationship between grade level and teacher stress and a positive relationship between variance in students' social-emotional competence and teacher stress. Social-emotional competence did not moderate between student year grades and teacher stress. Directions for further research and practical implications for teacher education are discussed.

Keywords

Student year grade; student age; social-emotional competence; teacher stress



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1. Introduction

Globally, occupational stress in teaching and its influence on the number of teachers leaving the profession, is viewed with growing concern [1-5]. In the US, around 40% of teachers leave their profession in the first five years of teaching [6-8]. With the same percentage, Chinese teachers at least consider leaving the profession [9]. Worldwide, teachers report high levels of stress (e.g., [10-12]). Compared to other occupational groups, teachers are highly affected by job stress [13, 14], which in turn has a negative impact on the quality of instruction. Stressed teachers lack enthusiasm [15], which reduces the amount of student learning [16] and interest [17]. Moreover, they do not have enough resources to be motivating [18, 19], again impacting the way the students learn [20]

Teacher stress can be defined as “a response of negative affect (such as anger or depression) by a teacher usually accompanied by potentially pathogenic physiological and biochemical changes [...] resulting from aspects of the teacher's job” ([21] p.2). If persisting, and the person is unable to cope with those specific stressors, stress can lead to the symptoms of burnout [22]. Although the emergence of burnout is related to dispositional factors [23, 24], occupational and contextual factors should not be neglected, particularly as they are a starting point for intervention. This study aims to examine student age as a factor, which could be related to teacher stress. Since previous studies have found or hypothesized different moderating factors concerning the relationship between the age group of the students and teacher stress, one of those factors, namely students' social-emotional competence, is included in the analysis.

1.1 Stressors of Teaching

Previous research identifies several occupational correlates of teacher stress, broadly categorized as macro-, meso- and micro-level factors. Macro-level stressors emerge out of wider cultural and (inter-)national changes, meso-level stressors occur in larger social contexts such as schools, and micro-level stressors essentially refer to small social contexts such as classrooms [25, 26].

Macro-level stressors for teachers are often interwoven with certain political decisions or movements. Woods and Carlyle [26], for example, identify specific changes in the modern educational system, which they said were “driven by the values of the market, competition, managerialism, heavy-duty accountability, instrumentalism, technical rationality” (p. 26). Empirically, these tendencies, evident in, for example, test-based accountability policies, correlate positively with teacher stress [27-29].

Meso-level stressors primarily emerge from processes regarding one school as a whole. These include such stressors as a lack of internal support [30], poor leadership, weak communication systems, autocratic decision-making, bullying management styles [26], poor collegial relationships, school culture [31-34], and poor cooperation with parents [35], university supervisors or field placement offices [36].

Certain stressors also result from an interplay of macro- and meso-level events. These are, for example, class size [37], workload [10, 34, 36, 38, 39], lack of opportunities for teacher development, and poor working conditions [40, 41].

The major micro-level stressors identified by previous educational research are disruptive-disrespectful student behavior [34, 36, 39, 42-46] and students' lack of motivation or effort [35, 40, 43, 44, 47, 48], and poor teacher-student-relationships [34, 35, 49-52].

1.2 The Role of Student Age as a Predictor of Teacher Stress

Even though student age is not explicitly mentioned as a specific stressor of teaching in previous studies, it seems reasonable that micro-level stressors like disruptive or disrespectful student behavior or students' lack of motivation or effort may somehow be associated with their age. Anyway, the extent to which these teaching stressors are becoming more or less intense with increasing student age should be clarified. In turn, student age should be able to statistically predict teacher stress. Yet, although previous studies showed significant results for the association between student age and teacher stress, the results remain inconsistent. For example, Arvidsson et al. [53] investigated a cohort of 310 Swedish teachers of school years 4 to 9 concerning their burnout level, which can be a consequence of chronic stress [54], and the year grades of their students. They found that teachers of the upper grades experienced more burnout symptoms than those of lower grades.

