

## Development of pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education through first teaching experiences

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**We examined the development of pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education through first teaching experiences during a 4-week practicum. Additionally, we assessed the burnout-related variables (job-related satisfaction and exhaustion and perceived competence support during the practicum). Whereas t-tests for paired samples showed that self-efficacy increased significantly, attitudes remained the same except for a decrease regarding attitudes towards the effects of inclusive education. However, 97% of the pre-service teachers in our study reported positive to neutral experiences with inclusive teaching during the teaching practicum and correlational analysis revealed a low, but significant positive relationship between positive experiences and self-efficacy and attitudes. Moreover, multiple regression analyses showed that positive experiences in inclusive classrooms predicted self-efficacy regarding the arrangements of inclusive education, while perceived competence support from university supervisors was a significant predictor of attitudes towards the effects of inclusive education. High self-efficacy correlated significantly with satisfaction of career choice, whereas attitudes were significantly negatively correlated with exhaustion. The implications of these findings and the importance of a sufficiently scaffolded teaching practicum in order to increase attitudes and self-efficacy beliefs towards inclusive education are discussed.**

### Introduction

A priority on the political agenda in many countries is currently the inclusion of students with special educational needs in mainstream schools (Pit-ten Cate, Schwab, Hecht, et al., 2018). While teaching in general can be

perceived as a challenging task for pre-service teachers, teaching in inclusive classrooms, which means addressing individual needs in heterogeneous learning groups, can be even more challenging. As a result, there is a growing body of research regarding inclusive education and factors that support teachers in implementing an inclusive classroom (for an overview see De Boer, Pijl and Minnaert, 2011; Hehir, Grindal, Freeman, et al., 2016; van Mieghem, Verschuere, Petry, et al., 2018). For the successful implementation of inclusive education, teachers have to be positive about it and support this kind of policy. Especially pre-service teachers' preparedness in form of positive self-efficacy beliefs and attitudes towards inclusive education are important, because they are responsible for implementing a successful inclusive education in the future (Ahsan and Sharma, 2018). Consequently, self-efficacy beliefs and attitudes towards inclusion are significant factors to take into account when discussing the outcomes of pre-service teachers' academic education (e.g., Hecht, 2014). Research indicates that first teaching experiences are crucial for the development of pre-service teachers' self-efficacy beliefs (Klassen and Durksen, 2014; Woolfolk Hoy and Burke-Spero, 2005) and their attitudes towards inclusive education (Varcoe and Boyle, 2014). Self-efficacy seems to be most malleable at the beginning of the teaching career (Pendegast, Garvis and Keogh, 2011; Woolfolk Hoy and Burke-Spero, 2005) and teaching experiences can have a strong impact on pre-service teachers' attitudes (De Boer, Pijl and Minnaert, 2011; Leatherman and Niemeier, 2005; Varcoe and Boyle, 2014). Therefore, 'inclusive experiences due to inclusive teaching during practicum phases' (Hecht, Aiello, Pace, et al., 2017, p. 273) are important impact factors for the development of pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education. However, despite the increasing field of research regarding inclusive education, little is known about the development of pre-service teachers' attitudes and self-efficacy beliefs in regard to inclusive education

through first teaching experiences. Our study aims at closing this research gap.

#### *Self-efficacy beliefs towards inclusive education*

Teacher self-efficacy can be defined as ‘a judgement of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated’ (Tschannen-Moran and Woolfolk Hoy, 2001, p. 783). Believing in one’s own teaching abilities is of high relevance for teachers and an important predictor of academic and occupational success (Vieluf, Kunter and van de Vijver, 2013). Regarding pre-service teachers’ self-efficacy, studies documented a positive correlation between pre-service teachers’ self-efficacy and commitment to the teaching profession (Chesnut and Burley, 2015; Klassen and Chiu, 2011), as well as a negative association for pre-service teachers’ burnout and their intention to quit the teaching profession (Fives, Hamman and Olivarez, 2007). Moreover, Soodak and Podell (1993) pointed out that teachers with high self-efficacy were most likely to agree with regular class placement for students with learning and/or behaviour problems. In-service teachers’ self-efficacy beliefs are closely related to the teachers’ well-being (Schwarzer and Hallum, 2008), job satisfaction (Vieluf, Kunter and van de Vijver, 2013) and school context (e.g., supervisory support), all of which reduce the risk of experiencing burnout (Skaalvik and Skaalvik, 2009).

Moreover, high self-efficacy beliefs are an important protection factor against exhaustion (Abele and Candova, 2007; Urton, Wilbert and Hennemann, 2014). This is particularly interesting for the context of inclusive education because exhaustion relates to stressors (e.g., time-consuming lesson planning, emotional distress), which can become a perceived excessive overload (van Dick and Stegmann, 2013). Fives, Hamman and Olivarez (2007) pointed out that ‘the development of teacher burnout begins with the student-teaching experience’ (p. 918). As of yet, there is a lack of empirical evidence regarding pre-service teachers’ self-efficacy and its relation to burnout-related variables like satisfaction of career choice, exhaustion and perceived competence support.

