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## **The challenge of change? The development of all-day schools and its implications for teacher stress**

### **Abstract**

*The present contribution deals with teacher stress in the context of organizational change: the development of all-day schools. This development is one of the most important reforms in the German school system in recent years and is closely linked to the overall aim to better foster students. In the context of change from a half-day to an all-day school, teachers need to adapt their work according to the new requirements and tasks. Based on a theoretical model of stress and strain in schools, we examine teachers' perceived stress and take the all-day school as predictor into account. The results of a structural equation model show that mainly personal factors like self-efficacy and cooperation show significant paths to teachers' perceived stress. Beyond, facets of working hours are significant predictors.*

### **Keywords**

*Teacher stress; All-day school; Organizational change*

## **Herausforderungen des Wandels? Die Entwicklung von Ganztagsschulen und ihre Folgen für die Lehrbelastung**

### **Zusammenfassung**

*Der Beitrag beschäftigt sich mit der Belastung von Lehrkräften im Kontext des Ganztagsschulausbaus. Der Ganztagsschulausbau ist eine der wichtigsten Reformen des deutschen Schulsystems in den letzten Jahren und ist eng mit dem Ziel verbunden, Schülerinnen und Schüler besser und umfassender zu för-*

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*dern. Für Lehrerinnen und Lehrer bedeutet der Wechsel von einer Halbtags- zu einer Ganztagschule, dass sie ihre Arbeit den Anforderungen dieser neuen Schulform anpassen müssen. Neue und andere Aufgaben können mögliche Folgen sein. Auf der Basis eines theoretischen Belastungs-Beanspruchungs-Modells betrachten wir die wahrgenommene Belastung der Lehrkräfte und beziehen dabei die Schulform der Ganztagschule als Prädiktor mit in die Analysen ein. Die Ergebnisse des Strukturgleichungsmodells zeigen, dass v.a. persönliche Faktoren, wie die Selbstwirksamkeitserwartung der Lehrkräfte sowie Kooperation signifikante Pfade zur wahrgenommenen Belastung aufweisen. Ebenso spielen Facetten der Arbeitszeit eine Rolle.*

## **Schlagworte**

*Lehrerbelastung und -beanspruchung; Ganztagschule; Organisationaler Wandel*

## **1. Introduction**

For more than a decade many authors, national and international alike, have noted that “schools and school districts continue to face increased opportunities and challenges associated with engaging with multiple organizational change efforts” (Flaspohler, 2007, p. 119). For teachers, these change processes often lead to increasing work assignments and to multiple tasks and functions to be fulfilled (Hargreaves, 2003). In the German school system as well, the pressure on schools and teachers to participate in change processes is greater than before, particularly in the area of the reforms and initiatives pertaining to international school studies. As a consequence, schools and teachers are increasingly challenged to be ready for innovations in their schools and classes (Darling-Hammond, 2005; Bonsen & Berkemeyer, 2011).

In the present article, we will look at a large organizational change process in the German school system: the change from half-day to all-day schools, which is one of the most important reforms in recent years. Starting in 2002, a huge number of all-day schools has been developed. In 2011, more than 50 % of all German schools were all-day schools (KMK, 2013), which is a vast augmentation since 2002 (16 %). A national capital expenditure program (IZBB<sup>1</sup>) was established to which schools could apply to receive help in changing from half-day to all-day programs. Most schools needed the financial support for capital improvements like building canteens or additional rooms for afternoon extracurricular activities. We find different lines of reasoning which reflect the rationale behind all-day schools (Holtappels, 2006; Stecher, Krüger, & Rauschenbach, 2011). Apart from the only mediocre German results in international school studies and the consequential aim of reducing risk groups, there are family and labor market oriented reasons that

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1 Investitionsprogramm Zukunft Bildung und Betreuung [Expenditure Program ‘Future Education and Care’]

authors refer to. Modern societies are making unprecedented demands on new graduates. It is not only specialized knowledge that students need to have; extra-curricular and social competencies have become more and more important in the job market. Schools need to anticipate such requirements. Furthermore, the role of the family in the process of socialization has changed and, correspondingly, the schools are increasingly becoming the place where young children and teenagers grow up and are socialized. Finally, schools are important components of the socio-cultural infrastructure that need to be preserved. As the rate of both parents working is continually increasing, all-day schools offer a chance to better coordinate job and family life (Ottweiler, 2005; Rekus, 2005; Holtappels, 2006).