This result was also found by Forlin [55], Saloviita & Pakarinen [56], Schwab & Iwanicki [57] and van Horn et al. [58]. Some studies specifically pointed out, that the burnout facet of depersonalization was higher for teachers teaching older students [55, 57]. First, the authors justified the increased stress levels with the fact that teachers in secondary education often have to deal with more students compared to those in primary education. Second, they believe that room and class composition changes, which occur more often in secondary education, can lead to a more frequent occurrence of disciplinary events. Third, it is assumed that arguments with teenagers may be generally more demanding than with younger students [53]. Fourth, other studies show that students' motivation significantly decreases throughout school life [59-61], especially in mathematics [62], which, in turn, could lead to increased stress [35, 40, 43, 44, 47, 48]. However, some of the above findings may be related to specific national (e.g., Swedish, Finnish, or Australian) educational contexts or strategies and therefore cannot be generalized. These include the increase in class size or the opening of the class community in secondary education.

In contrast, some studies, show that teachers of lower grades experience more stress or burnout. For example, Antoniou et al. [63] examined the stress and burnout levels of 338 teachers in Greece, while associating it with the grade level taught. As a result, primary education teachers showed more stress and burnout symptoms than teachers, occupied in secondary education. In particular, the burnout facet of emotional exhaustion was more pronounced in this group. Similar results were shown by Evers & Tomic [64], Malik et al. [65] and von der Embse et al. [29]. There could be several possible explanations for these results. Over the years, children and adolescents internalize and feel more self-conscious, and moral emotions such as guilt. These emotions function as negative markers to predict the negative consequences of one's potentially aggressive behaviors [66].

Moreover, they show a dramatic increase in verbal skills [67] and coping strategies, especially emotion-focused coping abilities [68, 69]. Additionally, children and adolescents show more empathy and sympathy towards others while advancing their social-emotional development, especially if they have been educated in emotionally nurturing environments. These social-emotional factors may thus reduce the frequency and intensity of students' aggression [66] and classroom management demands [70], which would, in turn, reduce teacher stress [34, 36, 39, 42-46]. However, studies have shown, that the positive effect of student age on teacher stress can easily be reduced or erased if the social-emotional competencies of one or more individuals in the class negatively deviate from the average level of their specific age [56].

1.3 The Present Study

The present study examines whether student age is associated with teacher stress. As mentioned above, there are convincing arguments and empirical evidence for both a positive and a negative correlation between teacher stress and student age. Thus, we have no directional expectation, only the goal of providing more detailed information on this relationship. Moreover, this study shall explore to what extent students' social-emotional development moderates the relationship between student age and teacher stress. When a negative relationship between these two variables is found, social-emotional competence is assumed to negatively influence this relationship. Thus, the suggested association between student age and teacher stress should be less negative when the students' social-emotional competence is high. If student social-emotional competence is low, the negative correlation between student age and teacher stress should become stronger.

2. Methods

2.1 Participants and Procedure

A total of 52 German school administrators were asked whether a digital inquiry of their teaching staff would be possible. Of these, 44 school principals agreed to the survey and forwarded it to their staff. Teachers had to complete the survey within two weeks. As a result, 284 teachers completed the survey.

78.5% ($N = 223$) of the teachers were female, 20.1% ($N = 57$) were male, and 1.4% ($N = 4$) of the teacher did not give a response regarding their gender. A great number of the teachers were in secondary education ($N = 128$, 45.1%), which could be divided into a high track ($N = 36$, 12.7%), low track ($N = 37$, 13%), and mixed track ($N = 55$, 19.4%). Moreover, 110 (38.7%) teachers from primary and 27 (9.5%) teachers from tertiary education participated. The remaining teachers ($N = 15$, 5.3%) worked in other kinds of schools (e.g., special needs schools). The teachers had an average work experience of 13.5 years ($SD = 9.3$ years). Data on the age of the teachers was not collected because in Germany this is rather sensible data and we assumed that most of the age effects could be explained by the variable of work experience. For better orientation, however, it is noted that the average age of teachers in Germany when they enter the profession is 30.8 years [71]. So that the meaningful work experience can be summed up with this starting age to estimate the age of the participants ($M \approx 44.3$ years).

