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Values and beliefs as predictors of pre-service teachers' enjoyment of teaching in inclusive settings

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As several countries have committed themselves to the promotion of inclusive school systems, teachers might feel overwhelmed by the additional competencies needed for inclusive teaching. Beyond an increase in specialised knowledge, these competencies include a coherent belief system to facilitate the adoption of inclusive practices. Currently, there is scarce knowledge concerning the foundation of teachers' beliefs and values and the possible connections between these personality traits and inclusive practices. Based on the theory of cognitive hierarchy, we investigated the predictive ability of the value of universalism in shaping sentiments, attitudes and concerns about inclusive education (RQ_1), as well as their links to the anticipated enjoyment of teaching in inclusive settings as an indicator of enthusiasm for teaching (RQ_2). Within a sample of 229 biology pre-service teachers (M_{age} = 22.9 years, SD_{age} = 3.5 years; 76% female, 68% bachelor) we found universalism to be a direct predictor of sentiments, attitudes and concerns regarding inclusive education. Furthermore, universalism was the strongest predictor of anticipated enjoyment of teaching in inclusive settings, while only sentiments about inclusive education were not predictive for enjoyment. The study illustrates how deeper underlying values like universalism is connected to beliefs about inclusive education and subsequent motivations in the classroom. When teacher educators intend to motivate pre-service teachers to teach in inclusive settings, these variables should be kept in mind, though further study must be done on the generalisability of the results for pre-service teachers of other school subjects.

Introduction

Germany is one of many countries that has committed itself to following UNESCO's Salamanca declaration (UNESCO, 1994), establishing an inclusive school system to provide access to all children. In reality, many schools still lack an inclusive spirit and are unable to truly provide equal chances for all students (Haug, 2017). One of the reasons for this prevailing inequality is the additional demands requested from teachers (Billingsley, 2004). For example, teaching in inclusive settings might require more specialised knowledge about the learning processes of students with special needs (Amr, Al-Natour, Al-Abdallat, et al., 2016). At the same time, acquisition of new knowledge may not always entail changes in educational practices, because its adoption in practice fundamentally relies on a coherent set of underlying beliefs (Florian, 2008; Forlin and Chambers, 2011). A *belief* generally represents an individual's belief in something to be true and may be the basis of higher order attitudes (Ajzen, 1991). A teacher's belief system and related stances are central to the maintenance and further implementation of inclusive practices in all school systems (Boer, Pijl and Minnaert, 2011; Sze, 2009).

Beliefs, for example, about a specific topic (i.e., inclusive teaching), are systematically embedded within a greater belief system (Fives and Buehl, 2012; Rokeach, 1972). Several studies from diverse disciplines within social psychology showed that deeper personality traits like values affect higher order beliefs and behaviours (Whittaker, Vaske and Manfredo, 2006). Therefore, values may affect teacher behaviour in contexts like inclusive teaching in that they serve as the psychological foundation for belief systems and context-specific beliefs.

Several models, like the model of professional action competence from the *Cognitive Activation in the Classroom* (COACTIV) project, incorporate personality variables such as coherent values and beliefs into the description of teacher competencies (Baumert and Kunter, 2013). However, these teacher competencies are embedded in a larger set of relevant factors. For example, in the COACTIV model, professional knowledge establishes the foundation for teachers' professional competency

(Baumert and Kunter, 2013). Furthermore, teachers are expected to show a high level of motivation conceptualised as outward enthusiasm comprising enjoyment of teaching, to practice healthy self-regulation and to hold coherent values and beliefs about teaching and learning (Baumert and Kunter, 2013).

A number of studies have already investigated specific beliefs regarding inclusive education (Jordan, Schwartz and McGhie-Richmond, 2009) or the impact of sentiments, attitudes and concerns on the adoption of inclusive education (Sharma, Forlin, Loreman, et al., 2006). However, there is scarce research on the foundations of such beliefs about inclusive education in deeper personality variables like values. Furthermore, the possible connections between the aforementioned variables have rarely been addressed to date. Increased knowledge about the structured nature of these variables may allow for important insights on the topic of inclusive teacher education. For example, teacher educators could more specifically target their professional development activities to ensure the sufficient preparation of teachers for instruction in inclusive settings.

Therefore, the present study investigates the role of values, beliefs and other variables as defined by the model of professional action competence, as well as their interrelatedness. Connections between the variables were hypothesised from the theory of cognitive hierarchy, which posits that deeper personality variables like values are the foundation for higher order attitudes and behaviours (Whittaker, Vaske and Manfredo, 2006).

Following Schwartz (1994), we selected the value of *universalism* from the framework of basic human values. This value represents an individual's tolerance for the welfare protections of both persons and nature, which may serve as a possible foundation for more specific beliefs about inclusive education (Schwartz, 1994). To conceptualise these specific beliefs, we selected sentiments, attitudes and concerns about inclusive education, which have been shown in prior studies to affect teachers' behaviours in inclusive settings (Forlin, Earle, Loreman, et al., 2011). Moreover, sentiments, attitudes and concerns about inclusive education appear to be the logical next level in the flow from basic values to more context-related variables as expressed in the cognitive hierarchy model. Finally, we investigated the connection of values and beliefs to inclusive practices, represented by the anticipated enjoyment of teaching in inclusive settings.

Findings emerging from these connections could be synthesised to improve inclusive teacher instruction in higher education. Thus, we chose a pre-service teacher sample from which to draw conclusions for the first phase of professional teacher development. Given the subject-specific nature of teacher education for secondary schools (Cortina and Thames, 2013), we investigated pre-service teachers who studied a common subject: biology. We then posed the following two research questions:

RQ_1: Is biology pre-service teachers' value orientation towards universalism connected to their sentiments, attitudes and concerns about inclusive education?
RQ_2: Are the sentiments, attitudes and concerns about inclusive education connected to biology pre-service teachers' anticipated enjoyment of teaching in inclusive settings?

Theoretical background

Structuring human personality

As outlined above, in theory deep personality variables have been described as the foundation for higher order attitudes and behaviours, a structure supported empirically in numerous studies conducted over the last two decades. In addition to the assumption that personality traits are organised in a certain order, more specific frameworks suggest relevant variables to explain human behaviour in specific contexts. This applies equally to teaching behaviours.

Although the theory of planned behaviour may be one famous example employed to explain human behaviour in general (Ajzen, 1991), the explanation of higher order variables by deeper ones can be attributed to the *theory of cognitive hierarchy* (Whittaker, Vaske and Manfredo, 2006). Building on prior studies about beliefs, this theory suggests an hierarchical order between personality variables, based on their position within a continuum of generality and specificity, the latter usually referring to specific contexts (Whittaker, Vaske and Manfredo, 2006). From this theoretical perspective, more general and deep variables like values are considered predictive of more specific variables like higher order attitudes and context-bound behaviours (Whittaker, Vaske and Manfredo, 2006). As the theory of cognitive hierarchy originated from general sociopsychology and has scarcely been applied to educational research, we explicitly test the assumed structure between the variables within our first hypothesis:

H1. The connections between variables can be ordered according to the theory of cognitive hierarchy, with values being predictive for beliefs about inclusive education, which in turn will be predictive for enjoyment of teaching in inclusive settings.