Compared to other countries, in Germany the change from half to all-day schools is much more at the center of the political and societal focus. The traditional half-day oriented German school system has been challenged by the developments of modern society. The organizational change from half-day to all-day schools impacts all persons involved, from the student and teacher level up to the administrative and political level. The aim of the present study is to examine what implications this organizational change process has for teachers' stress. As research shows, organizational change is a major stressor because "it involves changes to role structures and work patterns, increases workloads and creates a sense of job insecurity" (Lawrence & Callan, 2011, p. 567). Research on teacher stress shows that various factors on the individual and the school level can lead to stress (e.g., Klusmann, Kunter, Trautwein, Lüdtke, & Baumert, 2008; Klusmann, 2011). The current research aims at continuing this research by examining teacher stress in the context of organizational change and by comparing teachers in all-day schools with teachers in half-day schools. In the following sections, we will describe the theoretical model we refer to and introduce the key variables that we examined.

## **2. The challenge of change: What does it mean for teachers?**

Regarding the development of all-day schools, expectations are high (Rollett, Holtappels, & Bergmann, 2008). To meet these expectations, schools have to undertake fundamental changes and teachers are potentially confronted with unfamiliar tasks and functions. It can be assumed that all-day arrangements have diverse implications on teachers' workloads, work organization and work tasks. To name a few examples: New and more variable learning arrangements and remedial offers for certain students are envisioned. Forms of social learning and a more developed learning culture are aspired to. Extracurricular activities need to be planned and organized according to students' needs and interests (Holtappels, 2006). Along with this, additional staff has to be taken on, particularly for extracurricular activities. Teachers need to adapt their work to the new circumstances and to redefine their teaching. Maybe, there are new tasks for teachers, e.g., cooperating with the

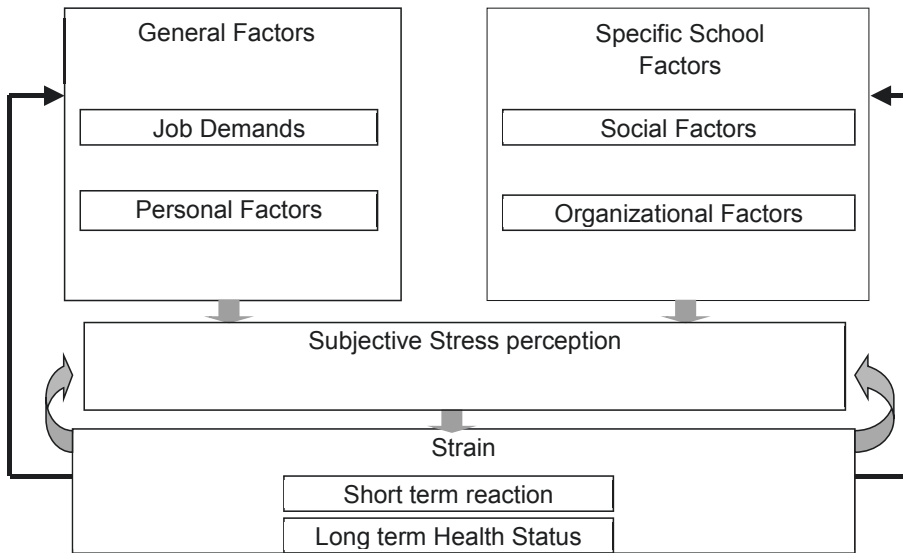
additional staff in organizing extracurricular activities or extended student counselling (Speck, Olk, Böhm-Kasper, Stolz, & Wiezorek, 2011). Also teachers have to work longer hours on the school premises, owing to classes after lunch, and they might have more time to bridge between classes, which again might enable them to spend more time performing non-teaching work at the school. In summary, there are a number of expectations and changes teachers have to deal with.

## **2.1 Theoretical model of stress and strain**

Using a theoretical model of stress and strain in schools as a point of reference (Böhm-Kasper, 2004), we will discuss a variety of variables potentially influencing teachers' perceived stress. This theoretical model is based on stress and strain models of occupational science and is also influenced by transactional models of stress and coping (Lazarus & Folkman, 1984) and can be described as follows (see Figure 1). The model consists of three main parts: (1) The first part constitutes the influencing variables which can be divided into general factors (job demands, e.g., school type, and personal factors like self-efficacy) and specific school factors (social aspects, e.g., cooperation, and organizational factors). It is important to note that these variables can function as job resources on the one hand or stressors on the other hand. (2) Following the transactional model of stress (Lazarus & Folkman, 1984), the present model assumes individual processes of evaluating these factors resulting in a subjectively perceived stress (Böhm-Kasper, 2004). Another distinctive feature of this model is the differentiation of stress and strain. Stress comprises all influencing factors and a person's reaction to these factors in terms of a perceived 'task' or 'burden' or 'challenge' depending on individual perceptions and environmental influences. (3) However, strain is described as a consequence of the persons' perceived stress. There are certain reactions to perceived stress that follow in direct relationship to it; some can lead to long term consequences such as burnout syndrome (Vandenberghe & Hubermann, 1999).