The teachers were asked to complete an online questionnaire administered via unipark (<https://www.unipark.com/>) and required 12 minutes on average for completion.

2.2 Instruments

2.2.1 Teacher Stress

To measure teacher stress, the German short version of the Perceived Stress Questionnaire (PSQ-20) was used [72]. This is based on the English version developed by Levenstein & colleagues [73] and contains 20 items, which can be subsumed into the four subscales of worries (e.g., "I was afraid of the future."), tension (e.g., "I had trouble relaxing."), joy (e.g., "I was full of energy.") and demands (e.g., "I felt that too many requests were being made to me."). Looking retrospectively at the last four weeks, the teachers were required to evaluate the items on a 4-point Likert scale (1 =

rarely, 2 = sometimes, 3 = often, 4 = usually). All positively formulated items were reversed to calculate the person-specific overall stress score. Then, the mean of all items was determined.

In the validation study of Fliege et al. [74], the questionnaire was validated on a sample of 650 participants. Concerning the subscales, internal consistency values of Cronbach's Alpha between $\alpha = 0.80$ ("demands") and $\alpha = 0.86$ ("worries") were reached in the validation study. Overall, the questionnaire showed an internal consistency of $\alpha = 0.85$.

2.2.2 Student Age and Teacher-Perceived Social-Emotional Competence

We gave the following instruction to measure students' characteristics: "The following statements refer to a single class. Please imagine the class in which you teach the most." Next, we asked for the year grade of this class as an indicator of the student's average age. Student grade can be used as equivalent to student age because these variables correlate almost perfectly (e.g., $r = 0.89$, $p < 0.001$ in [75]). In the German Education system, students start with year grade 1 when they are six years old, whereas they are around 18 when they enter the 13th year grade.

To measure the student's social-emotional competence, we used two items, which should give information about (1) the level and (2) the variance of their social-emotional skills. The first item included the statement "the average development of social-emotional competencies of the students in my class about their grade and their type of school is as follows" and the response options of "substantially delayed" (1), "slightly delayed" (2), "adequate" (3), "slightly ahead" (4), and "substantially ahead" (5). The second item contended the statement „the social-emotional competencies of the students in my class are" and the response options "very different" (1), "rather different" (2), "rather similar" (3), and "very similar" (4).

2.3 Data Analysis

Descriptive statistics and correlations were calculated with IBM SPSS Statistics 28.0.1.1. We also used SPSS to examine regression and moderation effects with the add-on PROCESS v. 3.5.

3. Results

3.1 Descriptive Statistics and Correlations

The descriptive statistics in Table 1 reveal that students' average year grade was 6.03 (corresponding age ≈ 12) with a minimum of 1 (age ≈ 6) and a maximum of 13 (age ≈ 18). Moreover, the table shows that students' social-emotional competence was evaluated as slightly delayed (2 = "slightly delayed"). However, within the learning groups, social-emotional competence was evaluated as similar (3 = "rather similar"). Concerning the stress components teachers described experiencing stress, especially in response to external factors (high demands). Internal factors like worries or tensions were only felt sometimes (2 = "sometimes"). Nevertheless, the overall stress score (also including the inverted joy values) was medium to rather low. However, all the stress variables showed great variance across teachers.

Table 1 Descriptive statistics.