Universalism as a foundation for teaching in inclusive settings

Concerning our first research aim (RQ_1), we regard universalism, from the basic human value framework by Schwartz (1994), as the key variable relevant to teaching in inclusive settings. Generally, *values* describe 'a moral, social, or aesthetic principle accepted by an individual or society as a guide to what is good, desirable, or

important' (VandenBos, 2015). For a further definition of specific values, several different value frameworks have been proposed. One of the most coherent conceptualisations is the framework of basic human values (Schwartz, 1994). This framework identifies 10 different types of values, which can be subsumed under four distinct superordinate value dimensions. Within the topic of inclusive education, we concentrated on the value dimension of self-transcendence, in which benevolence and universalism, particularly relevant for the context of our study, are subsumed. Although both of these values emphasise acceptance of others and the natural world as equal to concerns about their welfare (Schwartz, 1994), universalism in particular seemed a likely foundation for specific higher order beliefs and enjoyment of inclusive teaching.

Universalism is defined as the 'understanding, appreciation, tolerance, and protection for the welfare of all people and for nature' (Schwartz, 1994). In the field of inclusive education, it is fair to assume that pre-service teachers with a universalistic worldview would apply this to their professional lives and subsequently try to understand, appreciate and tolerate students with special needs. Such connections were already found in similar contexts like the integration of immigrants into society (Schwartz, 2007). To further investigate universalism as the foundation for higher order beliefs within the context of inclusive education, we selected sentiments, attitudes and concerns about inclusive education as more specific belief dimensions.

Teaching beliefs about inclusive education

Generally, a *belief* represents the 'acceptance of the truth, reality, or validity of something' (Ajzen, 1991; VandenBos, 2015). Applied to the classroom setting, teachers' beliefs are represented in the specific content they believe to be true about teaching and learning (Fives and Buehl, 2012). Within inclusive education research, several studies have shown how beliefs and their surrounding systems may affect a school's success in implementing inclusive practices (Jordan, Schwartz and McGhie-Richmond, 2009). For example, a qualitative study from India showed that an ideological driven negative attitude towards disability may be related to a less encouraging teaching environment towards inclusion (Tiwari, Das and Sharma, 2015). Although such beliefs are generally shaped by a variety of person- and situation-specific factors like prior experiences with students with special needs or the nature and severity of a disability (Avramidis and Norwich, 2002), many studies concentrated on a more specific set of beliefs related to inclusion, such as attitudes, sentiments and concerns (see Forlin, Earle, Loreman, et al., 2011).

Sentiments represent in this case a group of beliefs regarding inclusive education, which in prior studies often correlated with inclusive practices (Forlin, Earle, Loreman, et al., 2011). Building on the prior work of Gething (1994), the *sentiments* about inclusive education were initially conceptualised to measure the perceived discomfort of social interactions with disabled people. Accordingly, negative sentiments towards engaging with people with disabilities reflect the perceived problems teachers may encounter when interacting with disabled students (Forlin, Earle, Loreman, et al., 2011). Sentiments include the subdimensions of fear and discomfort, and helping and coping, as well as disability and abnormality (Loreman, Earle, Sharma, et al., 2007). Based on this conceptualisation, our second hypothesis suggests that universalism is a negative predictor of sentiments about inclusive education, as persons with a universalistic worldview would hope to protect every person, regardless of disability. This perspective is in concordance with studies from other contexts, in which, for example, universalism was positively correlated with perspectives on immigration (Schwartz, 2007).

H2. Universalism is a negative predictor of sentiments about inclusive education.

In addition to the belief dimension of perceived problems of inclusion, prior studies have also pointed to the relevance of teachers' general evaluations (Avramidis and Norwich, 2002). A general evaluation can be conceptualised as a set of *attitudes* about inclusive education, described as the 'acceptance of learners with different support needs' (Forlin, Earle, Loreman, et al., 2011). In prior studies, teachers generally showed positive attitudes towards inclusion, which were affected by internal as well as external factors and connected to other relevant variables like increased self-efficacy and inclusive practices (Avramidis and Norwich, 2002; Roberts and Simpson, 2016). Based on these results and their conceptual similarity to universalism, we hypothesise universalism to be a positive predictor of attitudes about inclusive education.

H3. Universalism is a positive predictor of attitudes about inclusive education.

In addition to sentiments about social contact with disabled people, content-related concerns may be another significant variable hindering the inclusion of students with special needs (Forlin, Earle, Loreman, et al., 2011). For example, prior studies demonstrated that teachers reported increasing workloads due to the inclusion of students with special needs (Haug, 2017) or a lack of perceived resources (Sharma and Desai, 2002). Moreover, specific institutional problems may function as further barriers for mainstreaming inclusion in schools (Tiwari, Das and Sharma, 2015). In all, *concerns* about inclusive education are defined as teachers' cognitions in relation to problems of inclusion like workload, stress and missing resources, but also the academic impact of students with special needs on the rest of the class (Loreman, Earle, Sharma, et al., 2007). Due to this negative

connotation, we hypothesise universalism as a negative predictor of concerns about inclusive education.

H4. Universalism is a negative predictor of concerns about inclusive education.

Enjoyment as the foundation of enthusiasm for teaching in inclusive settings

A further aim of our investigation was to connect universalism and the sentiments, attitudes and concerns about inclusive education with the implementation of inclusive practices (RQ_2). Comparable to prior studies in the field of professional development for teachers, we included enjoyment as an indicator of intrinsic motivation for teaching in inclusive settings. As described above, Baumert and Kunter (2013) proposed enthusiastic teaching as one facet of teachers' professional competence. Related studies found subject-specific enthusiasm to be a consistent predictor of student outcomes (Baumert and Kunter, 2013; Mahler, Großschedl and Harms, 2018). The COACTIV model and subsequent studies therefore used enthusiasm for teaching as an indicator of teaching motivation (Kunter, 2013).

Enthusiasm is defined as 'an affective, person-specific characteristic that reflects the subjective experience of enjoyment, excitement, and pleasure, and that is manifested in certain teacher behavior in the classroom' (Kunter, Frenzel, Nagy, et al., 2011). This can be divided into enthusiasm for teaching a specific subject and enthusiasm for teaching in general (Kunter, Frenzel, Nagy, et al., 2011). A recent review underlined the relevance of the behavioural manifestation within classrooms and further differentiated enthusiasm from teaching enjoyment (Keller, Hoy, Goetz, et al., 2016). Although enthusiasm always includes behavioural manifestations, the enjoyment can be described as the measurable affective component of enthusiasm and represents its required preceding teaching emotion (Frenzel, Goetz, Lüdtke, et al., 2016; Keller, Hoy, Goetz, et al., 2016).

Within the depiction of enjoyment as a teaching-related emotion, researchers described enjoyment as an internal psychological state with high subjective pleasantness and motivational approach tendencies caused by goal congruence (Frenzel, Pekrun, Goetz, et al., 2016). In correspondence with this, prior studies found enjoyment as a predictor of teaching motivation (Büssing, Schleper and Menzel, 2019b). The assumption that enjoyment is caused by the congruence with specific goals is based on *appraisal theory*, which states that the evaluation of situations based on a current goal is the underlying principle for the elicitation of emotions (Moors, 2009). As pertains to our study, the enjoyment of teaching in inclusive settings describes the positive emotional reaction to teaching in inclusive classrooms, triggered by its conduciveness to internal goals. This conceptualisation coheres with the conceptualisation of Baumert and Kunter (2013) as well as motivation theories like that of self-determination as studied by Ryan and Deci (2000). The latter propose enjoyment as a motivational quality of self-determined and intrinsic regulation (Ryan and Deci, 2000). To further investigate the relevant personal goals which may contribute to internal congruence with inclusive teaching, the present study utilises basic human values and beliefs about inclusive education as possible underlying personality traits related to teaching emotions. Since we utilise a sample of pre-service teachers, we hypothesise the following:

H5. Universalism is a positive predictor of the anticipated enjoyment of teaching in inclusive settings.

