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# What you think is what you feel: Immigration-related value beliefs predict emotional exhaustion in pre-service teachers

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**Abstract**
Cultural diversity has recently been discussed as a potential stressor for teachers. The present study contributes to this discussion by examining the role of cultural diversity in the development of emotional exhaustion among teachers. Using the teacher stress model as a framework, we investigated if working conditions, such as cultural diversity (1), value beliefs, such as cultural beliefs or stereotypes towards students with an immigration background (2), and perceived professional competence, such as teaching experience and self-efficacy (3), predict emotional exhaustion. The data comes from a longitudinal study with 291 German pre-service mathematics teachers ($M = 9.5$ month). Results from robust multiple regression analyses showed no relation between cultural diversity and emotional exhaustion. Emotional exhaustion was significantly predicted by prior emotional exhaustion, frequent class disruptions, and large classes. Regarding cultural beliefs, participants with more stereotypes towards students with an immigration background experienced a higher level of emotional exhaustion, whereas the actual cultural diversity in their class had no impact. Contrary to our hypotheses, no effect was found for cultural beliefs. Taken together, our results suggest that it is not cultural diversity per se that leads to emotional exhaustion but evaluative processes of seeing students with an immigration background as burden that reflect beginning teachers' stereotypes. Practical implications are that teacher training should aim to reduce candidates' stereotypes towards students with an immigration background and allow more hands-on teaching experience.

**Keywords** Teacher cultural beliefs · Emotional exhaustion · Diversity burnout · Practice shock · Stereotypes

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Extended author information available on the last page of the article

## 1 Introduction

The role of cultural diversity in the development of stress and burnout among teachers has been the subject of public debate (Autorengruppe Bildungsberichterstattung, 2016, 2020; Dubbeld et al., 2019a, 2019b; Gomolla, 2020; Gutentag et al., 2018; Hachfeld & Syring, 2020; Hermann, 2016; König, 2019; Parkhouse et al., 2019; Schuchart, 2020; Szelei et al., 2020). In OECD countries, approximately 13% of children on average have an immigrant background (OECD, 2019), although the diversity of students varies from country to country. In Germany, this figure has tripled to 39% (Autorengruppe Bildungsberichterstattung, 2020). The consequences are growing cultural differences between the predominately monocultural and monolingual teacher body (Statistisches Bundesamt (Destatis), 2019) and students and their parents (Vedder & Horenczyk, 2006). The impact of the students' cultural diversity on the educational system has been a hallmark issue for educational researchers. It is argued that cultural diversity—by itself or mediated through language barriers and religiously or culturally divergent socialization—can lead to conflict and hence to additional stress for teachers in everyday school life (De Dreu & Weingart, 2003; Dubbeld et al., 2019a, 2019b; Hermann, 2016; König, 2019). It is notable here that none of the studies found on the influence of cultural diversity on teachers' stress experience directly examined cultural diversity. Cultural diversity has been operationalized by: (1) comparing schools with different proportions of cultural heterogeneity, with nothing specified about the cultural heterogeneity that teachers actually face in their daily lives (Dubbeld et al., 2019a, 2019b; Szelei et al., 2020; Tatar & Horenczyk, 2003); (2) the extent to which teaching was hindered by migration-related factors (Betoret & Artiga, 2010); (3) teachers' attitudes toward cultural heterogeneity in the classroom (Gutentag et al., 2018); and, (4) fictional cultural heterogeneity presented as case vignettes (Glock, Kleen et al., 2019; Glock, Kovacs et al., 2019). The present study extends existing research by directly measuring the percentage of students with an immigration background in the classrooms of participating teachers.

### 1.1 Pre-service teachers

Particularly vulnerable to the potential effects of cultural heterogeneity might be pre-service and early career teachers. The reason for this is their lack of teaching experience in general and their frequent lack of preparation for teaching culturally diverse classes in particular. In previous research, pre-service teachers have reported high levels of stress early in their careers (Domitrovich et al., 2015; Klusmann et al., 2012), possibly leading to drop-out and career-changes, as reported in the USA (Tsouloupas et al., 2010), the Netherlands (Dubbeld et al., 2019a) or Australia (Goddard & Goddard, 2006). In the literature, this phenomenon is known as "reality shock", "transition shock", or "practice shock" (Dann et al., 1981; Dicke et al., 2016; Günther & Massing, 1980; Müller-Fohrbrodt et al., 1978; Veenman, 1984; Widlak, 1983). However, research investigating predictors of "reality shock" mostly do not consider cultural diversity as a relevant factor (Klusmann et al., 2012),

even if it is noted that preparedness plays an important role (Boomgard, 2013) and that teachers are predominantly prepared pedagogically and didactically for teaching native-speaking children (Dubbeld et al., 2019a).