Variable	<i>M</i>	<i>SD</i>	Min	Max
Student variables				
1. Grade	6.03	3.44	1.00	13.00
2. Level of social-emotional competence	1.94	0.79	1.00	4.00
3. Variance of social-emotional competence	2.92	0.75	1.00	5.00
Teacher variables				
4. Worries	1.38	0.92	0.00	4.00
5. Tension	2.14	0.92	0.00	4.00
6. Joy	2.09	0.84	0.27	4.00
7. Demands	2.40	0.91	0.00	4.00
8. Overall stress	1.96	0.77	0.13	3.67

Table 2 shows the correlations between all examined variables. Associations between the four sub-facets of stress were in line with our expectations. The students’ social-emotional competence levels correlated positively with its variance and their age. Moreover, persons teaching in higher grades experienced less stress, whereas teachers from lower grades experienced greater stress. Figure 1 shows this correlation in more detail concerning the student year grades.

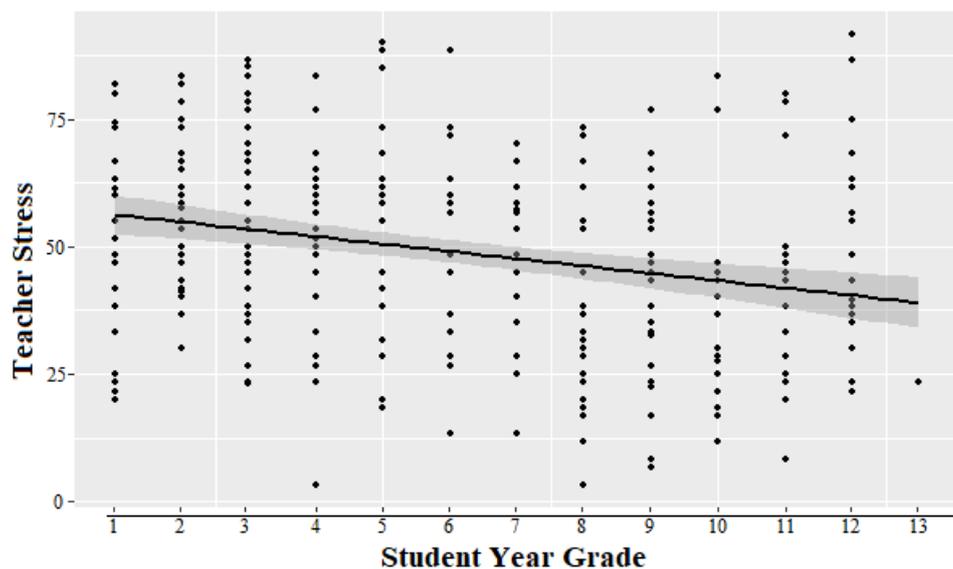


Figure 1 Relationship between teacher stress and students’ year grades (Pearson’s $r = -0.25$).

There were also small negative correlations between social-emotional competence levels and worries as well as demands. Additionally, we found small negative correlations between the variance of social-emotional competence and worries, tension, and demands.

Table 2 Correlations Between Students’ Year Grades, Social-Emotional Competence, and Teacher Stress.

	2	3	4	5	6	7	8 ^a
Student variables							
1. Grade	0.31***	0.09	-0.26***	-0.26***	-0.17**	-0.18**	-0.25***
2. Level of social-emotional competence		0.51***	-0.12*	-0.11	0.05	-0.12*	-0.12
3. Variance of social-emotional competence			-0.18**	-0.15**	0.09	-0.20***	-0.18**
Teacher variables							
4. Worries				0.73***	-0.66***	0.66***	0.89***
5. Tension					-0.62***	0.75***	0.90***
6. Joy						-0.51***	-0.80***
7. Demands							0.85***

^a Overall stress.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

3.2 Regression and Moderation

The following results show how students' social-emotional competence moderated the relationship between their age and teacher stress. We conducted three models, which used (1) the level of social-emotional competence, (2) the variance of social-emotional competence, and (3) the product of level and variance as moderators between students' age and teacher stress. Table 3 shows the results of these three models. Model 1 explained 6% of the data ($R^2 = 0.06$). Students' age (year grade) was significantly related to teacher stress but the level of social-emotional competence and the interaction of both variables were not.