In previous studies, this theoretical model of stress and strain in schools has been already confirmed with regard to its supposed skeletal structure (Böhm-Kasper, 2004; Fussangel, Dizinger, Böhm-Kasper, & Gräsel, 2010). In the following sections, we will introduce key variables that are assumed to influence teachers' perceived stress.

Figure 1: Theoretical model of stress and strain in schools (Böhm-Kasper, 2004)



## 2.2 Key variables

In this study, we examine the influence of a number of variables on teacher stress and strain. The dependent variables of teachers' perceived stress were assessed using three indicators: perceived stress in the classroom concerning instructional processes, stress perceived with regard to the preparation of lessons and perceived stress due to general school conditions. In accordance with the model, we assume the perceived stress to influence teacher strain, which is represented by emotional exhaustion as a central negative consequence and core of burnout syndrome (Lee & Ashforth, 1990). The long term effects of stress are represented by psychosomatic complaints.

On the basis of previous research, we assume that there are both organizational and personal factors to consider when regarding teacher stress (Krause, Dorsemagen, & Alexander, 2011). In the following, we will describe our independent variables that we assume to influence teacher stress.

### 2.2.1 All-day schools

The challenges of recently developed all-day schools are represented by the variable of the same name. We are interested in its influence on teacher stress compared with older all-day schools which have already existed for several years and half-day schools.

### **2.2.2 Teachers' readiness to innovate**

Teachers' readiness to innovate can either be seen from the organizational or the individual perspective. Based on the research of Holtappels (1997), Bergmann and Rollett (2008) stress the teachers' point of view. In the German context of newly developed all-day schools, they define readiness to innovate as being ready to revise and rethink one's own pedagogical work, engage in new concepts and ideas, and take part in school development and educational change processes.

At the same time, it is also the organization which supports teachers' readiness to innovate, by providing working conditions that foster the implementation of innovative ideas (Dee, Henkin, & Pell, 2002; Henkin & Holliman, 2009). With regard to previous results showing the meaning of teachers' readiness to innovate in the context of, e.g., teacher self-efficacy (Evers, Brouwers, & Tomic, 2002), we hypothesize that this variable can reduce or buffer stress because it better prepares teachers for changes.

### **2.2.3 Cooperation**

Teacher cooperation is an important variable of school quality and school effectiveness (e.g., Scheerens & Bosker, 1997) and also in the context of development processes in schools, it is often regarded as a key element (Martin, McCaughtry, Hodges-Kulinna, & Cothran, 2008; Kougiumtzis & Patriksson, 2009). As early as the 1990s, Rosenholtz (1991) found that teachers were better prepared for innovations when involved in cooperative settings. Rosenholtz (1991) argued that in such settings teachers feel greater support for their own learning as a teacher. As a consequence of such a working atmosphere they do not see their self-esteem endangered, and are able to implement new ideas. Thus, teacher cooperation can be hypothesized to buffer stress. Previous research shows mixed results. We find relieving effects of cooperation (e.g., van Dick, 1999; Böhm-Kasper, 2004) as well as stress enhancing effects (e.g., Klusmann et al., 2008). Cross-sectional results of the present project show that only intensive forms of cooperation, where teachers intensively collaborate to 'co-construct' their knowledge, are a significant predictor for reduced teacher stress (Fussangel et al., 2010). In the present study, we will look at co-construction as well because it can be assumed that it has the most relieving effect on stress. Co-construction is an intensive form of cooperation where teachers work on a common task and share their knowledge. It requires that teachers trust each other, which makes co-construction important as a buffering factor of stress and a kind of social support.

However, research also shows that teachers often have problems to cooperate with their colleagues in their daily school routine. The organization of schools makes cooperation hard to practice and even if teachers are motivated to cooperation, there are high "transaction costs" to overcome organizational structures (Little, 1990, p. 530). Especially intensive forms of cooperation like co-construction

seem hardly incorporated in the daily routines, probably because they need more resources.