#### *Development of pre-service teachers’ self-efficacy beliefs towards inclusive education*

One of the most important sources of self-efficacy beliefs are mastery experiences (Bandura, 1997; Woolfolk Hoy and Burke-Spero, 2005). A successful performance in the classroom can lead to higher self-efficacy beliefs, while failing can decrease teachers’ self-efficacy. During a teaching practicum, pre-service teachers experience for the first time if their actions and their behaviour as a teacher lead to the desired outcome (Tschannen-Moran, Woolfolk Hoy and Hoy, 1998). Moreover, one’s first own teaching can cause emotional reactions and therefore affect self-efficacy (ibid). If someone feels nervous or stressed during teaching, this can have a negative impact on self-efficacy

(Morris, Usher and Chen, 2017). Other sources of self-efficacy are vicarious experiences through model learning and social comparison (Pfitzner-Eden, 2015) as well as verbal persuasion (Morris, Usher and Chen, 2017). During a teaching practicum, pre-service teachers observe teaching lessons from experienced teachers and fellow students. These observations can strengthen one’s own self-efficacy when the observed performance is successful and when the observing person can identify with the model (Bandura, 1997; Woolfolk Hoy and Burke-Spero, 2005). Verbal persuasion can be offered in the form of feedback from mentors, supervisors and fellow students (Morris, Usher and Chen, 2017). Like vicarious experiences, it is particularly influential on self-efficacy for teachers who have little or no experiences (Morris, Usher and Chen, 2017; Pfitzner-Eden, 2015; Tschannen-Moran, Woolfolk Hoy and Hoy, 1998). Therefore, ‘the most powerful influences on the development of teachers’ sense of efficacy are experiences during student teaching’ (Woolfolk Hoy and Burke-Spero, 2005, p. 343). Experiences during the first teaching practicum seem crucial to develop high self-efficacy beliefs. Accordingly, most studies have shown that pre-service teachers’ self-efficacy increases through practical experiences (e.g., Flores, 2015; Klassen and Durksen, 2014; Pfitzner-Eden, 2015). However, most of these studies focus on an overall teacher self-efficacy and until now there are only few studies, which investigated pre-service teachers’ development of self-efficacy beliefs towards inclusive education during a teaching practicum.

#### *Attitudes towards inclusive education*

According to van Mieghem, Verschuere, Petry, et al. (2018), attitudes ‘refer to perceptions, views, beliefs, feelings, and the predispositions of actors towards something or someone’ (p. 6). They have affective, behavioural and cognitive components (Eagly and Chaiken, 1993). This study focuses on the cognitive component of attitudes towards inclusive education, which refers to the thoughts and attributes that are associated with inclusive classroom settings (Breckler, 1984). This component is highly valued for realising inclusive education (e.g., Urton, Wilbert and Hennemann, 2014).

Regarding teachers’ attitudes towards inclusion, research has shown that teachers with positive attitudes are more likely to adapt their lessons to the needs of all students and to influence their colleagues to support inclusion (Sharma, Forlin and Loreman, 2008), which then results ‘in more inclusive attitudes of other teachers, school educators, parents and students’ (Hehir, Grindal, Freeman, et al., 2016, p. 9). Monsen, Ewing and Kwoka (2014) reported that teachers’ attitudes influenced how they managed their classroom learning settings and that students who had teachers with more positive attitudes reported less difficulty, competitiveness and more satisfaction and cohesiveness than those students with teachers who had fewer positive attitudes. Moreover, negative attitudes were reported to lead to lower expectations of students with disabilities, ‘which in turn

could lead to reduced learning opportunities, beginning a cycle of impaired performance and further lowered expectations, both by the teacher and the child' (Campbell, Gilmore and Cuskelly, 2003, p. 370). Overall, attitudes of teachers can 'determine the success or the failure of inclusion' (Alghazo, Dodeen and Algaryouti, 2003, p. 515). Therefore, it is of high importance that pre-service teachers develop positive attitudes towards inclusion early in their professional career. In the context of teacher education, we need to know how we can support pre-service teachers in this process effectively.

#### *Factors that influence attitudes towards inclusive education*

A number of factors, like the nature of disabilities, demographic and personality factors or specific context factors (Avramidis and Norwich, 2002), influence attitudes towards inclusive education. Based on the contact hypothesis (Allport, Clark and Pettigrew, 1954), it can be assumed that teachers who have experiences with persons with disabilities hold more positive attitudes towards inclusive education. Empirical findings concerning this relation are contrary: There are positive correlations (Avramidis and Norwich, 2002; De Boer, Pijl and Minnaert, 2011; Leatherman and Niemeyer, 2005; Sermier Dessemontet, Morin and Crocker, 2014) as well as negative correlations between experiences and attitudes towards inclusion (Center and Ward, 1987; Forlin, 1995). Regarding the effects of a practicum on pre-service teachers' attitudes towards inclusion, Sokal, Woloshyn and Funk-Unrau (2013) underlined that 'high-quality interactions foster pre-service teachers' growth in their positive attitudes towards inclusion' (p. 287). Moreover, Forlin, Loreman and Sharma (2007) reported a positive correlation between pre-service teachers' teaching experiences with students with special educational needs and their attitudes towards inclusion. However, Yellin, Yellin, Claypool, et al. (2003) showed that pre-service teachers who received classroom-based instructions about inclusive education coupled with field-based experiences in inclusive classrooms developed significantly fewer positive attitudes towards inclusive settings than pre-service teachers who received only theoretical classroom-based instruction about inclusive education. Overall, there seems to be an inconsistency regarding the research findings about practicum settings as an influencing factor of pre-service teachers' attitudes.