Table 3 Regression of Teacher Stress Using Students' Level of Social-emotional Competence, Students' Variance of Social-Emotional Competence, and Their Year Grade as Predictors.

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI [LL, UL]
Model 1					
(intercept)	48.82	1.17	41.45	> 0.001	[46.50, 51.14]
Grade	-1.40	0.35	-3.99	> 0.001	[-2.09, -0.71]
Level of sec ^a	-1.03	1.49	-0.68	0.49	[-3.98, 1.91]
Grade x level of sec	0.26	0.42	0.62	0.53	[-0.57, 1.09]
Model 2					
(intercept)	49.13	1.11	44.24	> 0.001	[46.94, 51.31]
Grade	-1.31	0.32	-4.05	> 0.001	[-1.95, -0.67]
Variance of sec	-4.03	1.48	-2.72	> 0.01	[-6.95, -1.11]
Grade x variance of sec	-0.35	0.42	-0.83	0.40	[-1.19, 0.48]
Model 3					

(intercept)	49.13	1.15	42.49	> 0.001	[46.86, 51.41]
Grade	-1.29	0.34	-3.79	> 0.001	[-1.96, -0.62]
SEC product ^b	-0.43	0.33	-1.29	0.19	[-1.10, 0.22]
Grade x sec product	-0.02	0.09	-0.30	0.76	[-0.22, 0.16]

^a sec stands for social-emotional competence.

^b This value was generated by multiplying the level of student social-emotional competence with the variance of social-emotional competence.

The second model explained 9% of the data ($R^2 = 0.09$). Again, the year grade of the students was significantly related to teacher stress. Additionally, student variance of social-emotional competence was associated with the experience of stress, whereas the interaction of both variables was not. The third model explained 7% of the data ($R^2 = 0.07$). Like in the models above, student year grade was significantly associated with teacher stress. However, the product of student variance and levels of social-emotional competence, as well as the interaction term, were not significantly related to teacher stress. All three models were also applied to the sub-facets of teacher stress. The results showed no significant interactions. In every regression, student year grade was highly significantly related to the sub-facets of teacher stress. Moreover, the variance of student social-emotional competence was associated with the teachers' worries ($t = -2.66, p = 0.008$), tension ($t = -2.23, p = 0.02$), and demands ($t = -3.08, p = 0.002$). The *b*- and *t*-values were negative because of the negative polarity of student social-emotional competence (see method section).

4. Discussion

The present study aimed to examine, whether student age is associated with teacher stress. Previous empirical results and theoretical considerations led to two different rationales that argued for positive and negative relationships between those variables. In our study, we found a clear negative relationship between student year grade as an indicator of student age and teacher stress level as well as on all its sub-facets: worries, tension, demands, and joy (positive relationship).

This finding is in line with earlier studies conducted by Antoniou et al. [63], Evers & Tomic [64], Malik et al. [65], and von der Embse et al. [29]. It strengthens the assumption that younger students, because they have less differentiated moral emotions [66] and verbal skills [67] and have learned fewer emotion-focused coping strategies [68, 69], are more likely to engage in disruptive or aggressive behaviors [66]. This may increase classroom management demands [70] and thus lead to more frequent and intense teacher stress [34, 36, 39, 42-46].

Due to the crucial role of social-emotional development [56], we assumed that social-emotional development might have a moderating effect on the relationship between student age and teacher stress. However, contrary to our assumption, we could not find the expected moderation effect. Instead, we were able to find a clear direct association between the variance of student social-emotional development within the class and teacher stress (as well as its negative sub-facets).

However, a significant correlation between the variance of social-emotional competencies and student year grade could not be found. In other words, these results hint at teachers experiencing less stress in the classroom with increased age and reduced social-emotional variance. This means that elementary school teachers with students who exhibit high social-emotional variance experience the most stress.