#### **2.2.4 Teacher self-efficacy**

Teacher self-efficacy is an educational variable that plays an important role in different contexts. As Terhart (2010) points out, a teacher's readiness to participate in school development and innovations is coupled to self-efficacy. The concept of self-efficacy is grounded in the social cognitive theory by Bandura (1997) who defines it as follows: "Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments." (p. 3). According to this definition, self-efficacy does not refer to a person's true abilities, but rather reflects a person's conviction, what skills and expertise he or she has and how he or she can bring these into effective actions. Focusing on context-specific types of self-efficacy, different researchers have conceptualized and measured teachers' self-efficacy in various ways (see Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Many authors restrain their focus on teachers' instructional efficacy and its effects on student achievements (Tschannen-Moran & Woolfolk Hoy, 2001; Labone, 2004). A broader concept of teachers' self-efficacy can be conceptualized as teachers' beliefs in their abilities to manage the activities required to achieve given educational goals (Skaalvik & Skaalvik, 2007).

Teachers' self-efficacy seems to be a strong personal resource factor. With regard to research on teachers' stress and strain, empirical results show that high self-efficacy reduces the impact of perceived stressors (Abele & Candova, 2007; Schwarzer & Hallum, 2008; Betoret, 2009). Beyond this, several studies provide evidence for a moderate relieving effect of high self-efficacy on teacher burnout (Evers et al., 2002; Skaalvik & Skaalvik, 2010). Since innovations demand additional personal efforts and resources, teachers can experience stress and tension during organizational change processes. Often, the benefits of innovations are time-delayed, which can reduce motivation to advance the aspired changes. If people involved in innovative processes have high self-efficacy beliefs, their motivation will be maintained in the pursuit of their objectives (Bandura, 1997). High self-efficacy can provide teachers with a set of effective strategies during the process of implementation and, in effect, lead to lower 'burnout' statistics (Evers et al., 2002). Furthermore, adequate coping strategies can be seen as one facet of self-efficacy in a multi-dimensional concept of self-efficacy (Skaalvik & Skaalvik, 2007).

#### **2.2.5 Working hours**

Aspects of working time are one of several important stress factors in the teaching profession (Dorsemagen, Krause, & Lacroix, 2010). Teachers' working time can be characterized by unique features, because it is unequally distributed over the week

and year. During classes, work is extremely demanding and the school day is characterized by a rigid timetable, where teachers often find no time for breaks, and are concerned exclusively with their students. At the beginning and the end of the school year, peaks in work pressure can be observed. Additionally, teachers complete a significant number of their tasks at home, where they typically prepare their lessons, outline upcoming assignments, and grade exams (Travers & Cooper, 1996). One advantage of working at home is having greater time autonomy. A disadvantage can be seen in overworking and thinking continuously of job duties and problems. As a consequence, a lack of cognitive detachment of work duties may lead to reduced recovery processes and impaired personal well-being (Sonnentag, 2001; Binnewies & Sonnentag, 2008).

A teacher's exact workload is difficult to determine. Most researchers rely on teachers' self-reports because work at home can hardly be measured objectively. Taken as a whole, different empirical studies on teachers' workloads in Germany demonstrate that teachers' average working hours are alike but often higher than the average working hours of other civil servants. However, the number of working hours varies greatly between schools as well as between individuals, and we find a very wide range (Mummert + Partner, 1999; Schaarschmidt, 2008). A teacher's classload reflects only one part of his or her actual working hours. In Germany, the number of classes assigned to each teacher is predetermined by the school type (e.g., primary or secondary school), but it is independent of the school organization (all-day or half-day). This model is increasingly being criticised, particularly in the context of school development (Klemm, 2009): By only focusing on teachers' compulsory classes, it lags behind actual developments and the change of school culture, because it ignores the fact that modern schools need teachers who perform several other tasks in addition to teaching lessons. This leads directly to the German discussion of developing all-day schools where new ways of teaching and learning have to be put into practice and the school day has to be reorganized with a new rhythm of classes, extracurricular activities and leisure time (Rabenstein, 2008). What is not yet clear in the literature is whether teachers in all-day schools perceive reduced time autonomy negatively or whether they think it is good to have new opportunities, for instance for increased cooperative activities. Empirical results show that the implementation of working time models that consider the teacher's attendance in school, can lead to an increase in cooperative activities and contributions to the development of innovations in all-day schools can be observed (Pfeifer & Holtappels, 2008).