Conversely, recent work on the relation between cultural diversity and teacher stress (Dubbeld et al., 2019a, 2019b; Glock, Kovacs et al., 2019) neglects factors described as relevant predictors in teacher stress models that emphasize the interplay of several dimensions, such as situation, context, background variables, personality, beliefs, and learning experiences. This paper aims to close this gap by investigating the relation between cultural diversity and emotional exhaustion within the theoretical framework of the teacher stress model (Rudow, 1994). Rudow (1994) prompts the consideration of "objective and subjective loads, cognitive and emotional phenomena, short-term and long-term effects, positive and negative stress reactions and consequences, action competence, health and personality development" (p. 41). Following the model, we use a longitudinal approach to investigate if cultural diversity predicts emotional exhaustion controlling for situational and context, as well as personal background variables. Drawing on previous work, we further analyze if teachers' cultural value beliefs and their perceived professional competencies and teaching experiences are related to emotional exhaustion.

### 1.2 The underlying model: the teacher stress model

Stress is a multidimensional construct whose development depends on various factors inside and outside the person (Lazarus & Folkman, 1987). For the teaching profession, Rudow (1994) has developed an integrative framework model on teacher stress that follows basic assumptions of the transactional stress model (Lazarus & Folkman, 1987). Simplified, the transactional stress model states that the experience of stress depends on the interaction between environment and person. Someone experiences stress when they evaluate a given situation (environment) as threatening (person) and at the same time perceive their available coping options as insufficient (person). Correspondingly, in the teacher stress model (Rudow, 1994), the present working conditions (environment) are evaluated (person) by the teacher as being stressful or not (person). This evaluation process, which is called reflection, is shaped by the teachers' personal prerequisites for action. Those personal prerequisites for action are a wide variety of factors influencing the teacher, including personality and background variables. In the statistical model of the present study, we have reproduced this model, making one small change. Stable variables, i.e., not or hardly changeable personality and background variables, were shifted in the analysis from action prerequisites to working conditions. This was done to test separately the influence of variables that could be changeable and therefore possibly trained in university teaching. Figure 1 depicts the version of the teacher stress model, which served as the guiding framework for the current study. As the indicator of teacher stress, we focused on emotional exhaustion. We considered situational and contextual variables as well as personal prerequisites for action (general and specific to cultural diversity). Among the working conditions, we included both system-level variables and class-level variables. Personal prerequisites for action

*Study model based on the Rudow framework model (Rudow, 1994)*

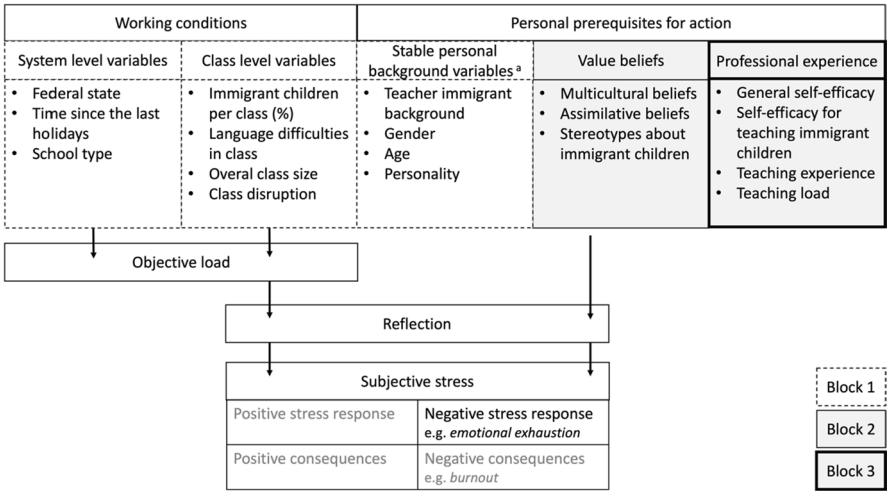


**Fig. 1** Study model based on the Rudow framework model (Rudow, 1994). *Note*. This figure shows a simplified illustration of Rudow's teacher stress model (1994) that served as the theoretical framework. As outcome variable, we focused on the negative stress response (i.e., emotional exhaustion). In the hierarchical robust multiple regression analysis, variables were entered in three blocks, marked here as Blocks 1 through 3. [a]Stable personal background variables were entered along with the working conditions (Block 1) to isolate the effect of cultural value beliefs (Block 2) and professional experience (Block 3), which could potentially be addressed in university teacher education

included migration-related value beliefs and professional (learning) experiences (i.e., teaching experience). In the following sections, the theoretical background for the selected constructs is described.