H6. Sentiments about inclusive education are a negative predictor of the anticipated enjoyment of teaching in inclusive settings.

H7. Attitudes about inclusive education are a positive predictor of the anticipated enjoyment of teaching in inclusive settings.

H8. Concerns about inclusive education are a negative predictor of the anticipated enjoyment of teaching in inclusive settings.

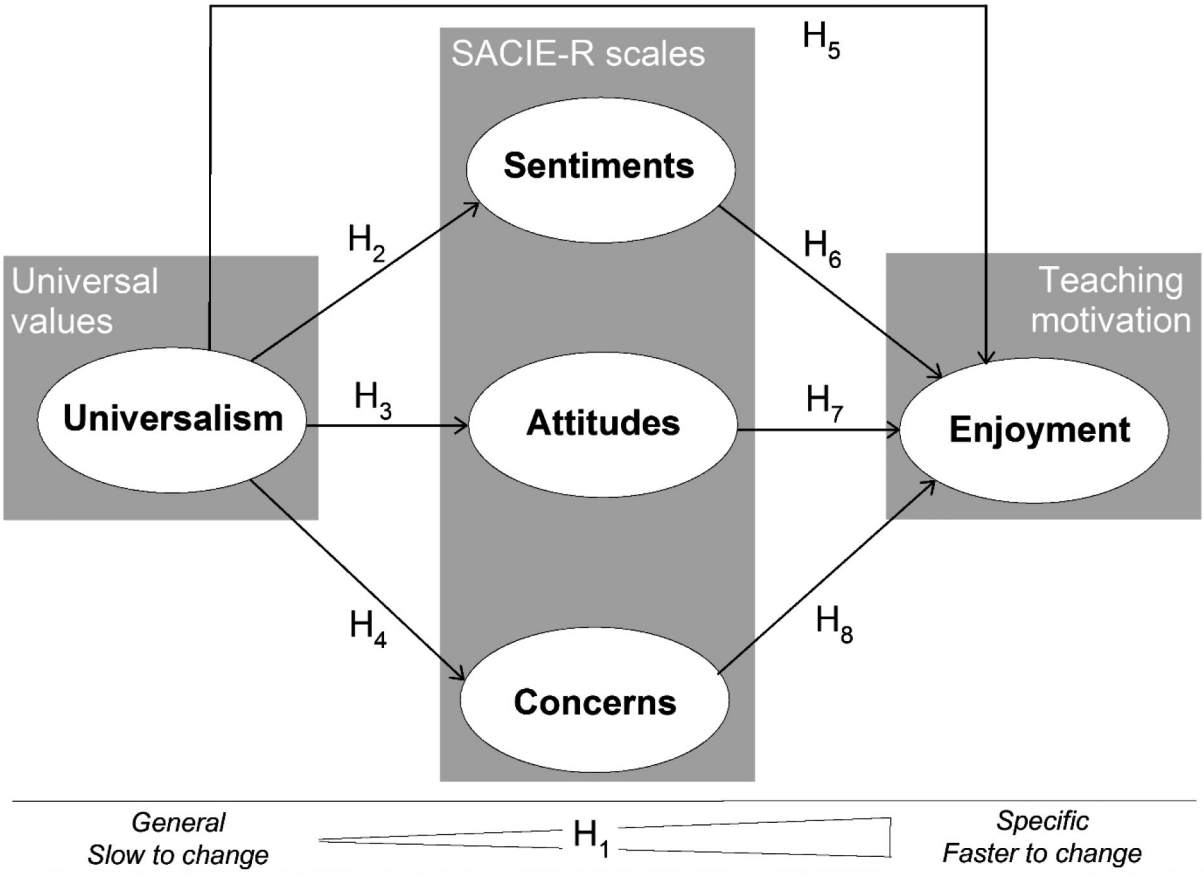
Figure 1 illustrates the structured nature between the variables of our study and the corresponding hypotheses. Along with the presented and hypothesised connections between the variables, several studies have shown how further demographic variables like gender (Lohbeck, Hagenauer and Frenzel, 2018) or prior experience with disabled people and students may affect either the anticipated enjoyment of teaching or beliefs about inclusive education (Avramidis and Norwich, 2002). Although we did not explicitly hypothesise a connection between demographic and dependent variables to maintain the focus of our paper, we nonetheless investigated their relevance as control factors. This especially concerns gender as a control variable of enjoyment, given its effect in prior studies (Lohbeck, Hagenauer and Frenzel, 2018). These differences may be explained by variances in affectivity in female and male persons, even when the findings are inconsistent between contexts (Brody and Hall, 2008).

Methods

Research design and sample

Our interest in connections between several variables led us to employ a quantitative cross-sectional research design with a paper–pencil questionnaire (Bryman, 2008). This questionnaire included all of the presented scales and several additional variables, which are not within the purview of this paper. The questionnaire was administered in German and the scales were translated into English for the purpose of this paper. We selected a

Figure 1: Hypothetical structure of the study variables based on the cognitive hierarchy with more general variables on the left predicting more specific variables on the right. SACIE–R, sentiments, attitudes and concerns about inclusive education, revised



pre-service teacher sample for the investigation. Scientific subject areas appeared distinctly demanding for students with special needs. One reason for this is their factual complexity and inherent activities like inquiry learning, which require the additional support of all science teachers (McGinnis and Kahn, 2014; Villanueva, Taylor, Therrien, et al., 2012). Furthermore, a particular subject may attract a specific set of teachers, based on its content. As we measured universalism, which also includes nature-related value dimensions, differences concerning the general occurrence of this value within teachers of a specific subject may occur. This phenomenon has been described by (Hermann, Voß and Menzel, 2013), who identified a different value structure between groups of students of different university subjects. Due to possible differences between future teachers of different school subjects and the particular challenges of inclusive science classes described above, we decided to sample biology pre-service teachers only.

The data were collected over the course of several lectures at a medium-sized university in Northwest Germany between January and April 2016. Overall, 229 pre-service biology teachers with a mean age of 22.88 years (SD_{age} = 3.47 years) completed the questionnaire, 174 (76.3%) self-reported as female and 54 as male. Furthermore, the majority of students in the sample were studying to become grammar school teachers (n = 159, 72.9%). Some were training to teach at vocational schools (n = 52, 23.9%) and only a few for secondary schools (n = 7, 3.2%). Although the sample shows similar characteristics in the distribution of age and gender to other studies of pre-service teachers, it nonetheless represents a convenience sample, as we did not apply any further randomisation to the student groups (Bryman, 2008).

The study was conducted in accordance with the rules and regulations of the Declaration of Helsinki, the German Research Foundation (DFG) and the American Psychological Association. We obtained informed consent for inclusion in the sample from every participant before the study. Furthermore, we ensured the anonymity of all participants by not recording their names. They also were given the option to skip questions or to refuse to fill in the whole questionnaire at any moment. No student made use of the latter option. The protocol was not subject to the approval of a local ethics committee, as the research had no medical background, assessed no sensitive personal information and all participants learned the aims of the study before agreeing to participate.