### **3. The present investigation**

In the present study, we examine teacher stress in the context of organizational change. We want to examine what impact the fact of working in a recently developed all-day school has on teacher stress (compared to working at older all-day

and half-day schools). Beyond recognizing this school type, we have introduced different key variables that are assumed to influence teachers' perceived stress. By means of a structural equation model, we want to investigate the following first research question: What is the relationship between the introduced predictor variables on the one hand and teacher stress and strain on the other hand? We have assigned the variables to the theoretical model in the following way: the school type (recently developed all-day school, older all-day, or half-day school) is an indicator of general job demands. Together with teacher self-efficacy as a personal factor, they represent the general factors of the model which can all function as stressors or resources. As social factors, we have identified teacher cooperation and working hours as organizational factors, both of which represent the specific school stressors or resources.

According to the theoretical model, we differentiate stress and strain. As mentioned before, we assessed teachers' perceived stress using three indicators: perceived stress in the classroom, with regard to the preparation of lessons, and perceived stress due to general school conditions. In accordance with the model, we assume the perceived stress to influence teacher strain, which is represented by emotional exhaustion. The long term effects of stress are represented by psychosomatic complaints.

The second research question focuses on the differences between the school types. We compare recently developed all-day schools with older all-day schools and half-day schools in order to describe whether the development of all-day schools leads to fundamental changes for teachers and their work lives.

## 4. Methods

### 4.1 Procedure and sample

Data was provided by a project<sup>2</sup> in North-Rhine Westphalia in Germany which focused on the relation of cooperation and stress in all-day and half-day schools. We administered two quantitative questionnaires to teachers in all-day and half-day schools within a distance of one year. Thus, we have longitudinal data allowing us to predict teacher stress and strain at the second assessment by predictors of the first one.

The sample consists of 251 teachers working in lower secondary schools<sup>3</sup> in North-Rhine Westphalia who took part in both surveys. 81 (32 %) of these teachers work in recently converted all-day schools, 93 (37 %) in older all-day schools (existing since more than ten years) and 77 (31 %) teachers in half-day schools. The following table gives some additional information about the sample.

<sup>2</sup> The project was funded by the German Federal Ministry for Education and Research (BMBF) and the European Social Fund (ESF); Project Number: GTS0908.

<sup>3</sup> The teachers are working in 55 different lower secondary schools.

Table 1: Sample characteristics, sorted according to school type

		All-day schools after 2006		Older all-day schools		Half-day schools	
		N = 81		N = 93		N = 77	
		N	%	N	%	N	%
Gender	Female	47	58	62	67	54	70
	Male	34	42	30	33	23	30
Age	≤ 45 years	22	27	24	26	21	27
	> 45years	59	73	67	72	56	73
Involved in all-day administration tasks		6	7	4	4	–	–
All-day courses provided		57	70	73	79	–	–

Note. More than 100 % due to rounding.

## 4.2 Instruments

The quantitative questionnaire was standardized and comprised different scales, some had to be adapted for the study.

*Cooperation.* Teacher cooperation (“co-construction”) was assessed by a scale consisting of 4 items, e.g., “We support each other with regard to written exams and corrections.”;  $\alpha = .63$  (Fussangel, 2008).

*Readiness to innovate* was assessed by 3 items, e.g., “I support broad changes in our school.”;  $\alpha = .62$  (adapted from Gräsel, Stark, Sparka, & Herzmann, 2007).

*Teacher self-efficacy* was assessed using a German scale which is based on Bandura’s theory of self-efficacy (Bandura, 1997). Teachers were asked to rate their agreement with 12 questions (e.g., “How can you, as a teacher, ensure that students who exhibit problematic social behaviour follow the class rules?”;  $\alpha = .86$ ) (Gerecht, Steinert, Klieme, & Döbrich, 2007).

*Working hours.* We assessed the working hours in three fields: (1) lessons in the classroom, (2) additional offers in the school like extracurricular activities, and (3) working hours off-campus, like lesson preparation or corrections. Teachers had to indicate how many hours per day they spend on the various activities.

*Teachers’ perceived stress* was assessed by three indicators: (1) perceived stress in the classroom concerning instructional processes (6 items, e.g., “Students disturb instructional processes.”;  $\alpha = .77$ ), (2) stress perceived with regard to the preparation of lessons (2 items, e.g., “I have extensive correction of written exams to do.”;  $\alpha = .66$ ) and (3) perceived stress due to general school conditions (3 items, e.g., “Room equipment is insufficient at our school.”;  $\alpha = .63$ ) (adapted from Böhm-Kasper, Bos, Jaeckel, & Weishaupt, 2000).