#### *Research questions*

This study addresses the described research gaps while investigating the pre-service teacher's development of self-efficacy and attitudes towards inclusive education during a teaching practicum in a pre-post-design. Moreover, we want to explore if pre-service teachers' attitudes are related to their self-efficacy beliefs and to important protection factors against burnout (e.g., satisfaction of career choice and little job-related exhaustion). Subsequently, we investigate if positive experiences in inclusive classrooms and a high competence support during the

practicum predict pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education. Accordingly, we pursue the following research questions:

1. How do pre-service teachers evaluate their first teaching experiences in inclusive classrooms and what kind of challenging tasks do they report?
2. How do pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education change through their first teaching experiences?
3. How are pre-service teachers' attitudes towards teaching in inclusive settings related to their self-efficacy beliefs and their satisfaction of career choice and job-related exhaustion?
4. Which factors during the practicum (e.g., positive experiences, competence support) predict pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education?

## **Method**

### *Participants*

We questioned 179 students from a German university in their fourth semester of teacher education who took part in a 4-week teaching practicum. Only students who participated in pre- and post-test were included in the sample. Consequently, a limited number had to be excluded which resulted in 150 pre-service teachers in the final sample (88% female) with a mean age of 23.46 (SD = 4.58) years. Teacher training in Germany involves a Bachelor and a Master program in teaching and learning. All students choose two teachings subjects. Most participants in our study studied German (57%), Elementary Science Education (39%), Mathematics (37%) or English (15%). The Bachelor program is set up for six semesters and contains two short practical internships. The first practicum is a 3 weeks observational practicum in the second bachelor semester. In the second, 4-week teaching practicum, students have to plan and organise four lessons on their own according to the practicum regulations. For most of the students in our study, this teaching practicum provides their first teaching experiences. However, more than 70% of the students reported that they already had experiences with private tutoring and 20% had other practical teaching experiences before the practicum.

During the practicum, each student was observed once or twice in school during his or her own lesson by a university supervisor (former headmasters, teacher educators or in-service teachers) and fellow students, who gave feedback after the lesson. The practicum was accompanied by the Department of School Education and School Development at the Institute of Educational Science. Educational research indicates that pre-service teachers should be made familiar with theoretical knowledge before teaching on their own (Brouwers and Tomic, 2000). Consequently, the pre-service teachers had to complete a lecture on didactics and methods, which provided an overview of theoretical concepts and

**Table 1: Scales, sample items and internal consistency coefficients**

Scale	Items	Sample items	$\alpha_1$	$\alpha_2$
Self-efficacy with regard to the arrangement of inclusive education	4	I feel confident in organising my lessons in a way that even children with special educational needs achieve their learning targets at their own pace.	0.79	0.81
Self-efficacy with regard to the handling of classroom disruptions	4	I am able to calm down a disturbing child.	0.86	0.86
Attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting	4	Students with special educational needs are likely to bring disturbance to regular classes (recoded).	0.66	0.79
Attitudes towards the arrangement of inclusive education	4	Lessons can be organised in a way that they meet the needs of every student.	0.78	0.80
Attitudes about the effects of inclusive learning settings	4	Students with special educational needs have higher learning gains if they are placed in regular classes.	0.71	0.70
Satisfaction of career choice	4	I have never regretted my decision to become a teacher.	0.78	0.84
Job-related exhaustion	3	My university studies make me feel exhausted.	0.83	0.84
Perceived competence support	3	In the event of difficulties, I was able to call on meaningful help at any time		0.81

teaching methods, and an accompanying seminar with its focus on lesson planning. The arrangement of inclusive education was one of the topics of lecture and seminar.

#### *Procedure and instruments*

The first survey was conducted as a paper–pencil test as part of the kick-off event for the teaching practicum a week before it started. The post-test was conducted online in the week after the practicum. All the participants were advised of the nature of the study and their voluntary and anonymous participation. Therefore, it can be assumed that the pre-service teachers consented regarding their participation in the survey. The first section of the questionnaire contained demographic information including age, gender, teaching subjects, previous teaching experiences, previous mastery or vicarious experiences with inclusive education and evaluation of these experiences [rated on a 5-point response scale, ranging from 'negative' (1) to 'positive' (5)]. The second section contained the following instruments (see Table 1 for subscales, sample items and internal consistency coefficients):

*Self-efficacy beliefs and attitudes towards inclusive education.* To measure pre-service teachers' self-efficacy beliefs and cognitive components of attitudes towards inclusion, we used three scales regarding attitudes and two scales regarding self-efficacy from a German language questionnaire from Bosse and Spörer (2014). All items were rated on a 6-point response scale, ranging from 'I don't agree at all' (1) to 'I fully agree' (6).