Measurements

We mainly utilised established scales, which consisted of multiple indicators to increase validity when measuring latent variables (Bryman, 2008). All items were randomised to prevent measurement problems based on item order, and participants rated their agreement with each items on a 6-point scale. Their options were: 'strongly disagree' (1), 'disagree' (2), 'rather disagree' (3), 'rather agree' (4), 'agree' (5) and 'strongly agree' (6). To construct the final variables for the correlations and regression analyses we calculated the mean for all measured items respectively. The English version of all items can be viewed in Table 1.

We also measured several demographic variables like gender with a dichotomous item, and age with an open item. Furthermore, we asked the participants to disclose their experiences with disabled people. Participants could select from seven closed response options like 'one disabled human within my household', 'one disabled human as a relative' or report own experiences. For the analysis we coded these as no experience ('0') and some experience ('1'). Finally, we asked for their level of teaching experience within inclusive settings as another item on a scale, with the options 'very few' (1), 'few' (2), 'high' (3) or 'very high' (4).

Universalism. To measure the basic human value of universalism we selected the German short version of the established and validated Portraits Value Questionnaire (PVQ–21) (Schmidt, Bamberg, Davidov, et al., 2007). This three-item scale has extensively been applied to measure values and show sufficient measurement properties for a desired population (Cieciuch and Davidov, 2012). Participants were asked to rate their similarity to a fictional person demonstrating universalistic characteristics. We kept this indirect way of measuring values and the original wording of the response categories as suggested in the PVQ–21. Therefore, participants rated the person to be either 'very much like me' (6), 'like me' (5), 'somewhat like me' (4), 'a little like me' (3), 'not like me' (2) and 'not like me at all' (1).

SACIE scales. We selected the most recent revised version to measure the sentiments, attitudes and concerns about inclusive education: scale SACIE–R (Forlin, Earle, Loreman, et al., 2011). In this iteration, every dimension is measured by an agreement with five statements, which either include specific sentiments, attitudes or concerns towards inclusive education. The German version was developed by translating the English scales in close adaptation to the already tested German version by Hecht, Niedermair and Feyerer (2016). The first version was refined by enlisting an independent person to reverse translate it and then checking this renewed translation. Final translation was achieved through mutual consent of both translators. In contrast to other studies, we did not reverse code the scales of sentiments and concerns, as negative connections of these scales seemed to be more coherent (Forlin, Earle, Loreman, et al., 2011).

Enjoyment. Due to the lack of a measurement instrument at the time of the study we constructed three items based on prior studies about teaching enjoyment (Frenzel, Goetz, Lüdtke, et al., 2009). Within this scale, participants rated their anticipated enjoyment of their future teaching in inclusive settings. This is also coherent with the conceptualisation of Kunter (2013), which conceptualises the perception of enjoyment as the internal affective experience of enthusiasm for teaching (Keller, Hoy, Goetz, et al., 2016).

Data analysis

For the first step of our statistical analysis we performed a confirmatory factor analysis (CFA) with all scales to ensure the discriminant validity of all variables (Brown, 2015; Shelby, 2011). The selection of fit criteria was based on Kline (2016), who recommends the evaluation of model fit by combining the fit indices of the root mean square error of approximation (RMSEA), the Bentler comparative fit index (CFI) and the standardised root mean square residual (SRMR). Therefore, we assessed a good model fit for the CFA by a RMSEA ≤ 0.08, a CFI ≥ 0.95 and a SRMR ≤ 0.08. After an initial check of the loadings and model fit, we adjusted the model based on theoretical assumptions following Brown (2015). This modification is further described and justified in the following measurement results section. Beyond the CFA, we also inspected Cronbach's alpha and McDonald's omega as additional indicators of the internal consistency of all scales (Peters, 2014).

After the examination of the reliability and validity of the scales, we constructed them based on the mean of the described items (see Table 1) and investigated the bivariate correlations and descriptive statistics of the variables. Based on these connections and our theoretical model, we then used robust regression analyses with the dependent variables to assess the predictive ability of the predictor variables and investigate the relevance of the control variables. We rated control variables as relevant to our model when they predicted more than one dependent variable. Following these regressions, we calculated a structural equation model (SEM) to answer the subsequent research questions and hypotheses (H_2–H_8). To assess the fit of the SEM we applied the same fit criteria as the CFA. Finally, we compared the model fit of this SEM with two different alternative models to check the accuracy of our theoretical model and to assess the hierarchical structure between variables (H_1). These models were selected based on the absence of a structure behind the variables, meaning the alternative model 1 placed enjoyment on one level with the belief scales and the alternative model 2 positioned universalism on another level with the belief scales. As an additional indication of the quality of the

Table 1: Results from confirmatory factor analysis based on the initial and modified calculation

	Initial		Modified	
	λ	SE	λ	SE
Universalism (Cieciuch and Davidov, 2012; Schmidt, Bamberg, Davidov, et al., 2007)				
'How much like you is this person'?				
He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life. (UNIV01)	0.532	–	0.562	–
It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them. (UNIV02)	0.545	0.36	0.499	0.29
He strongly believes that people should care for nature. Looking after the environment is important to him. (UNIV03)	0.261	0.21	0.271	0.19
Sentiments (Forlin, Earle, Loreman, et al., 2011)				
I find it difficult to overcome my initial shock when meeting people with severe physical disabilities. (SEN01)	0.785	–	0.778	–
I am afraid to look a person with a disability straight in the face. (SEN02)	0.665	0.07	0.675	0.06
I tend to make contacts with people with disabilities brief and I finish them as quickly as possible. (SEN03)	0.842	0.04	0.871	0.08
I would feel terrible if I had a disability. (SEN04)	0.263	0.11	EXC	–
I dread the thought that I could eventually end up with a disability. (SEN05)	0.299	0.11	EXC	–
Attitudes (Forlin, Earle, Loreman, et al., 2011)				
Students who have difficulty expressing their thoughts verbally should be in regular classes. (ATT01)	0.784	–	0.790	–
Students who frequently fail exams should be in regular classes. (ATT02)	0.059[n.s.]	0.15	EXC	–
Students who need an individualised academic program should be in regular classes. (ATT03)	0.683	0.14	0.672	0.14
Students who are inattentive should be in regular classes. (ATT04)	0.599	0.10	0.606	0.09
Students who require communicative technologies (e.g., Braille and sign language) should be in regular classes. (ATT05)	0.514	0.15	0.519	0.15
Concerns (Forlin, Earle, Loreman, et al., 2011)				
I am concerned that my workload will increase if I have students with disabilities in my class. (CON01)	0.840	–	860	–
I am concerned that it will be difficult to give appropriate attention to all students in an inclusive classroom. (CON02)	0.526	0.09	0.538	0.08
I am concerned that I will be more stressed if I have students with disabilities in my class. (CON03)	0.907	0.06	0.899	0.06
I am concerned that students with disabilities will not be accepted by the rest of the class. (CON04)	0.193	0.09	EXC	–
I am concerned that I do not have knowledge and skills required to teach students with disabilities. (CON05)	0.504	0.09	0.491	0.08
Enjoyment				
I think I will enjoy teaching inclusive classes in my later working life. (ENJ01)	0.837	–	0.828	–
I look forward for the heterogeneity of students in an inclusive class. (ENJ02)	0.814	0.08	0.822	0.08
I enjoy engaging with inclusive teaching. (ENJ03)	0.787	0.06	0.790	0.07
Model fit statistics				
χ^2 (df)	356.698 (179)		147.417 (109)	
Root mean square error of approximation	0.073		0.043	
Bentler comparative fit index	0.853		0.965	
Standardised root mean square residual	0.081		0.051	

Notes: n.s., not significant loading of item, all other loadings were significant; EXC, item excluded due to small loading or scale validity.

models, we inspected the Akaike and Bayesian information criteria (AIC and BIC) and the explained variance (R^2). Although smaller values for the AIC and BIC indicate better fitting models, the R^2 shows how strongly the independent variables explain the variance within the dependent factors (Kline, 2016).