Teacher strain was assessed by two instruments representing the direct consequences on the one hand and long term consequences on the other hand. (1) Emotional exhaustion as a strain reaction was assessed by a German adaptation of

the Maslach Burnout Inventory (Maslach & Jackson, 1981) and consisted of 7 items (e.g., “At the end of a working day I feel exhausted.”;  $\alpha = .86$ ) (Barth, 1997). (2) To describe long term consequences of stress teachers should indicate the frequency of several psychosomatic complaints (7 items, e.g., cardiovascular complaints like dizziness;  $\alpha = .85$ ) (adapted from Brähler & Scheer, 1993).

## 5. Results

The first research question refers to the relationship between teacher stress and strain and the introduced predictor variables. Before investigating the theoretical model by means of a structural equation model the following table shows the inter-correlations of the introduced variables.

Table 2: Intercorrelations among the introduced variables

	2	3	4	5	6	7	8	9	10	11	12	13
(1) Co-construction t1	<b>.31</b>	<b>.21</b>	-.01	.06	.12	<b>-.18</b>	.03	-.03	<b>-.22</b>	<b>-.15</b>	-.02	.06
(2) Self-efficacy t1	1	<b>.39</b>	.03	.09	<b>.18</b>	<b>-.30</b>	.02	-.05	<b>-.26</b>	<b>-.20</b>	.08	-.11
(3) Individual readiness to innovate t1		1	-.06	.02	.10	<b>-.16</b>	-.08	.00	<b>-.21</b>	<b>-.15</b>	-.08	.06
(4) Working hours: Lessons t1			1	<b>-.18</b>	.01	.02	.06	.11	<b>.13</b>	.01	.01	-.10
(5) Working hours: Extracurricular tasks t1				1	-.06	-.07	.05	-.06	.01	-.04	.11	<b>.13</b>
(6) Working hours out of school t1					1	.08	<b>.18</b>	-.09	.11	<b>.18</b>	.01	-.07
(7) Perc. stress in the classroom t2						1	<b>.26</b>	<b>.19</b>	<b>.41</b>	<b>.35</b>	-.01	.06
(8) Perc. stress: Preparation of lessons t2							1	<b>.20</b>	<b>.29</b>	<b>.22</b>	.04	.03
(9) Perc. stress: General conditions t2								1	<b>.20</b>	<b>.15</b>	-.11	<b>.17</b>
(10) Emotional exhaustion t2									1	<b>.71</b>	.06	-.13
(11) Psychosomatic complaints t2										1	.02	-.06
(12) Recently dev. all day school											1	<b>-.53</b>
(13) Older all day school												1

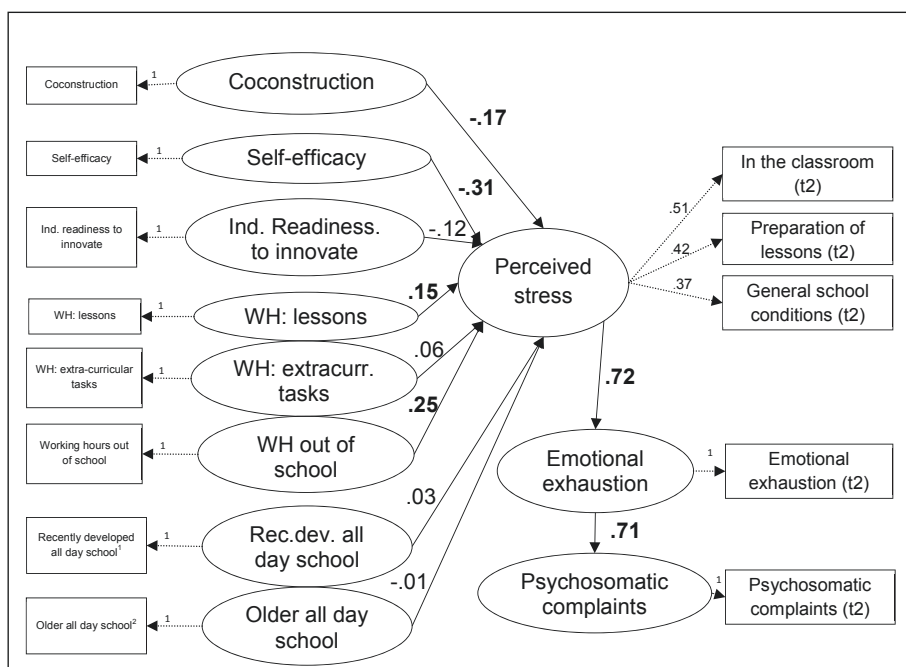
Note. Significant correlations are in bold.