#### *Burnout-related variables.*

1. *Satisfaction with career choice:* We modified a scale from Kunter, Baumert, Leutner, et al. (2016) to

measure pre-service teachers' satisfaction with their career choice. The four items were rated on a 6-point response scale, ranging from 'I don't agree at all' (1) to 'I fully agree' (6).

2. *Job-related exhaustion:* We modified the subscale Emotional Exhaustion from the German version of the Maslach Burnout Inventory for teachers (Enzmann and Kleiber, 1989; Maslach, Jackson, Leiter, et al., 1986) to measure emotional distress. Three items were rated on a 6-point response scale, ranging from 'I don't agree at all' (1) to 'I fully agree' (6). Moreover, we asked how much time the pre-service teachers in our study had spent to adapt their lessons to the needs of all students [rated on a 4-point response scale, ranging from 'very little' (1) to 'a great deal' (4)] to assess their preparatory effort. In an open question at the end of the survey, pre-service teachers were asked to write down their personal challenges during the teaching practicum.
3. *Perceived competence support:* In the post-test, we measured students perceived competence support on part of the university with the subscale competence support (Basic Need Satisfaction, Kunter, Baumert, Leutner, et al., 2016). Students rated three items on a 4-point response scale, ranging from 'does not apply' (1) to 'apply' (4).

In the post-test, pre-service teachers were asked if they had experienced teaching in inclusive classrooms during the practicum and how they evaluated these experiences [rated on a 5-point response scale, ranging from 'negative' (1) to 'positive' (5)].

#### *Data analysis*

To investigate whether the change from pre- to post-test was significant, we conducted *t*-tests for paired samples for each group and calculated effect sizes for repeated

measures. To examine the relationship between pre-service teachers' self-efficacy, attitudes towards inclusive education, satisfaction of career choice and job-related exhaustion, correlational analysis were employed. Beyond that, we conducted multiple regression analyses to establish if teaching experiences and competence support during the practicum predict pre-service teachers' self-efficacy and their attitudes towards inclusive education. The variable *experiences in inclusive classrooms* was included as missing value in the regression analyses if students reported no teaching experiences in those learning settings.

## Results

Our first question was how pre-service teachers perceived and evaluated their first teaching experiences in inclusive classrooms. Eight pre-service teachers (5%) reported that they had not experienced teaching in inclusive classrooms during the practicum. The other pre-services teachers were able to make vicarious and mastery experiences in inclusive classrooms and evaluated these experiences as positive (9%), mostly positive (58%) or neutral (30%). Only 3% reported negative (one student) or mostly negative (three students) experiences regarding teaching in inclusive classrooms during the practicum. About 37% of the pre-service teachers reported that they had spent a great deal of time to adapt their lessons to the needs of all students, 52% responded that they had spent a reasonable amount of time and 11% responded that they had spent little to very little time to adapt their lesson to heterogeneous needs of students. With regard to challenges during the practicum, pre-service teachers perceived classroom management as the most challenging task. 31% of the answers are related to challenges concerning classroom management (e.g., maintaining of the group focus, establishment of rules and routines). However, 30% of the answers refer to the diversity of the students and challenges in dealing with students with special educational needs (e.g., taking into account the needs of all students, integration of a student with Asperger's syndrome). Other challenging tasks for the pre-service teachers in our study refer to time management (7%), lesson planning (7%) or personal factors like nervousness or anxiety and stress during teaching.

Regarding our second research question, we wanted to know if pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education change through their first teaching experiences. Our results showed that pre-service teachers had a significant increase in both self-efficacy scales [arrangement of inclusive education:  $t(148) = 3.48, P < 0.001, d = 0.29$ ; handling of classroom disruptions:  $t(148) = 7.72, P < 0.001, d = 0.62$ ]. During the teaching practicum, attitudes remained the same except for a decrease regarding attitudes towards the effects of inclusive education [ $t(147) = 2.27, P < 0.05, d = -0.19$ ; see Table 2].

Our third research question was if pre-service teachers' attitudes are related to their self-efficacy beliefs and their

satisfaction of career choice and job-related exhaustion. Our findings revealed a weak but significant correlation between attitudes and self-efficacy beliefs regarding the arrangement of inclusive education (see Table 3). Self-efficacy in handling classroom disruptions correlated only with attitudes towards the arrangement of inclusive education. Moreover, high self-efficacy correlated significantly with satisfaction of career choice, especially after the practicum ( $r = 0.34-0.38; P < 0.05$ ), whereas attitudes were negatively correlated with job-related exhaustion after the practicum ( $r = -0.21-0.30; P < 0.05$ ).