We utilised robust statistical methods based on Field and Wilcox (2017), due to skewness and kurtosis of some of the variables (see descriptive statistics in Table 2). This included the selection of spearman's rho as a correlation coefficient and robust estimators for the CFA, regression analyses and SEM. Given these robust methods, we did not exclude any cases. Furthermore, none of the variables showed more than 5% of cases missing, and thus we did not impute any data points for the calculations. All calculations were performed using RStudio Version 1.1.456 running R version 3.5.1 (R Core Team, 2018). The dataset and the code for the replication of the analyses are available within the Supporting Information.

Results

Measurement results

Based on the selected fit criteria, the first calculation of the CFA led to an unacceptable fit of the data, with the RMSEA and SRMR passing the fit criteria, in contrast to the CFI (see Table 1). This divergence may be explained by problematic loadings (<0.4; Field, 2018) of the items SEN04, SEN05, ATT02 and CON04. Most of the non-compliance of the items to the measurement model can be explained by their content. For example, the items SEN04 and SEN05 both represent fears of personal disabilities, although the rest of the scale denotes sentiments about contact with disabled people. Similarly, the item CON04 signifies external concerns by students, contrary to the other items, which refer to the participants' own concerns regarding people with disabilities. Finally, the item ATT02 uniquely denotes the measurement of students' achievements, which may have posed a problem for pre-service teachers. Following Brown (2015), the misfit of these items with regard to the measurement model can be theoretically justified, and we therefore excluded them from the scales.

After the exclusion of the items mentioned above, the CFA obtained a sufficient fit with an RMSEA of 0.043, SRMR of 0.051 and CFI of 0.965. Concerning the internal consistency of the scales as indicated by Cronbach's alpha and McDonald's omega we found good values for all variables except universalism (see Table 2). This may be explainable due to the low factor loading of the item UNIV03, which may be due to the content of this item. UNIV03 is the only item measuring the nature dimension of universalism within the applied short scale. The variability of item content may lead to a lower internal consistency of the items but also ensures the content validity of the short scale. Therefore, we decided to leave this

Table 2: Inter-correlations and descriptive statistics

	1	2	3	4	5	6	7	8	9	10
1. Age	–									
2. Gender	−0.16*	–								
3. School type	−0.41***	0.27***	–							
4. Experience dis.	−0.04	−0.03	−0.01	–						
5. Teaching exp.	−0.03	0.11	0.10	0.30***	–					
6. Universalism	0.07	0.02	−0.08	0.09	0.01	–				
7. Sentiments	−0.04	0.07	0.14	−0.30***	−0.09	−0.31***	–			
8. Attitudes	−0.04	−0.10	−0.16*	0.18*	0.01	0.21***	0.22***	–		
9. Concerns	0.12	−0.18*	0.11	−0.15	−0.10	−0.15*	0.31***	−0.26***	–	
10. Enjoyment	0.02	−0.18*	−0.23***	0.25***	0.05	0.36***	−0.31***	0.54***	−0.39***	–
Number of items	1	1	1	1	1	3	3	4	4	3
Minimum	18	0	–	1	1	3.00	1.00	1.50	1.00	1.00
Maximum	38	1	–	2	4	6.00	5.33	6.00	6.00	6.00
M	22.88	–	–	–	1.44	4.91	2.31	3.93	3.94	3.67
SD	3.47	–	–	–	0.63	0.66	0.94	0.79	1.04	0.95
Median	22.00	–	–	–	1.00	5.00	2.33	3.75	4.00	3.66
Skewness	–	–	–	–	1.24	−0.49	0.43	−0.03	−0.45	−0.41
Kurtosis	–	–	–	–	0.93	−0.34	−0.40	0.35	0.27	0.67
Cronbach's α	–	–	–	–	–	0.44	0.75	0.82	0.80	0.87
McDonald's ω	–	–	–	–	–	0.56	0.81	0.72	0.79	0.81

Notes: The coding of gender was 0 = female, 1 = male; school type was coded as 0 = not grammar school, 1 = grammar school; experience with disabilities was coded with 0 = no experience, 1 = some experience. *$P < 0.05$. ***$P < 0.001$.

item within the scale, also given the empirical model fit of the overall CFA. Moreover, an additional exclusion of the item UNIV03 decreased the fit of the CFA as well as both measures of internal consistency. Prior studies showed only weak values of internal consistency for this measure, due to the wideness of the construct. For example, Schwartz (2007) reports values ranging from 0.47 to 0.68. However, as the scale for the sub-dimension only comprises three items, there is little capacity to exclude items or otherwise modify the data. We must also acknowledge the criticism of solely evaluating single value indicators like Cronbach's alpha or McDonald's omega as the only criteria for sufficient measurements (Peters, 2014), which we will also discuss later. Furthermore, the CFA indicated sufficient measurement abilities of the measurement model due to the selected fit criteria. For these reasons we accepted the overall model as sufficient according to the given modifications and continued with further analyses.

Connections between the variables

Bivariate correlations. As displayed in Table 2, we found several significant correlations between variables. Overall, universalism was negatively correlated with small effect sizes with sentiments ($r = -0.31$, $P < 0.001$), positively with attitudes ($r = 0.21$, $P < 0.001$) and negatively with concerns ($r = -0.15$, $P < 0.05$) about inclusive education. Furthermore, we found a positive correlation of universalism with anticipated enjoyment of teaching in inclusive settings ($r = 0.36$, $P < 0.001$). Correlations with a medium effect size could also be identified between the SACIE scales and anticipated enjoyment of teaching, with the strongest positive connection between attitudes and enjoyment ($r = 0.54$, $P < 0.001$). Concerning demographic variables, we found a negative connection between gender (coded with '0' = female and '1' = male) and concerns towards inclusive education ($r = -0.18$, $P < 0.05$) as well as gender and teaching enjoyment in inclusive settings ($r = -0.18$, $P < 0.001$).