### 1.3 Outcome: emotional exhaustion as indicator of teacher stress

Emotional exhaustion is a personally experienced fatigue of emotional strength that emerges "from the social interaction" that becomes an "emotional burden" (Maslach et al., 1986, p. 3). It manifests itself in feeling too powerless to attend to the needs of others, leading to the feeling that ones' "emotional resources are depleted, and there is no source of replenishment" (Maslach et al., 1986, p. 3). Following the Maslach Burnout Inventory (Maslach et al., 1986), emotional exhaustion is one of the three indicators for burnout; the other two are reduced personal accomplishment and depersonalization. Compared to the general population, emotional exhaustion is the only symptom of burnout that occurs significantly more often among teachers (Scheuch et al., 2016; Seibt et al., 2007). In the teacher stress model, emotional exhaustion is only one aspect of the subjective stress experience, belonging to the negative stress response that can lead to negative consequences such as burnout (cf. Rudow, 1994) and dropout (Wright & Cropanzano, 1998). In their meta-analysis on the validity and definition of burnout syndrome, Korczak et al. (2010) concluded

that the results from different studies on the relevance of two out of the three burnout markers, namely depersonalization and reduced personal accomplishment, differed greatly, while emotional exhaustion appeared to be a consistent pattern (see also Schwarzer et al., 2000). Accordingly, emotional exhaustion can be seen as the main symptom of burnout (see also Koeske & Koeske, 1989). Given the importance of emotional exhaustion for the genesis and definition of burnout, especially among teachers, we focus on emotional exhaustion as our outcome variable.

### 1.4 Working conditions: situational and context variables

As depicted in Fig. 1, the tasks and working conditions of teachers are thought to provide the basis for the development of emotional exhaustion. In the present paper, we focus on working conditions in terms of situational and contextual variables. We distinguish between class-level and system-level variables.

#### 1.4.1 Class level variables

As the main class level variable of interest, we consider the proportion of students with an immigration background per class. Previous studies suggest that dealing with intercultural classes and taking responsibility for meeting the needs of students with an immigration background can be a source of stress and professional dissatisfaction (Betoret & Artiga, 2010; Buchwald et al., 2008; Friedman, 1991; Holub, 2012) and possibly lead to "diversity-related burnout" (Gutentag et al., 2018; Tatar & Horenczyk, 2003). Similarly, language barriers and conflicts due to religiously or culturally divergent socialization (Dubbeld et al., 2019a, 2019b; Hermann, 2016; König, 2019) can also add to the objective load (see also Rudow, 1994). Other class level variables frequently perceived as stressful are: negative student behavior such as disrespect (Hastings & Bham, 2003; Klusmann et al., 2008); destruction, aggression, talking out of turn (Glock, 2016b; Kärner & Höning, 2021; Kokkinos et al., 2005); and, noise (Kristiansen et al., 2014), large classes (Darius et al., 2021; Kärner & Höning, 2021; Scheuch et al., 2015) and classroom climate (Byrne, 1994). In the present study, in addition to the percentage of students with an immigration background per class, we focused on cultural and language barriers, negative student behavior, and class size.

#### 1.4.2 System level variables

System level variables directly impact the working conditions of teachers. In Germany, the educational system is governed by state legislation. Hence, school regulations can differ between federal states. Moreover, Germany has a tracked school system and different school tracks vary systematically in their student composition regarding socio-demographics (Autorengruppe Bildungsberichterstattung, 2016, 2020). Therefore, an influence of the system level on teachers' emotional exhaustion

cannot be ruled out. In order to control for possible effects, we include in our study federal state, and school type (track) as relevant system level variables.

### 1.5 Personal prerequisites for action

#### 1.5.1 Stable Personal background and personality variables

According to Rudow (1994) and in line with the transactional stress model, objective load only becomes subjective stress when a person does not have the personal resources and prerequisites to deal adequately with the stressor. The personal prerequisites for action are the basis on which a person reflects and interprets a given situation (see Fig. 1). For the purpose of the present study, we differentiate personal prerequisites for action into three groups: personal background variables, value beliefs regarding cultural diversity, and perceived professional competence and teaching experiences.

Under personal background variables, we subsume those variables pertaining to a person that can hardly or not at all be changed by themselves or others, e.g., sociodemographic background variables and personality.

**1.5.1.1 Sociodemographic background variables** The factors examined in the literature were age, sex, marital status (Billingsley & Cross, 1992; Cano-García et al., 2005; Dubbeld et al., 2019a; Montero-Marín et al., 2011; Yildirim, 2008), monthly income, and contract duration (Montero-Marín et al., 2011). Most studies only show weak or no predictive utility of demographic variables in predicting general or diversity-related burnout (Billingsley & Cross, 1992; Cano-García et al., 2005; Dubbeld et al., 2019a; Montero-Marín et al., 2011; Romijn et al., 2020; Yildirim, 2008; Zellars et al., 2000). Regarding gender and age, findings are heterogeneous, with several studies reporting no effect of gender and age in research on teacher burnout (Billingsley & Cross, 1992; Cano-García et al., 2005; Dubbeld et al., 2019a; Montero-Marín et al., 2011; Yildirim, 2008). However, in general research on stress and burnout gender and age often are associated with an increased risk. The highest risk is reported for women and people aged 40–59 years (Bayani et al., 2013; Hapke et al., 2013; Kokkinos, 2007; Korczak et al., 2010; Maske et al., 2016; Wohlers & Hombrecher, 2016). Furthermore, there are two studies showing that teachers' own immigrant background was associated with a higher risk of burnout (Cantor-Graae & Selten, 2005; Dubbeld et al., 2019a). Therefore, in the present study, we include teachers' immigrant background, as well as gender and age.