Concerning our last research question, we wanted to know which factors during the practicum (e.g., positive experiences, competence support) predict pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education (see Tables 4 and 5). The results of the regression models showed that positive experiences in inclusive classrooms during the practicum are important predictors of self-efficacy (self-efficacy with regard to the arrangement of inclusive education:  $B = 0.37, SE = 0.12, P < 0.01$ ; self-efficacy with regard to the handling of classroom disruptions:  $B = 0.43, SE = 0.11, P < 0.01$ ). Moreover, the time pre-service teachers spent to adapt their lessons to the needs of all students predicted self-efficacy with regard to the arrangement of inclusive education ( $B = 0.35, SE = 0.12, P < 0.01$ ).

Contrary to our assumptions, positive experiences during the teaching practicum did not predict attitudes towards inclusive education (see Table 5). However, positive experiences before the practicum predicted pre-service teachers' attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting. Moreover, our findings indicated that perceived competence support from university supervisors is a significant predictor of attitudes towards the effects of inclusive learning settings ( $B = 0.51, SE = 0.11, P < 0.01$ ), while experiences in inclusive classrooms is a negative predictor ( $B = -0.45, SE = 0.21, P < 0.05$ ).

## Discussion and implications

Regarding inclusive education, there is an increasing body of research on pre- and in-service teachers' attitudes and self-efficacy beliefs. However, as of yet, research has not focused on the development of pre-service teachers' attitudes and self-efficacy beliefs towards inclusive education through first teaching experiences. Our study aimed at closing this research gap.

Our first research question was how pre-service teachers evaluate their first teaching experiences in inclusive classrooms and what kind of challenging tasks they report. We found out that pre-service teachers in our study reported mostly positive or at least neutral mastery and vicarious experiences in inclusive classrooms, which can be interpreted as an indication for the successful implementation of inclusive teaching in most of the practicum

**Table 2: Means (M), standard deviations (SD) and effect sizes for repeated measures (*d*)**

	Pre		Post		$\Delta$	<i>t</i>	df	<i>P</i>	<i>d</i>
	M	SD	M	SD					
SE_AIE	4.22	0.74	4.44	0.81	0.23	3.48	148	<0.001	0.29
SE_CD	4.07	0.79	4.55	0.77	0.48	7.72	148	<0.001	0.62
Attitudes_SB	4.26	0.82	4.29	0.96	0.03	0.46	146	0.643	0.04
Attitudes_AIE	4.51	0.95	4.48	1.01	-0.03	0.40	148	0.689	-0.04
Attitudes_EI	4.89	0.71	4.76	0.79	-0.14	2.27	147	<0.05	-0.19

Notes: SE\_AIE, self-efficacy with regard to the arrangement of inclusive education; SE\_CD, self-efficacy with regard to the handling of classroom disruptions; Attitudes\_SB, attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting; Attitudes\_AIE, attitudes towards the arrangement of inclusive education; Attitudes\_EI, attitudes about the effects of inclusive learning settings.

schools. With regard to the perceived challenges during the practicum, our results confirm that classroom management is 'one of the most important tasks pre-service teachers have to master during their first teaching practicum' (Weber, Gold, Prilop, et al., 2018, p. 40). However, dealing with the needs and the diversity of all students was an equally perceived challenge for the pre-service teachers in our study. These findings confirm that inclusive education 'can be a very complicated and demanding task' (Varcoe and Boyle, 2014, p. 324), especially for pre-service teachers with little own teaching experiences.

Regarding the second research question, we wanted to know how pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education change through their first teaching experiences. We presumed that the pre-service teachers in our study underwent a positive change in their self-efficacy beliefs and their attitudes towards inclusive education. Previous research has shown that mastery and vicarious experiences during a teaching practicum have mostly a positive impact on pre-service teachers' self-efficacy beliefs. Our findings confirm this hypothesis for the development of self-efficacy beliefs and align with previous studies (Malinen, Savolainen, Engelbrecht, et al., 2013; Zee and Kooen, 2016). The significant increase of self-efficacy indicates that most students in our study experienced success during their first teaching experiences in inclusive classrooms regarding the arrangement of inclusive education and the handling of classroom disruptions. In contrast to the development of self-efficacy beliefs, the results concerning attitudes towards inclusive education were not as favourable. With regard to the significant decline of attitudes about the effects of inclusive learning settings, these findings are in line with other studies (e.g., Center and Ward, 1987; Forlin, 1995; Wilzenski, 1991). Yet, we have to consider that pre-service teachers reported high attitudes towards inclusive education before their practicum. This is especially true for pre-service teachers' attitudes about the effects of inclusive learning settings, which were still high after the practicum. Pendergast, Garvis and Keogh (2011) underline that 'if beliefs are too high, participants will encounter a significant reality shock when they enter into practical experience' (p. 55). The authors report this assumption for the development of self-efficacy beliefs, but

considering our findings about time pre-service teachers invest to adapt lessons and their degree of exhaustion this could also be plausible for the decrease of attitudes towards inclusive education during the practicum. Another factor that should be taken into account is the preparation and the qualification of pre-service teachers toward inclusive teaching practices. Special education qualifications seem to be 'associated with less resistance to inclusive practices' (Avramidis, Bayliss and Burden, 2000, p. 280) and pre-service teachers seem to have more positive attitudes towards inclusion when they receive a 'professional preparation prior to student teaching' (ibid, p. 279). Pre-service teachers in our study received a professional preparation with regard to different theoretical concepts, such as teaching methods and lessons planning. However, both lecture and seminar did not focus on special education qualifications, and inclusive education was only one of the topics.