Regression analyses. Similar to the bivariate correlations, we found predictive abilities between many of the variables that corresponded to the cognitive hierarchy (see Table 3). Although demographic variables (model 1) only explained a small amount of variance within the dependent factors, the full models including demographic and personality variables explained the sentiments, attitudes and concerns about inclusive education as well as anticipated enjoyment of teaching in inclusive settings better. Within this second regression step, gender

Table 3: Standardised robust regression results for the dependent variables of sentiments, attitudes and concerns about inclusion as well as enjoyment of teaching in inclusive settings

	β (SE)			
Predictor variables	Sentiments	Attitudes	Concerns	Enjoyment
Model 1: demographics				
Intercept	3.22 (0.71)***	4.19 (0.48)***	3.30 (0.66)***	3.93 (0.68)***
Age	0.00 (0.02)	−0.02 (0.01)	0.05 (0.02)*	−0.03 (0.03)
Gender	0.16 (0.18)	−0.06 (0.15)	−0.53 (0.20)**	−0.22 (0.15)
School type	0.25 (0.18)	−0.41 (0.13)**	0.45 (0.19)*	−0.44 (0.15)**
Experience disability	−0.52 (0.16)**	0.20 (0.12)	−0.30 (0.17)	0.43 (0.15)**
Teaching experience	−0.09 (0.13)	0.09 (0.10)	−0.16 (0.16)	0.07 (0.11)
Adjusted R^2	0.08	0.05	0.09	0.11
Model 2: demographics and theoretical predictor variables				
Intercept	3.54 (0.90)***	4.14 (0.62)***	3.31 (0.98)***	1.28 (0.77)
Age	0.01 (0.02)	−0.02 (0.01)	0.05 (0.02)*	−0.01 (0.02)
Gender	0.40 (0.15)*	−0.17 (0.14)	−0.68 (0.18)***	−0.43 (0.12)***
School type	0.13 (0.17)	−0.30 (0.13)*	0.30 (0.18)	0.03 (0.13)
Experience disability	−0.38 (0.14)**	0.11 (0.11)	−0.01 (0.17)	0.14 (0.11)
Teaching experience	−0.02 (0.11)	0.06 (0.11)	−0.10 (0.15)	0.01 (0.08)
Universalism	−0.32 (0.10)***	0.21 (0.09)*	0.02 (0.12)	0.33 (0.09)***
Sentiments	–	−0.06 (0.06)	0.32 (0.10)**	−0.11 (0.08)
Attitudes	−0.05 (0.09)	–	−0.31 (0.10)**	0.52 (0.07)***
Concerns	0.30 (0.07)***	−0.18 (0.06)**	–	−0.23 (0.06)***
Adjusted R^2	0.25	0.16	0.23	0.57

Notes: The coding of gender was 0 = female, 1 = male; school type was coded as 0 = not grammar school, 1 = grammar school; experience with disabilities was coded with 0 = no experience, 1 = some experience. *$P < 0.05$. **$P < 0.01$. ***$P < 0.001$.

appeared to be a predictor for the sentiments (β = 0.40, $P < 0.05$) and concerns (β = −0.68, $P < 0.001$) about inclusive education as well as anticipated enjoyment of teaching (β = −0.43, $P < 0.001$), but not for attitudes regarding inclusion (β = −0.17, $P > 0.05$). However, attitudes were the only variable predicted by school type (β = −0.30, $P < 0.05$; school type was coded as '0' = not grammar school and '1' = grammar school). Furthermore, experience with disabled people negatively predicted sentiments about inclusion (β = −0.38, $P < 0.01$). Concerning the personality variables, we found close connections: for example, universalism predicted all dependent variables except concerns. Similarly, attitudes and concerns were also predictors of anticipated teaching enjoyment in inclusive settings. Please refer to Table 3 for an overview of all results.

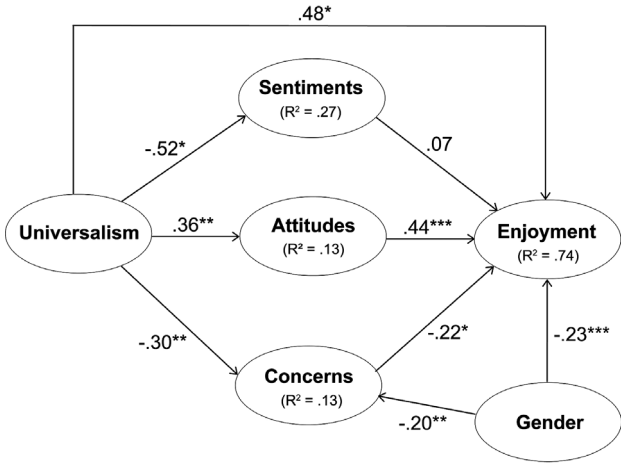
Structural equation models

Theoretical model. Based on the previously identified correlations and predictive abilities of gender, we included this factor as a predictor of concerns about inclusion and the anticipated enjoyment of teaching in inclusive settings, but not for the sentiments about inclusive education. We disregarded other demographic variables like school type and experiences with disability, as these variables only predicted specific dependent variables (see Table 3). The integration of these variables in the SEM would have decreased the model fit due to resulting additional non-significant connections between variables of the existing theoretical model.

Although gender was predictive for the anticipated enjoyment of teaching (β = −0.23, $P < 0.001$; coding: '0' = female; '1' = male) and concerns about inclusive education (β = −0.20, $P < 0.01$), this variable showed no predictive ability in the elaborated SEM for sentiments about inclusive education, despite its predictive abilities in the robust regressions. Therefore, the path from gender to sentiments was not added to the final SEM (Figure 2). Additionally, we found universalism to be the strongest predictor of the anticipated enjoyment of teaching in inclusive settings (β = 0.48, $P < 0.05$). Universalism also predicted the sentiments (β = −0.52, $P < 0.05$), attitudes (β = 0.36, $P < 0.01$) and concerns (β = −0.30, $P < 0.01$) about inclusive education. Of these variables, attitudes (β = 0.44, $P < 0.001$) as well as concerns (β = −0.22, $P < 0.05$) were predictive for the enjoyment of teaching, but sentiments did not show a similar relation (β = 0.07, $P > 0.05$).

Overall, the predictors explained 74% of the variance within anticipated enjoyment of teaching in inclusive settings ($R^2_{ENJ} = 0.74$). Universalism was able to explain 27% of variance within sentiments ($R^2_{SEN} = 0.27$), and 13% of variance in attitudes towards inclusive education ($R^2_{ATT} = 0.13$). Universalism and gender together explained 13% of variance for the concerns about inclusive education ($R^2_{CON} = 0.13$).

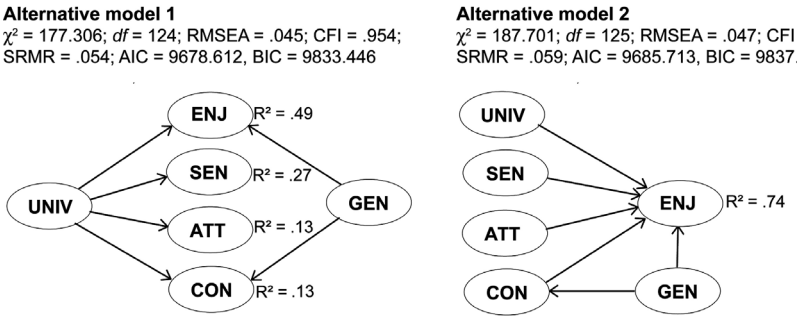
Figure 2: Structural equation model for the prediction of enjoyment of teaching by the sentiments, attitudes and concerns about inclusive education, revised scales and universalism as hypothesized by the theoretical model. Model fit indices: $\chi^2 = 177.306$, degrees of freedom = 124, root mean square error of approximation = 0.045, Bentler comparative fit index = 0.954, standardized root mean square residual = 0.054, Akaike information criterion = 9678.612, Bayesian information criterion = 9833.446. R^2 = explained variance. *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$. The coding of gender was 0 = female and, 1 = male



Alternative models. As fully explicated in the section on methods, the alternative models were selected based on the absence of a hierarchical structure between variables. As displayed in Figure 3, alternative model 1 disregards the structure between teacher belief scales and enjoyment, positioning them on one level. Similarly, the second alternative model disregards the structure behind universalism and the belief scales, situating them on one level.