Regarding the dependent variables of stress and strain we see small yet significant negative correlations with co-construction as an intensive type of cooperation. Self-efficacy accompanied by a readiness to innovate are negatively associated with

stress and strain variables meaning that the higher scores in self-efficacy the lower are the scores in the stress variables. We find small positive relationships between working hours off-campus and one of the stress variables (preparation of lessons) and health complaints. Beyond these relationships, we find significant small to moderate positive correlations between co-construction and self-efficacy as well as between self-efficacy and the readiness to innovate. The only significant (but small) correlation concerning the school type worth mentioning exists between teachers' extracurricular working hours and older all-day schools.

In order to investigate the overall context of the variables, and to examine the theoretical model, structural equation modeling was used<sup>4</sup>. According to the model, there are the perceived stress (measured by three indicator variables) and the two strain variables as dependent variables assessed at the second time of measurement (t2). The independent variables were assessed one year earlier (t1). Figure 2 shows the results of the structural equation model.

Figure 2: Structural equation model: Relations between stressors/resources and teacher stress and strain. Significant paths are in bold. Independent variables: t1 – dependent variables: t2. <sup>1</sup>Recently developed all-day school versus half-day schools; <sup>2</sup>Older all-day school versus half-day school; WH = working hours



<sup>4</sup> We used the software lisrel 9.1.

The significant paths indicate that the teachers' perceived stress is mainly influenced by individual and job related variables. Teacher self-efficacy shows the strongest influence. The more teachers feel self-efficacious the less they perceive stress in their job. We find the same direction of impact for co-construction: Teachers who cooperate intensively and co-construct their knowledge with colleagues perceive less stress. Beyond this, we find two significant positive paths between working hours and perceived stress: working hours spent teaching on-campus, as well as those devoted to off-campus activities, significantly influence teachers' perceived stress. Interestingly, the school type has no effect on teachers' perceived stress. The fact of working in a recently implemented all-day school has no influence on stress, either. The same is true for teachers' readiness to innovate which has no significant effect. As expected, we find a strong positive relationship between the perceived stress and the strain variables.

The second research question refers to the differences between the three considered school types in the present study. Table 3 shows the results.

Table 3: Means, standard deviations, and differences between recently implemented all day school programs, older all-day schools, and half day schools

	Recently adopted all-day schools		Older all-day schools		Half-day schools		<i>p</i>	ES	Post hoc*
	<i>N</i> = 81		<i>N</i> = 93		<i>N</i> = 77				
	<i>M</i> **	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Cooperation (t1)									
Co-construction	3.0	0.82	3.1	0.96	2.9	1.0	n.s.	–	–
Personal factors (t1)									
Readiness to innovate	4.0	1.1	4.2	1.0	4.1	1.1	n.s.	–	–
Self-efficacy	3.7	0.6	3.6	0.7	3.7	0.6	n.s.	–	–
Working hours (t1)									
Classes	16:22	4:56	15:57	4:24	17:13	3:79	n.s.	–	–
Extracurricular tasks	1:43	1:82	1:44	1:81	0:52	1:07	> .01	.06	Old/New all-day > half-day
Off-campus tasks	17:21	6:54	16:38	7:37	17:40	8:35	n.s.	–	–
Perceived stress (t2)									
In the classroom	3.3	1.1	3.3	1.1	3.2	1.0	n.s.	–	–
Preparation of lessons	3.2	1.1	3.3	1.1	3.2	1.0	n.s.	–	–
General conditions	3.0	1.4	3.5	1.2	3.1	1.4	> .05	.03	New all-day < old all-day
Strain (t2)									
Emotional exhaustion	3.3	1.0	3.0	0.9	3.3	1.1	n.s.	–	–
Psychosomatic complaints	3.1	1.1	3.0	1.0	3.1	1.2	n.s.	–	–

Note. Recently launched all-day school schools were developed after 2006, the older all-day schools had been working since at least 2002 with an all-day program. \*Scheffé. \*\*Range: 1–6 or hours; min.

All in all, we find only small differences between teachers in the differently aged all-day schools and half-day schools. There are no differences between teachers' frequencies of cooperation. With respect to personal factors, the teachers' average values of readiness to innovate and self-efficacy do not differ among the three school types.