Concerning the third research question, we were interested in how pre-service teachers' attitudes are related to their self-efficacy beliefs and their satisfaction of career choice as well as job-related exhaustion. Our results confirmed that positive attitudes towards inclusive education are related to positive self-efficacy beliefs towards the arrangement of inclusive education. These findings are in line with other studies (e.g., Randoll, 2008). Interestingly, self-efficacy beliefs in handling classroom disruptions did not correlate with attitudes. This might be because students believe they can handle classroom disruptions in the sense of classroom management in general but these judgements about their own capabilities do not influence their attitudes about inclusive education.

Vieluf, Kunter and van de Vijver (2013) observed strong correlations with in-service teachers' self-efficacy and their job satisfaction in a cross-national perspective. Our results showed that these observations can also be made for pre-service teachers' self-efficacy beliefs towards inclusive education and their satisfaction of career choice, underlining the importance of a high self-efficacy beliefs not only for in-service teachers but also for pre-service teachers and their role 'as a protective resource factor' (Schwarzer and Hallum, 2008, p. 152). Moreover, we found that exhaustion after the practicum was negatively related to pre-service

**Table 3: Intercorrelations of subscales**

	1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1
1.1 SE_AIE <sub>r1</sub>													
1.2 SE_AIE <sub>r2</sub>	0.48**												
2.1 SECD <sub>r1</sub>	0.63**	0.22**											
2.2 SE_CD <sub>r2</sub>	0.38**	0.50**	0.53**										
3.1 Attitudes_SB <sub>r1</sub>	0.05	0.04	−0.12	−0.07									
3.2 Attitudes_SB <sub>r2</sub>	0.12	0.25**	−0.11	0.16	0.55**								
4.1 Attitudes_AIE <sub>r1</sub>	0.21*	0.20*	0.09	0.10	0.60**	0.46**							
4.2 Attitudes_AIE <sub>r2</sub>	0.21**	0.34**	0.00	0.16*	0.44**	0.71**	0.59**						
5.1 Attitudes_EI <sub>r1</sub>	0.21**	0.20*	0.15	0.11	0.49**	0.37**	0.62**	0.40**					
5.2 Attitudes_EI <sub>r2</sub>	0.11	0.27**	−0.04	0.13	0.48**	0.60**	0.45**	0.62**	0.51**				
6.1 Satisfaction of CC <sub>r1</sub>	0.08	0.25**	0.14	0.20*	−0.02	0.07	−0.05	0.11	0.01	0.05			
6.2 Satisfaction of CC <sub>r2</sub>	0.25**	0.41**	0.28**	0.31**	−0.05	0.14	0.02	0.11	0.09	0.10	0.43**		
7.1 Exhaustion <sub>r1</sub>	−0.08	−0.03	−0.13	−0.10	−0.08	−0.12	−0.15	−0.16*	−0.19*	−0.18*	−0.03	−0.16*	
7.2 Exhaustion <sub>r2</sub>	−0.06	−0.08	−0.08	−0.17*	−0.08	−0.25**	−0.19*	−0.30**	−0.15	−0.25**	−0.11	−0.22**	0.71**

Notes: SE\_AIE, self-efficacy with regard to the arrangement of inclusive education; SE\_CD, self-efficacy with regard to the handling of classroom disruptions; Attitudes\_SB, attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting; Attitudes\_AIE, attitudes towards the arrangement of inclusive education; Attitudes\_EI, attitudes about the effects of inclusive learning settings; satisfaction of CC, satisfaction of career choice. \* $P < 0.05$ . \*\* $P < 0.01$ .

teachers' attitudes towards inclusive education. Fives, Hamman and Olivarez (2007) point out that burnout can begin with student teaching. As emotional exhaustion seems to be one of the results of burnout (Maslach and Jackson, 1981), positive attitudes can be seen as a protective resource factor against emotional exhaustion and the development of burnout for pre-service teachers. Contrary to other studies (e.g., Brouwers and Tomic, 2000; Fives, Hamman and Olivarez, 2007), we found only a small correlation between self-efficacy with regard to the handling of classroom disruptions and emotional exhaustion after the practicum. These results comply only partially with the findings of Fives, Hamman and Olivarez (2007). They report that student teachers with higher self-efficacy beliefs experience less emotional exhaustion. However, the authors measured other facets of self-efficacy and they used different measuring points. One interpretation of our findings is that pre-service teachers feel more emotionally exhausted because they have difficulties with specific tasks of their university studies and that these difficulties serve as an indicator of low capability, which in turn can influence their self-efficacy beliefs negatively. Future research should investigate the relationship between emotional exhaustion and self-efficacy towards inclusive education in detail.