**1.5.1.2 Personality** Several studies have shown a relationship between the personality trait neuroticism and a higher experience of stress or burnout (e.g., Armstrong & Rimes, 2016; Goddard et al., 2004; Klusmann et al., 2012; Liu et al., 2012; McCrae, 1990; Mineka et al., 2020; Sarubin et al., 2015; Zellars et al., 2000), especially of emotional exhaustion as one key symptom of burnout (Burisch, 2002; Kokkinos, 2007; Pishghadam & Sahebjam, 2012; Sosnowska et al., 2019). For

the other personality traits, the findings are heterogeneous. Some find a protective influence of extraversion (Kim et al., 2019; Kokkinos, 2007; Magnus et al., 1993; Pishghadam & Sahebjam, 2012; Sarubin et al., 2015), agreeableness (Cano-García et al., 2005; Kokkinos et al., 2005), consciousness (Kim et al., 2019; Klusmann et al., 2012), or openness (Ghorpade et al., 2007; Lü et al., 2016; Strutton et al., 1995). Others do not find any effect of the latter four traits (Klusmann et al., 2012; Zellars et al., 2000). The personality trait of openness may also play a role in teachers' emotional exhaustion. Teachers who are open to new experiences tend also to be more receptive to adopting innovative teaching and learning methods. This openness could lead to them discovering more effective strategies, which, in turn, may reduce their emotional exhaustion levels. In addition, a positive relationship was found between preservice teachers' willingness to adapt their teaching to students' cultural diversity and their multicultural beliefs (Hachfeld et al., 2015).

Considering the potential protective influence of openness in dealing with culturally diverse classes, we have included it in our analyses. For this study, we are specifically focusing on the personality traits of neuroticism and openness.

### 1.5.2 Value beliefs regarding cultural diversity

Teachers' motives, beliefs, and values are subsumed under personal prerequisites for action (Rudow, 1994). According to Rudow's model (1994), personal prerequisites for action influence teachers' reflections of objective load (see also Dickerson & Kemeny, 2004; Gomes et al., 2013; Kogler et al., 2015; Simães et al., 2021). In other words, whether teachers perceive objective cultural diversity as a subjective stressor depends on what value beliefs they hold toward that cultural diversity. Current research exploring the influence of value beliefs on the relationship between cultural diversity and emotional exhaustion (Dubbeld et al., 2019a, 2019b; Glock & Böhmer, 2018; Kleen et al., 2019) often focus on teachers' cultural beliefs (Civitillo et al., 2018, 2019; Dubbeld et al., 2019a, 2019b; Glock, Kleen et al., 2019; Glock, Kovacs et al., 2019; Gutentag et al., 2018; Horenczyk & Tatar, 2002) and stereotypes (Bonefeld eal., 2022; Glock & Böhmer, 2018; Glock & Krolak-Schwerdt, 2013, 2014; Kleen & Glock, 2018).

**1.5.2.1 Cultural beliefs** Cultural beliefs refer to the "attitudes […] teachers hold about students with a different cultural background" (Hachfeld et al., 2011, S. 987). They describe the value teachers place on cultural diversity (positive vs. negative evaluation), and the emphasis they put on cultural differences (stressing vs. ignoring differences). Most studies focus on the two beliefs of multiculturalism (positive evaluation with a high emphasis on differences) and assimilation (negative evaluation with a low emphasis on differences), often conceptualizing them as two ends of a continuum (see Hachfeld & Syring, 2020). Here, it is assumed that cultural beliefs have a moderating role and can serve as a buffer (in the case of multicultural beliefs) or as a catalyst (in the case of assimilationist beliefs) for the relationship between cultural diversity and emotional exhaustion. Accordingly, in the school context, higher assimilationist beliefs, i.e., the belief that students with an immigration background must adapt to the culture of the country, have been associated with both classic and

diversity-related burnout (Dubbeld et al., 2019a, 2019b; Gutentag et al., 2018; Tatar & Horenczyk, 2003). Multicultural beliefs, on the other hand, i.e., the belief that cultural differences need to be considered in educational contexts, are often discussed as a protective factor (Dubbeld et al., 2019a, 2019b; Gutentag et al., 2018). However, this protective effect of multicultural beliefs has not been demonstrated to date (Dubbeld et al., 2019a, 2019b). In sum, while there is evidence that assimilative beliefs are related to diversity burnout in the school context, the potentially buffering role of multicultural beliefs needs further investigation.