The first alternative model shows exactly the same fit for all selected criteria as the theoretical model. However, based on the missing predictive effects of the beliefs regarding inclusive education, 49% ($R^2 = 0.49$), this first alternative model explains a notably smaller level of variance in the dependent variable of anticipated enjoyment of teaching. Although the second alternative model could explain the same amount of variance within the anticipated enjoyment towards teaching as the theoretical model, it showed insufficient fit, as the CFI fell below the selected fit criterion (≥0.95). Furthermore, the AIC ($AIC_{ALT2} = 9685.713$) and BIC ($BIC_{ALT2} = 9837.182$) were greater in the second alternative model than the theoretical model ($AIC_{THEORETICAL} = 9678.612$, $BIC_{THEORETICAL} = 9833.446$). As smaller AIC and BIC values indicate better fit of the respective model to the underlying data, these results point to the theoretical model as that with the best data fit. This also implies a structured hierarchy between values, the SACIE scales and enjoyment of teaching as an indicator of teaching motivation.

Figure 3: Overview of the tested alternative models for the connections between the variables of universalism (UNIV), enjoyment (ENJ), sentiments (SEN), attitudes (ATT), concerns (CON) and gender (GEN) concerning their fit to the data illustrated by the chi-square value (χ^2), degrees of freedom (df), root mean square error of approximation (RMSEA), Bentler comparative fit index (CFI), standardized root mean square residual (SRMR), Akaike information criterion (AIC), Bayesian information criterion (BIC) as well as the explained variance of the dependent variables (R^2)



Discussion

Hierarchical structure of values, beliefs and anticipated enjoyment of teaching

As implied in the hypothetical structure, we found a hierarchy within the study variables that can be interpreted in correspondence to the cognitive hierarchy model (H_1). Plainly, more general and deep variables explained higher order factors like beliefs and enjoyment of teaching. This connects to prior research from other domains like wildlife psychology (Whittaker, Vaske and Manfredo, 2006), but it has rarely been employed to explain behaviours within the field of education. Only one study to date has adapted the cognitive hierarchy for the explanation of teaching motivation from the environmental issue of returning wolves, investigating connections between attitudes and values towards the species with the teaching about the issue. In this study, pre-service teachers with a higher protection motivation for the endangered species were also more motivated to teach about the topic (Büssing, Schleper and Menzel, 2019a). As the protection motivation could be explained by underlying variables like values and attitudes, the authors also postulated a cognitive hierarchy between them (Büssing, Schleper and Menzel, 2019a).

The present study delves further into this issue and more explicitly investigated the structural hierarchy between the variables by using comparisons of two alternative models. The comparison illustrated how the theoretical model based on cognitive hierarchy showed the best fit for the dataset. Nonetheless, the central value of universalism turned out to be a stronger predictor of the enjoyment of inclusive teaching than specific beliefs about inclusive teaching. This finding partly contradicts the assumptions of the cognitive hierarchy model, as more specific variables should be strongly correlated with one another (Whittaker, Vaske and Manfredo, 2006). Our results may be elucidated by the extraordinary nature of basic human values, which have shown to strongly affect a wide variety of environmental behaviours and other different domains (Menzel and Bögeholz, 2010; Sagiv, Roccas, Cieciuch, et al., 2017). Nonetheless, it is also possible that the connection may only be relevant in the context of inclusive teaching.

Generally, a structured hierarchy may be promising, as interventions on deeper levels could entail changes in a variety of subsequent higher order variables. But such a change in values may be difficult within the field of teacher education, due to the complex nature of value integration in educational settings. Values form early in life and are difficult to change after a certain age (Rokeach, 1972). Explicit value reflection can still lead to value change later in life and should therefore find its way into tertiary education. Therefore, one of the central contributions of the present study is the contribution of values to pre-service teachers' enjoyment and therefore their motivation to work in inclusive settings. Due to the effect of teachers' motivations on students' learning outcomes (Mahler, Großschedl and Harms, 2018), this is also consequential for teachers' professional development, particularly with regard to inclusive education and its emphasis on the importance of addressing values in educational settings.

In summary, our results depict the importance of developing a positive value structure that supports inclusive education early in life for the ongoing promotion of inclusive societies. Expanding our view beyond teachers' perspectives, we should bear in mind that inclusive classroom experiences may be influential value-shaping experiences, particularly for young students. Teachers' positive value orientations may therefore be of great importance for their students, with an enormous multiplier effect.

Connections between the variables

Universalism as the foundation for beliefs and anticipated enjoyment of teaching. As described in the

results, universalism was a significant predictor of the sentiments, the attitudes, as well as the concerns about inclusive education (H_2 – H_4). Furthermore, we also found a connection between universalism and the anticipated enjoyment of teaching in inclusive settings (H_5). Universalism, placing value on the understanding and protection of all people (Schwartz, 1994), can therefore be described as one important foundation for a positive emotional evaluation of inclusive teaching, facilitating subsequent positive beliefs as well as enjoyment of teaching in inclusive settings. Even when the insufficient measurement abilities of our instrument have to be discussed, this result is in line with prior qualitative studies, which showed how teachers' personalities may impact affective reactions (O'Connor, 2008). The present study adds quantitative results to these prior results, which may be applicable to other contexts and future research. Concrete examples for such studies may include curricular changes, which represent another context in which teachers' evaluations of specific situations are based on identity, as shown in prior qualitative studies (van Veen, Sleegers and van de Ven, 2005).

The results connecting values and enjoyment of teaching are also in line with appraisal theory, which explains the occurrence of emotions as the appraisal of specific situations based on their relevant goals (Moors, 2009). Within the context of inclusive teaching, universalistic values are in line with providing a school system that supplies equal chances for all students. Therefore, appraisal theory can also explain why values depict predictive abilities for a wide range of behaviours, as they transcend the internal goals over a wide range of situations (Sagiv, Roccas, Cieciuch, et al., 2017; Schwartz, 1994). But within the context of the present study, this wideness of the value concept also led to problems.

Like described in the measurement results, the internal reliability coefficients Cronbach's alpha and McDonald's omega for the utilised established PVQ–21 scale (Schmidt, Bamberg, Davidov, et al., 2007) showed non-sufficient measurement abilities concerning the internal consistency of the items in our sample. Furthermore, the item UNIV03 also showed an insufficient factor loading in our calculated CFA model. For the present study we nonetheless analysed the results for this scale including this insufficient item, as its exclusion further decreased the internal reliability coefficients as well as the model fit of the CFA. Interestingly, the moderate internal measurement abilities replicated problems, which had already been found in prior studies (e.g., Schwartz, 2007). Generally, this points to possible problems with the utilised short version, especially in regard of the item UNIV03. This item is the only item in the applied scale which reflects the perspective of protecting nature. This explains its low loading in the CFA and the low internal consistency of the scale, as the content of nature was not part of the other items.

Within the present study, we nonetheless adhered to the initially developed scale, due to the empirical results (the whole CFA had a sufficient model fit) as well as theoretical assumptions (with the exclusion of UNIV03 no item would measure the nature-related dimension of universalism and therefore impair the scale's content validity). Although this should be kept in mind when interpreting our results, we recommend other instruments to measure universalistic value dimensions within further studies. Schwartz himself already proposed sub-dimensions for the nature-based characteristics of universalism within a revised framework of basic human values (Schwartz, Cieciuch, Vecchione, et al., 2012). Although this new framework also entailed a new version of the scale (PVQ5X), researchers should in future studies rather apply this new measure, to better capture teachers' universalistic value dimensions. Other possibilities may be the application of the long version of the scale (PVQ–40), which showed better measurement abilities in prior studies (Schmidt, Bamberg, Davidov, et al., 2007). Nonetheless, the present study for the first time showed how universalistic values may be related to specific teacher beliefs, namely the sentiments, attitudes, and concerns about inclusive education, as well as anticipated enjoyment of teaching.