Our last research question was which factors during the practicum predict pre-service teachers' self-efficacy beliefs and attitudes. Our findings revealed that positive experiences in inclusive classrooms predict pre-service teachers' self-efficacy. However, only positive experiences during the practicum predicted self-efficacy with regard to the arrangement of inclusive education, while the perceived positive experiences before the practicum also predicted self-efficacy with regard to the handling of

classroom disruptions. Most of the pre-service teachers in our study made their first teaching experiences during this practicum and had to plan and organise at least four lessons on their own. Therefore, they had no experiences with the arrangement of inclusive education before the practicum, which explains why positive experiences before the practicum did not predict their self-efficacy beliefs. Regarding their self-efficacy beliefs in handling classroom disruptions, all pre-service teachers in our study participated in a 3-week observational practicum. The vicarious experiences during this practicum about handling classroom disruptions could have had an impact on their self-efficacy. Moreover, we found that the time pre-service teachers spent to adapt their lessons to the needs of all students predicted their self-efficacy to arrange inclusive learning settings. As we pointed out earlier, a successful performance in the classroom leads to higher self-efficacy beliefs. We assume that pre-service teachers who spent a great deal of time with lesson planning and consideration of individual learning targets performed more successful in inclusive classrooms than pre-service teachers who spent only little time with the arrangement of inclusive learning settings. These findings underline the importance of a thoroughly planned lesson, especially in inclusive classrooms, not only for students but also for pre-service teachers' self-efficacy.

Concerning the attitudes of pre-service teachers, we found that only positive experiences before the practicum predicted attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting. Since these experiences refer to mostly vicarious experiences, it can be assumed that vicarious experiences during the first practicum allow pre-service teachers to reflect

**Table 4: Regression models for self-efficacy with teaching experiences and perceived competence support as predictors**

	Self-efficacy with regard to the arrangement of inclusive education				Self-efficacy with regard to the handling of classroom disruptions			
	<i>B</i>	SE <i>B</i>	$\beta$	<i>P</i>	<i>B</i>	SE <i>B</i>	$\beta$	<i>P</i>
SE_AIE <sub>r1</sub>	0.54	0.10	0.48	<0.01				
SE_CD <sub>r1</sub>					0.47	0.08	0.54	<0.01
Experiences <sub>r1</sub>	−0.05	0.10	−0.05	0.59	−0.02	0.08	−0.02	0.79
Experiences <sub>r2</sub>	−0.16	0.22	−0.07	0.46	−0.19	0.18	−0.10	0.30
Positive experiences <sub>r1</sub>	0.19	0.12	0.14	0.12	0.38	0.10	0.33	<0.01
Positive experiences <sub>r2</sub>	0.37	0.12	0.29	<0.01	0.43	0.11	0.39	<0.01
Competence support	0.16	0.11	0.13	0.15	0.06	0.09	0.06	0.49
Time to adapt lessons	0.35	0.12	0.28	<0.01	0.08	0.10	0.07	0.42
<i>R</i> <sup>2</sup>	0.399				0.430			

Notes: SE\_AIE, self-efficacy with regard to the arrangement of inclusive education; SE\_CD, self-efficacy with regard to the handling of classroom disruptions; Attitudes\_SB, attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting; Attitudes\_AIE, attitudes towards the arrangement of inclusive education; Attitudes\_EI, attitudes about the effects of inclusive learning settings.

**Table 5: Regression models for attitudes towards inclusive education with teaching experiences and perceived competence support as predictors**

	Attitudes_SB				Attitudes_AIE				Attitudes_EI			
	<i>B</i>	SE <i>B</i>	$\beta$	<i>P</i>	<i>B</i>	SE <i>B</i>	$\beta$	<i>P</i>	<i>B</i>	SE <i>B</i>	$\beta$	<i>P</i>
Attitudes_SB <sub>r1</sub>	0.76	0.12	0.58	<0.01								
Attitudes_AIE <sub>r1</sub>					0.75	0.10	0.65	<0.01				
Attitudes_EI <sub>r1</sub>									0.79	0.13	0.61	<0.01
Experiences <sub>r1</sub>	−0.16	0.13	−0.12	0.19	−0.10	0.127	−0.07	0.44	−0.03	0.10	−0.03	0.76
Experiences <sub>r2</sub>	−0.14	0.27	−0.05	0.60	−0.24	0.270	−0.08	0.38	−0.45	0.21	−0.20	<0.05
Positive experiences <sub>r1</sub>	0.46	0.16	0.28	<0.01	0.05	0.15	0.03	0.74	0.15	0.13	0.12	0.22
Positive experiences <sub>r2</sub>	0.29	0.16	0.19	0.07	0.18	0.16	0.11	0.28	0.16	0.12	0.13	0.20
Competence support	0.02	0.14	0.01	0.89	0.01	0.14	0.01	0.95	0.51	0.11	0.41	<0.01
Time to adapt lessons	0.07	0.15	0.04	0.65	0.05	0.15	0.03	0.73	−0.11	0.12	−0.09	0.33
<i>R</i> <sup>2</sup>	0.373				0.435				0.404			