**1.5.2.2 Stereotypes** Teachers' beliefs and stereotypes have been shown to influence how teachers interpret and react to job stressors (Gomes et al., 2013; Podell & Soodak, 1993; Simães et al., 2021; Soodak & Podell, 1993). Stereotypes are unintentional, pre-existing expectations about the characteristics, behaviors, and interactions of members of a particular group (Gardener, 2013; Hilton & Hippel, 1996; Kleen & Glock, 2018). In the case of the present study, stereotypical expectations refer to students with an immigration background. Such stereotypes about students with an immigration background have been shown to influence teachers' judgments of student performance and behavior. Students with an immigration background were punished more and harsher than native children (Glock, 2016b) and scored lower in academic skills (Alesina et al., 2018; Boneld et al., 2022; Glock & Krolak-Schwerdt, 2014; Parks & Kennedy, 2007), even though in reality there was no difference in their skills (Alesina et al., 2018; Glock, 2016a; Parks & Kennedy, 2007). Interestingly, these two factors—weak performance and disruptive student behaviors—whose assessment by teachers is influenced by immigration-related stereotypes are often blamed by teachers themselves for teacher stress. (Alesina et al., 2018; Glock, 2016b; Hastings & Bham, 2003; Kärner & Höning, 2021; Klusmann et al., 2008; Kokkinos et al., 2005). This may suggest that stereotypical expectations about students with an immigration background not only influence teachers' perception of and behavior towards students, but also their own emotional experience. This is supported by a vignette study in which teachers were presented with either a fictitious description of a highly culturally diverse school or a culturally less diverse school (Glock, Kleen et al., 2019). Burnout symptoms were then assessed using the Maslach Burnout Inventory (Maslach et al., 1986). Results from the 97 participating teachers and pre-service teachers indicated that participants presented with a culturally diverse school reported higher levels of burnout and stress than teachers presented with a less culturally diverse school (Glock, Kleen et al., 2019). With regard to stereotype bias and its potential effects, pre-service teachers are at particularly high risk (Agirdag et al., 2013; Bontefeld al., 2022; Glock & Böhmer, 2018). In addition to underestimated language skills (see above), pre-service teachers also rated migrants' math skills lower than those of native children (Bonefeld et al., 2022). Furthermore, they associated teaching in culturally diverse classrooms with a higher workload and more negative feelings, whereas teachers who already worked in culturally diverse classrooms associated it with positive feelings (Glock, Kovacs et al 2019). However, the associations found in Glock, Kovacs et al.,(2019) were correlative, therefore, no causal relationship can be inferred between cultural diversity, pre-service teachers' stereotypes, and exhaustion, and further investigation is needed. If teachers' stereotypes can explain

or influence the relationship between cultural diversity and emotional exhaustion, this is also where possible interventions could come in. To examine this relationship, we address pre-service teachers' stereotypes in this study.

### 1.5.3 Perceived professional competence and teaching experiences

Professional competences and experiences represent the teacher's professional toolbox and have a major influence on teachers' assessment of whether their available coping resources are sufficient to deal with particular situations. In Germany, aspiring teacher candidates acquire these competences and experiences during the two phases of their education. While the first phase, the university phase, focuses on the acquisition of content knowledge and some first experiences in school, the second phase, the practical phase, focuses on teaching experiences. During this practical phase, which lasts approximately 18 months, candidates teach as pre-service teachers in schools, but also attend courses and are mentored by a teacher from their school. The practical phase ends with an examination of their teaching skills.

In Rudow's model (1994), professional skills and experience are part of the personal prerequisites for action. These form the basis for the evaluation of the objective load in the reflection phase (see Fig. 1). Self-efficacy, i.e., teachers' belief about their own competence, plays a central role in the assessment (Glock, 2016a; Schwarzer et al., 2000). Self-efficacy is considered domain specific (Schwarzer et al., 2000). For example, a teacher might be very confident in teaching their subject (high general teaching self-efficacy) but unconfident when it comes to teaching children from different cultural backgrounds (low migration-related self-efficacy). Self-efficacy can develop from experiencing situations in which one is successful and finds one's actions to be efficacious (Schwarzer, 1998). Previous studies show that the more pronounced pre-service teachers' practical experiences (Voss & Kunter, 2020) and professional competencies are (Dicke et al., 2015; Klusmann et al., 2012; Voss et al., 2017), the better pre-service teachers are able to cope with upcoming demands. Accordingly, higher teacher self-efficacy is found to be associated with lower stress experience and burnout (Butler & Constantine, 2005; Fathi et al., 2021; Schwarzer & Hallum, 2008; Schwarzer et al., 2000; Skaalvik & Skaalvik, 2007, 2010). Self-efficacy could also play a role in effective dealing with cultural diversity (Choi & Lee, 2020; Geerlings et al., 2018; Romijn et al., 2020). Gutentag et al. (2018) found that positive teacher attitudes toward students with an immigration background were related to higher self-efficacy as well as lower diversity-related burnout. Therefore, general teaching self-efficacy and specific self-efficacy for teaching children with a migration background are included in the analyses in this study, as well as teaching experience and experience in teaching students with an immigration background.

## 1.6 Research aims and hypotheses

The present paper investigates whether cultural diversity (i.e., proportion of students with an immigration background) itself contributes to pre-service teachers'

emotional exhaustion beyond other situational (e.g., proportion of disruptive students, school type) and personal background variables (e.g., personality, own immigrant background). Previous research has also argued that (value) beliefs (e.g., cultural beliefs) can serve as a buffer or catalyst in the development of emotional exhaustion in culturally diverse contexts. In a second step, we investigate the relation between two cultural beliefs (multicultural and assimilationist) or stereotypes with emotional exhaustion beyond situational and personal background variables. In a third step, we add self-perceived professional competence (i.e., self-efficacy) and teaching experiences to our model.