In inclusive settings, pre-service teachers who value universalism may manage demanding situations differently, as inclusive teaching positive correlates with their motivational life goals. In turn, affective evaluations have also been shown to shape pre-service teachers' future teaching identities and therefore may also affect their values (Zembylas, 2005). Unfortunately, especially in the context of inclusive education, negative situations like the disruption of classroom teaching by students with special needs may adversely impact teachers' beliefs and identities (Timoštšuk and Ugaste, 2012). But those with a strong basis in universalism may hold a generally positive view of students with special needs. Classroom disruptions will therefore more likely be assessed on an individual basis and not equated with special needs more broadly. When negativity predominates, disruptions may be more likely assigned to an entire category of 'disabled students'. This also emphasises the need for better preparation of and assistance for pre-service and in-service teachers regarding the demands of inclusive teaching. For example, future teachers or in-service teachers can be trained in a reflective practice in which they learn to distinguish individual student behaviour from behaviour that is assigned to a larger group, in this case students with special needs.

Beliefs about inclusive education as predictors of enjoyment of teaching. Beyond universalism, we also found attitudes and concerns (H_7 and H_8) about inclusive education to be predictive of enjoyment of teaching, while sentiments showed no significant effect on the dependent variable (H_6). The results concerning the positive connection of attitudes and the negative connection of

concerns are in line with prior research, which suggested the predictive abilities of central beliefs for higher order attitudes and behaviours (Whittaker, Vaske and Manfredo, 2006). But the lack of predictive ability despite the bivariate correlation between sentiments and enjoyment of teaching contradicts this logic. This indicates a minor relevance of sentiments when further variables like attitudes and concerns are employed as additional factors.

In contrast to attitudes and concerns, sentiments form the only subscale of the SACIE scales that does not directly reference classroom teaching, but more generally connects to contact with disabled people. Although this could be one possible explanation for the weaker role this variable plays, another reason may be that teaching in inclusive settings is not limited to mentally or physically disabled students but comprised of different kinds of special needs pupils who cannot be fully subsumed under the term 'disability' (Haug, 2017). Finally, we drew upon a sample of pre-service teachers who are distant from the classroom setting and thus direct confrontation with disabled students. Clearer results could be drawn from the adaptation of the present study to a field study that investigates in-service teachers' sentiments in real classes, as described above. On the one hand, the absence of a concrete teaching situation is a major limitation of our study, as the results may only be cautiously transferred to actual classrooms. On the other hand, our results provide insights into pre-service teachers' personality structures and this helps us to design pedagogical frameworks for tertiary teacher education. For example, our results illustrate the importance of prevailing attitudes and concerns about inclusive education, which should therefore be addressed in teacher preparation courses to maintain the initial motivation expressed by pre-service teachers to teach in inclusive settings (Forlin and Sin, 2010). Such specific courses should facilitate positive attitudes and decrease concerns by addressing affective aspects, instead of focussing on cognitive instruction alone, neglecting the affective dimensions of inclusive teaching (Forlin and Chambers, 2011).

Within such an more affective way of teaching, experience-based learning may also foster positive attitudes (Palmer, 2002). According to this approach, positively evaluated experiences should be provided to pre-service teachers, which could foster their efficacy beliefs regarding teaching in a specific setting like inclusive education (Palmer, 2002). Further research should investigate the extent to which virtual experiences for example within immersive virtual reality learning settings may allow for a more experiential and holistic approach to the learning process (Schöne, Wessels and Gruber, 2017).

Gender. Outside of universalism and its effect on beliefs about inclusive education, we also found a connection between gender and concerns as well as anticipated enjoyment of teaching in inclusive settings. Within the subsequent SEM, we found an interesting but seemingly contradictory connection between the tested variables. First of all, we found a negative connection between gender and concerns. Due to the coding of gender (female = 0, male = 1), this implies higher concerns expressed by female over male pre-service teachers. This effect of gender on the SACIE scales has been mentioned previously (Forlin and Sin, 2010). But in contrast, we also found a higher level of enjoyment of teaching among female participants. In our study, female participants simultaneously articulated higher concerns about inclusion and more significantly anticipated enjoying teaching in inclusive settings. Although other studies have already discussed the effects of gender on teaching emotions (Lohbeck, Hagenauer and Frenzel, 2018), the negative predictive effect of maleness on teaching enjoyment still seems illogical, based on the negative correlation between concerns and enjoyment.

However, the results may be justifiable based on the quality of women's emotional experiences, as several studies showed a higher level of emotionality (Brody and Hall, 2008). This could explain why female pre-service teachers reported higher concerns based on their anxiety towards teaching in inclusive settings, and at the same time expressed a higher anticipated enjoyment of teaching within a demanding environment. Based on these results, teacher educators should specifically address female pre-service teachers' emotionality and try to channel it towards positive experiences. Furthermore, future studies could investigate the sensitivity of women to inclusive teaching situations with specific scales investigating their emotionality. Finally, these studies should aim for a more balanced ratio of male and female participants, as our sample showed a rather high amount of female pre-service teachers.

Implications and conclusion

As described above, our study shows how affective and deeper personality traits like universalistic values are connected to higher order beliefs and enjoyment in the context of teaching in inclusive settings. For teachers' professional development, these results suggest that personality traits should be addressed in the initial process to strengthen pre-service teachers' motivation to implement inclusive education techniques. This is important as professional development must engage teachers in terms of content instead of only presenting new knowledge (Kennedy, 2016). This integration may enable the further establishment of inclusive education, which was normatively described by numerous countries but has not yet been fully implemented (Haug, 2017; UNESCO, 1994). But in the present moment these implications should be generalised cautiously, as we only sampled pre-service teachers from the subject of biology, and prior studies have uncovered differences between participants from diverse academic disciplines, which is why this may also apply to the study results (Hermann, Voß and Menzel,

2013). Furthermore, we discussed the poor measurement abilities of the utilised short version of the universalism scale (PVQ–21).

Nonetheless, the importance of affective variables like values and beliefs suggests teacher educators to strengthen pre-service teachers' positive emotional experiences, as a merely cognitive teacher preparation for inclusive practices is insufficient (Forlin and Chambers, 2011). One other possibility besides more experienced-based approaches for strengthening such affective learning outcomes may also be the adoption of methods from transformative learning. Newer definitions of this approach strengthen the affective dimension and define it as a learning process aimed at identity development based on affective experiences (Illeris, 2014). Such an approach to teacher education may be especially suitable for learners who already possess specific problematic frames, beliefs and attitudes, which should be transformed into desired outcomes. Such methods could for example aim to adapt concerns about inclusive education. In our study, concerns directly correlated with the enjoyment of teaching. Another way to address such concerns may be the reflection of one's values with regard to special needs students, as values served as the basis for higher order beliefs about inclusive education in our study. Within professional development activities, teachers should therefore always be encouraged to reflect on their role within education and to envision their ability to create just and equal classrooms for all students. This and the other suggested methods will hopefully support the further creation of just and equal educational opportunities for every learner, and finally lead to fully inclusive classrooms.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. R-Studio Script.
Appendix S2. Dataset.