Notes: SE\_AIE, self-efficacy with regard to the arrangement of inclusive education; SE\_CD, self-efficacy with regard to the handling of classroom disruptions; Attitudes\_SB, attitudes about the influence of the students' behaviour on teaching and learning in an inclusive setting; Attitudes\_AIE, attitudes towards the arrangement of inclusive education; Attitudes\_EI, attitudes about the effects of inclusive learning settings.

more in depth how teachers (re-)act without any pressure to action, which in turn can lead to more positive attitudes (Hecht, Niedermair and Feyerer, 2016). Whereas self-efficacy beliefs seem to be more malleable for pre-service teachers through positive teaching experiences (Pendergast, Garvis and Keogh, 2011; Woolfolk Hoy and Burke-Spero, 2005), attitudes seem to be more stable (Bosse, Henke, Jäntsch, et al., 2016; Wilkins and Nietfeld, 2004). Moreover, our findings showed that the level of contact with students with special educational needs does not seem to influence attitudes and that teaching experiences in inclusive classrooms do not necessarily lead to favourable changes in attitude. Our results confirm therefore the findings of Varcoe and Boyle (2014), that 'previous teaching experience impacted negatively on pre-service teachers' attitudes towards inclusive education' (p. 333). Wilczenski (1991) states that 'negative trends in attitudes

toward mainstreaming among teachers apparently start with student teaching' (p. 14). Unfortunately, our findings do not debunk this nearly 30-year-old statement, at least not for attitudes about the effects of inclusive learning settings. However, we found that perceived competence support during the teaching practicum positively predicts attitudes towards the effects of inclusive learning settings. This emphasises the importance of a sufficiently scaffolded teaching practicum in order to prevent negative trends in attitudes through teaching experiences.

#### Limitations and areas for future research

Overall, the results from the present study are encouraging. Nevertheless, several limitations of the present study must be acknowledged. Firstly, the generalisability of the results is limited, regarding the sample size and because pre-service teachers in our samples represent



only one teacher education program of one German university. Moreover, we did not apply an experimental control group design, which would be advisable for future research. Secondly, we did not measure knowledge of inclusive education or other variables like personality factors or specific context factors influencing attitudes towards inclusive education. In line with this, our study was conducted in an authentic practicum setting and measurement points were only before and after the practicum. In future research, more factors influencing pre-service teachers' self-efficacy and attitudes during a teaching practicum need to be specified and the role and attitudes of mentors and university supervisors should be investigated in detail. For example, it would be of interest to investigate context variables of the practicum school and the mentors in school. Furthermore, attitudes of mentors or fellow students in the same school could have an impact, too.

Thirdly, concerning the evaluation of experiences in inclusive classrooms, we did not distinguish between vicarious and mastery experiences in inclusive classrooms. Therefore, we do not know if pre-service teachers in our study experienced mostly positive vicarious experiences or mastery experiences. In future studies, these different kinds of sources of self-efficacy beliefs should be investigated.

Fourthly, our instrument to measure pre-service teachers' attitudes and self-efficacy beliefs towards inclusion did not differentiate between specific special educational needs. Research has shown, that attitudes of teachers 'were strongly influenced by the nature of the disabilities' (Avramidis et al., 2000, p. 278). However, inclusive education does not mean, that teachers can choose what kind of special educational needs their students are allowed to have'. Furthermore, there is a co-morbidity between different special educational needs (e.g., learning disabilities and emotional disorder) (Sahoo, Biswas and Padhy, 2015), suggesting that the different special educational needs are primarily a systematisation for diagnosis. Nevertheless, our instrument measured only explicit cognitive attitudes. Future research should combine the measurement of explicit and implicit attitudes (Krischler and Pitzen Cate, 2018). Fifthly, some research concerning pre-service teachers' self-efficacy reports that self-efficacy decreased a couple of weeks after a practicum (e.g., Bach, 2013). However, other studies (e.g., Schüle, Besa, Schriek, et al., 2017) indicate that pre-service teachers' self-efficacy continues to increase after a 4-week practicum. Therefore, a follow-up measure is advisable for future research taking into account the different types of practicum or university curriculums.

## Conclusion

As mentioned in the introduction, strong self-efficacy beliefs and positive attitudes towards inclusive education should be considered as important outcomes of

teacher education programs and determine the success of inclusive education (e.g., Schwab, 2018). Overall, our findings show that most of the pre-service teachers have positive attitudes and slightly high self-efficacy beliefs towards inclusive education, and they report positive experiences with inclusive teaching during their first teaching practicum. Whereas positive experiences seem crucial to foster self-efficacy beliefs towards inclusive education, attitudes seem to be more resistant to change. However, competence support from university supervisors seems to have an impact regarding attitudes towards the effects of inclusive education. On that basis, an important implication of this study is that teacher education, striving to enable pre-service teachers to competently teach in inclusive classrooms, needs to invest in the quality of supervising in order to maintain the already positive attitudes of the vast majority of pre-service teachers.

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## Conflict of interest

None declared.

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