Considering previous studies, we formulated the following hypotheses:

1. Cultural diversity significantly contributes to perceived emotional exhaustion even when controlling for other situational and personal background variables.
2. Positive (value) beliefs towards cultural diversity are negatively related to emotional exhaustion; that is, teachers with stronger multicultural beliefs (or weaker assimilationist beliefs) and fewer stereotypes towards students with an immigration background experience less emotional exhaustion.
3. Perceived professional competence (e.g., self-efficacy) and teaching experiences are negatively related to emotional exhaustion.

## 2 Method

### 2.1 Participants and procedure

The data are from the COACTIV-R study project,[1] a larger German study of mathematics pre-service teachers that investigated the development of their professional competencies during the induction period (for further information see Kunter et al., 2011; Löwen et al., 2013) and took place between 2007 and 2009. The survey was carried out longitudinally over an average of $M = 9.5$ months ($SD = 1.4$, $Min = 5.3$, $Max = 11.3$) and contained two measurement points, one at the beginning of the school year (hereinafter referred to as T1) and one at the end (referred to as T2). After each of the two measurement points, participants were additionally asked to complete an extensive self-report questionnaire at home and send it back. Participation was remunerated with an expense allowance of € 100. Response rates were very high, reaching 98.6% for the first and 97.6% for the second measurement point questionnaire. Two cohorts in consecutive years of the 18-month induction phase were recorded (K1 = first year of preparation, K2 = second year of preparation). The cohorts were surveyed at the same time.

The present analyses are based on a subsample of 291 participants (66.00% female) from the two German federal states Baden-Wuerttemberg and North

[1] The study "COACTIV-Referendariat: Competence Acquisition of Trainee Teachers in the Preparatory Service" was conducted from 2007–2009 at the Max Planck Institute for Human Development and was funded by the Max Planck Society President's Innovation Fund.

Rhine-Westphalia. The participants were on average 27.6 years old ($SD = 3.84$; $Min = 23$, $Max = 54$ years). The majority of participating pre-service teachers were born in Germany (93.47%, $n = 272$). Twelve percent ($n = 34$) had an immigrant background, meaning that they or at least one of their parents was born abroad (Kunter et al., 2013). The participating pre-service teachers worked at all types of schools commonly found in Germany. On average, they taught 10.76 h per week ($SD = 2.27$) across four different classes ($M = 3.79$, $SD = 1.32$). The classes included an average of 20.6% of children with an immigrant background ($SD = 20.83$), mostly from mixed countries of origin. Participants working at lowest track secondary schools, in German called *Hauptschule*, reported higher scores of students with an immigration background ($M = 36.61\%$, $SD = 27.87$) than participants at intermediate track secondary schools ($M = 26.21\%$, $SD = 21.54$), called *Realschule*, which in turn reported higher scores than participants working at academic track secondary schools, called *Gymnasium* ($M = 11.87\%$, $SD = 11.42$).

## 2.2 Measures

### 2.2.1 Outcome variable emotional exhaustion

Participants' emotional exhaustion was assessed using the four-item scale "Emotional exhaustion" from the German version (Enzmann & Kleiber, 2004) of the Maslach Burnout Inventory (Maslach et al., 1996), which was adapted to the everyday life of teachers (e.g., "I often feel exhausted at school"). Teachers' emotional exhaustion was asked at both measurement points. As outcome variable, emotional exhaustion at T2 was used, while exhaustion at T1 was included as a control variable. Participants were asked to what extent the four statements applied to them on a four-point Likert-scale, reaching from 1 (*does not apply*) to 4 (*does apply*). Internal consistencies of the scale were good with $\alpha_{t2} = .83$ for T2 and satisfactory with Cronbach's $\alpha_{t1} = .70$ for T1.

### 2.2.2 Working conditions

The situational variables describing the working conditions can be divided into class level and system level variables.

**2.2.2.1 Class level variables** As Class level variables, children per class (overall class size), the proportion of students with an immigration background per class, the degree of language difficulties in class, and class disruption were included. Participants provided the total number of students and the number of students with an immigration background in their class. The proportion of students with an immigration background was calculated by dividing the number of students with an immigration background by the total number of students in the class. To assess the extent to which language barriers affect teaching in class, participants rated three items (e.g., "Students have difficulties in actively participating in class for linguistic reasons.", $\alpha = .79$). Answers were given on a four-point Likert-scale

from 1 (*not at all*) to 4 (*very much*). Participants' perception of disruptive behaviors in class was assessed by having teachers indicate the extent to which each of four items applied to instruction in their classroom (e.g., "At the beginning of the lesson it takes a long time for the students to become calm and start working.", $\alpha = .84$). Responses were given on a six-point Likert-scale (1 = *applies*, 6 = *does not apply*). All class level variables were assessed at T2.