The numbers of working hours we considered were subdivided according to three aspects of teachers' work. No differences are found for the number of hours per class and working hours off-campus among the three school types. However, teachers in all-day schools estimate the number of working hours they spend performing extracurricular tasks to be significantly higher than teachers in half-day schools.

No differences are observed for the values of perceived stress in the classroom and due to preparation of lessons. But teachers in older all-day schools perceive slightly more stress due to general conditions compared to teachers at recently developed all-day schools. With respect to indicators of strain, there are no differences between emotional exhaustion and health complaints among teachers of the three different school types.

## **6. Discussion**

The present study was guided by the question of what variables influence teachers' perceived stress and strain. This was investigated in the context of a recent German reform initiative: the development of all-day schools. The results can be summarized as follows: Considering all variables in the model, individual teacher factors have the most significant impact on teachers' perceived stress, with teacher self-efficacy having the strongest effect. Other significant paths were found for co-construction as an intensive form of teacher cooperation and the working hours (lessons and working hours out of school). Neither the fact of working in a recently developed all-day school nor an older all-day school influences teachers' perceived stress. The relationship between stress and strain is very high, as expected. Regarding the differences between recently developed, older all-day and half-day schools, we find few significant differences with regard to the working hours spend on extracurricular tasks as well as perceived stress due to general school conditions. However, these school type differences have little relevance in practice.

Altogether, the findings of the structural equation model show that teachers' perceived stress is mainly influenced by individual factors like self-efficacy. This goes along with the results of other studies that have investigated influences on teacher stress and strain (Klusmann et al., 2008). In particular, the meaning of teacher self-efficacy was already found in other studies (Betoret, 2009; Skaalvik & Skaalvik, 2010). Surprisingly, we were unable to find differences between the recently developed all-day schools and the other two school types. Perhaps the items of the questionnaire used in the present study made reference to teachers' instruc-

tional tasks that are not specific to change processes too predominantly. Although expected, other authors did not find any differences with regard to self-efficacy, either. Keer and Verhaeghe (2005), for example, explain this by pointing out that different learning processes occur despite the fact that self-efficacy beliefs are similar between different groups. Maybe, additional efficacy changes may only be observable very much later. With regard to teachers' readiness to innovate, it is possible that changing from half-day to an all-day schedule is not the salient experience with regard to teacher stress as we might have expected. As all teachers are confronted with many new tasks in the area of school development, the traditional image of what constitutes a good teacher is changing in general. Experience and expertise at innovation in academic programs is nowadays regarded as a central part of the teaching profession (KMK, 2004), and teachers in general are more and more aware of these aspects.

The fact of working in an all-day school does not have an impact on teachers' perceived stress. At first sight, this is a surprising result. Considering the high expectations linked to the new all-day schools and the changes schools and teachers are confronted with in this context, we would have expected that teacher stress is tangent to it. Considering that change processes often take many years, it is possible that the organizational change process of developing all-day schools is still too much at the beginning. All in all, only a few aspects of the present results reflect the special situation of teachers in recently instituted all-day schools; they have more working hours to devote to extracurricular tasks, and they perceive higher levels of stress with regard to general school conditions. These aspects may show that the new all-day schools still need time to absorb and utilize the experiences of their more established counterparts. Beyond this, aspects of teachers' working hours play a significant role for the perceived stress. We find the core features of teachers work (hours spend in classes and hours working at home) to be relevant for the perceived stress.

Intensive forms of teacher cooperation have a relieving effect on teachers' perceived stress. Obviously, the considered cooperation type of co-construction helps teachers to better deal with stressors in their daily school routines. The importance of cooperation and social support has often been emphasized (Kyriacou, 2001). The results confirm previous (cross sectional) studies where co-construction was considered (Fussangel et al., 2010) and accentuates its meaning also compared to other forms of cooperation. The impact of co-construction in the context of teacher stress raises the question of differentiating cooperation and social support theoretically. Concerning this question, further research has to be done.

Some limitations of the present study have to be mentioned. We did not take cooperation between teachers and additional staff at all-day schools into consideration, which is an important change compared to half-day schools, and may have an influence on teacher stress in this context. Initial cross-sectional results suggest no effect of such an 'interprofessional' cooperation on teacher stress (Dizinger, Fussangel, & Böhm-Kasper, 2011). However, this will have to be investigated in the long run. Beyond this, we have only reported quantitative data assessed with ques-

tionnaires. A combination with qualitative results should be undertaken to describe teacher stress and its predictors in the context of organizational change more precisely. In particular, complementary observations of different school types could focus on organizational characteristics.

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