4.1 Limitations

This study has several methodological limitations. First, for anonymity reasons, we have not been able to assign which teachers came from which school; thus, we can neither exclude nor assess the effect of the school level [76].

Second, all measurement methods were self-assessments. The usual measurement errors, such as acquiescence [77] or social desirability [78], must be considered when interpreting the results. Some teachers might have rated themselves less stressed because they pretend to be resilient. At the same time, studies are arguing for the validity of teacher self-assessments. For example, Rathmann and colleagues [79] found a strong relationship between teachers' self-reported classroom climate and life satisfaction. Third, for reasons of time economy, student social-emotional competence was only measured using two items. It is questionable whether a construct containing many different facets, such as expressing, receiving, and managing emotions [80] or forming and maintaining social interactions and relationships [81], can be represented in such a simple way. Although there are findings that show that single items can be eligible to substitute multiple-item scales [82], a subdivision into sub-facets would have been interesting here to explore the correlations in more detail. In addition, the measurement of a strongly interpersonal construct such as social-emotional competence remained limited to the teachers' perspective since the viewpoints of the students and external observers were not assessed.

4.2 Implications and Further Directions

Beyond its limitations, this study might allow us to derive directions and implications for further research and practice. First, we should address why teachers rated student social-emotional competence as "slightly delayed." There is evidence that this rating indicates an increased need for student social-emotional learning [83] and not a distorted perception due to increased teacher stress. This can be concluded from the fact that teachers could cope with low levels of social-emotional competence, but had difficulty when social-emotional competence was highly variable. This opens the question of whether teachers may have been exposed to increased stress levels due to the variety of programs addressing inclusive schooling [84], teachers may have been exposed to increased stress levels. Here, supplemental staff could be a strategy to decrease stress levels in demanding environments due to the increase in social resources [85]. This staff could, for example, consist of school counselors, school psychologists, and social workers who support schools and teachers in diagnosing and promoting student social-emotional competence by developing and applying specific screening procedures and interventions [86]. At the same time, the findings highlight the role of teachers' social-emotional competence [87] and knowledge [88]. This competence, which mainly consists of teacher emotion regulation and relationship management should be measured and promoted adequately in teacher education [89].

The need to build up such competence might, at the same time, be related to the particular type of school a teacher works at, as some school types may hold more variance in terms of their students' social-emotional competence. Accordingly, teachers would need to be better prepared against stress (through learning social-emotional knowledge and skills), especially in those school types, where students are young and socially-emotionally heterogeneous. However, since this study is correlational, we cannot rule out the possibility of a self-selection effect on the teachers' side. Perhaps more stress-prone young adults are more likely to choose a teaching profession in which

younger and perhaps more socially and emotionally unstable students are educated. For example, Denzler & Wolter [90] found that teachers who teach younger students have a higher need for social connection compared to others. This could hint at a dependency on social harmony and make younger students' teachers more vulnerable to (social) stress. Following this rationale, these teachers should be specially trained regarding their coping with stress.

Yet, the results discussed here are only based on self-assessments and should, therefore, optimally be complemented by other methods, such as psychophysiological measurement methods for stress [48] or observational procedures for social-emotional competence [91], in order to obtain a corresponding broader picture of the situation and to further emphasize possible practical implications. If the results presented could be strengthened by additional data, there would be an increased need to focus on dealing with social-emotional variability in early grades in the context of teacher education. Appropriate knowledge and classroom management skills would contribute to this. In addition to knowledge and skills related to social-emotional competence, these teachers should have the opportunity to learn appropriate relaxation methods for their everyday work [92]. Finally, the role of student age and social-emotional competence in the development of teacher stress needs further research. In particular, it would be useful to conduct experimental studies to draw more precise conclusions about causal relationships. Moreover, more insights are needed concerning whether some schools have more variance in social-emotional competence than others and how this distribution is related to inequities in student socioeconomic status or family involvement.

Author Contributions

The author did all the research work of this study.

Competing Interests

The author has declared that no competing interests exist.

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