**2.2.2.2 System level variables** System level variables for which we controlled were federal state, and school type. Moreover, it is possible that the time since the last vacation could affect emotional exhaustion. To account for variations in vacation regulations across different federal states included in the analysis, we considered the time since the last vacation as a control variable. Because participants working at academic track secondary schools reported the lowest scores for students with an immigration background, we divided the variable "school type" into two categories to ensure comparability in group size. The first category includes the academically highest school type in Germany (*Gymnasium*), which was the most frequently selected option. The second category encompasses all other school types (*Realschule* and *Hauptschule*).

### 2.2.3 Personal prerequisites for action

**2.2.3.1 Personal background and personality variables** As personal background variables, participants' own immigrant background (participant or at least one parent was born abroad, Kunter et al., 2013), gender, age, and personality were included the analysis. Personality was assessed using the subscales of neuroticism (e.g., "I often feel tense and nervous.", $\alpha = .86$) and openness (e.g., "I often try new and strange foods.", $\alpha = .73$) of the German version (Borkenau & Ostendorf, 1991) of the NEO-FFI (Costa & McCrae, 1992). Responses were given on a four-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). All personal background variables were assessed at T1. The personal background variables included in this study were not or hardly changeable. To isolate the effect of cultural value beliefs and professional experience (which could potentially be addressed in university teacher education) in the analysis, we controlled for personal background variables together with the working conditions.

**2.2.3.2 Cultural value beliefs: multicultural and assimilative beliefs** Participants' beliefs regarding cultural diversity were assessed using the subscales for multicultural beliefs of the Teacher Cultural Beliefs Scale, namely multicultural beliefs (TCBS; Hachfeld et al., 2011) and adding another subscale for assimilative beliefs (Hachfeld & Hahn, 2008). The assimilation subscale follows Berry's integration theory (Berry, 2011) and focuses on teachers' expectation to adopt German culture, making it a clear counterpart to the subscale on multicultural beliefs. Multicultural beliefs were assessed via six and assimilative beliefs via three items. The subscales measure the extent a teacher believes that he or she should address

cultural diversity in class (*multicultural beliefs*, e.g., "It is important for children to learn that other cultures may have different values.", $\alpha = .72$) or that students with an immigration background should adopt the native culture (*assimilative beliefs*, e.g., "The institution of school should be used to help students with immigrant backgrounds adapt to German culture.", $\alpha = .65$). Multicultural beliefs were assessed at T1, while assimilative beliefs were assessed only at T2 due to organizational reasons. Responses were given each on a six-point-Likert-Scale ranging from 1 (*totally disagree*) to 6 (*totally agree*).

**2.2.3.3 Stereotypes** Four items measured participants' agreement with negative stereotypes seeing students with an immigration background in class as a burden (e.g., "Students with an immigration background require additional support and therefore place an additional burden on the teacher.", $\alpha = .87$). Responses were given on a six-point Likert-scale ranging from 1 *(totally disagree*) to 6 (*totally agree*) and assessed at T1.

**2.2.3.4 Teaching self-efficacy** Participants' general self-efficacy was measured using the General Self-Efficacy Expectancy Scale (Schwarzer & Jerusalem, 1999; e.g., "I know that I can manage to teach even the most problematic student(s) the material relevant to the exam.", $\alpha = .66$). Responses were given on a four-point Likert-scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Specific self-efficacy for teaching children with an immigrant background was assessed with four items (e.g., "I am confident that I can sufficiently challenge and support students of non-German origin.", $\alpha = .81$). Responses were given on a four-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). General and specific self-efficacy were assessed at T1.

**2.2.3.5 Teaching experience and teaching load** Participants' general practical experience was determined from their corresponding preparatory service cohort (first and second year, respectively). Their specific practical experience in teaching students with an immigration background before the preparatory service was assessed at T1 using one dichotomous (yes/no) single item ("Did you work with students with an immigration background in school before your preparatory service?"). Moreover, the study involved prospective teachers from two different federal states, each with different durations for their teacher preparation service. In one state, the preparation service lasted 18 months, while in the other, it extended to two years. As a result, it was expected that the teaching workload would vary at the second measurement point, with Cohort 2 having a lower average teaching workload compared to Cohort 1. This difference was addressed by including the teaching load as a control variable in the analyses. The teaching load was assessed by asking the participants to report their teaching workload for the past four weeks.

### 2.3 Statistical analyses

Data were analyzed using IBM SPSS statistical software for Windows version 27 (IBM Corp., Released 2021). A maximum Cook's distance of $D_i(max) = 0.04$ indicated that none of the cases exerted a particularly large influence on the model (cf. Cook & Weisberg, 1982). Therefore, extreme values of more than two standard deviations above or below the mean (3.8%) were left in the analysis. Before the analyses, the assumptions of the procedures were checked. All regression analyses were performed with bootstrapping (simple draw of 1000 samples, 95% bias-corrected-and-accelerated [BCa] confidence interval; Wright et al., 2011). For the analyses, the proportion of students with an immigration background was combined into six categories: 0–1%, 1–10%, 10–20%, 20–30%, 30–50%, 50–100%. Each of the categories included the lower limit, since the upper limit already belonged to the next category (i.e., the category "10–20% " included all percentages up to 19.99, while 20% was already counted as the next category).

To test our research questions, we performed hierarchical robust multiple regression analyses (for multicultural and assimilationist beliefs, separately) and entered the variables in three blocks (see also Fig. 1). Each block represents one research question. In each model step, the variables were included simultaneously.

In the first block, we entered situational and context variables (i.e., proportion of students with an immigration background, language barriers in class, class disruptions, number of children per class, time since the last vacations, school type, and federal state), as well as emotional exhaustion at T1. Assuming that personality background variables (i.e., gender, teachers' immigration background, neuroticism, and openness) are invariant, we added them in the first block together with the situational and context variables, which can also not be changed by the teachers themselves.

In the second block, we added immigration-specific personal prerequisites for action, namely cultural value beliefs (one model each for multicultural and assimilative beliefs separately) and stereotypes about seeing students with an immigration background as a burden.

In the last block, we calculated a full model and added our proxy variables for perceived professional competency (i.e., general teaching self-efficacy and specific self-efficacy for teaching students with an immigration background) and teaching experience (i.e., cohort, teaching load and specific experience with students with an immigration background).

In addition, we investigated a potential moderating effect of cultural beliefs on the relation between cultural diversity and emotional exhaustion using univariate analyses of covariance (ANCOVA). A moderating effect of cultural beliefs would result in a significant interaction between cultural beliefs (multicultural or assimilative) and cultural diversity (proportion of students with an immigration background and language barriers including culturally induced conflicts).

## 3 Results

### 3.1 Descriptive and correlative results

The target variable, emotional exhaustion, increased slightly over the course of the study period (T1: $M = 2.06$, $SD = .57$, T2: $M = 2.19$, $SD = .73$; $t(280) = -3.59$, $p < .001$), but remained at a medium level. At the beginning of the school year (T1), there were no significant differences in emotional exhaustion between advanced and beginning pre-service teachers ($t(280) = -4.55$, $p = .649$). Towards the end of the school year (T2), participants in the second year (Cohort 2, $M_{C2} = 1.8$, $SD_{C2} = 0.51$) of the preparatory service were found to be significantly less exhausted than participants in the first year (Cohort 1, $M_{C1} = 2.3$, $SD_{C1} = 0.74$), $t(286) = 4.36$, $p < .001$.

Pearson's correlations and descriptive statistics of all study variables are presented in Table 1. Contrary to our hypothesis, emotional exhaustion at T2 was not correlated with the proportion of students with an immigration background ($r = -.01$, $p = .937$). However, there were low to strong significant associations with stereotypes of seeing students with an immigration background as a burden ($r = .23$, $p < .001$), frequent class disruptions ($r = .30$, $p < .001$), neuroticism ($r = .50$, $p < .001$), perceived professional competence (competence generally: $r = -.27$, $p < .001$; self-efficacy for teaching students with an immigration background specifically: $r = -.14$, $p = .019$), work experience (cohort $r = -.25$, $p < .001$), teaching load ($r = .14$, $p = .019$), and prior emotional exhaustion ($r = .54$, $p < .001$).

### 3.2 Results of the regression analyses

Results from the regression analyses are presented in Table 2 (analysis with assimilative beliefs) and Table 3 (analysis with multicultural beliefs). Patterns for both analyses were similar (model with assimilative beliefs: $R^2 = .49$, $p = .055$; model with multicultural beliefs: $R^2 = .49$, $p = .038$).

#### 3.2.1 Hypothesis 1: cultural diversity

Results from the regression analyses showed no significant relation between the proportion of students with an immigration background and emotional exhaustion at T2 (see Table 2 for assimilative model and Table 3 for multicultural model). Of the situational and context variables included in the first block, only class disruption (AS: $b = .09$ [0.03, 0.15], $p = .01$; MC: $b = .09$ [0.02, 0.14], $p = .01$), class size (AS: $b = .02$ [0.01, 0.03], $p = .01$; MC: $b = .08$ [0.02, 0.15], $p = .01$), and federal state (AS: $b = .26$ [0.08, 0.41], $p < .001$; MC: $b = .25$ [0.10, 0.40], $p = .002$) were significantly related to emotional exhaustion at T2. More class disruptions and larger classes led to higher emotional exhaustion at T2. Of the personal background variables, both neuroticism (AS: $b = 0.34$ [0.17, 0.52], $p < 0.001$; MC: $b = .34$ [0.17, 0.52], $p < .001$) and openness (AS: $b = .21$ [0.05, 0.37], $p < .001$; MC: $b = 0.22$ [0.05, 0.38], $p = .01$) predicted emotional exhaustion at T2. Pre-service teachers scoring higher in neuroticism or in openness reported higher emotional exhaustion. Emotional exhaustion

**Table 1** Pearson correlations and descriptive statistics between all study variables

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Emotional exhaustion T2 | – | .54*** | .07 | −.15* | −.05 | .50*** | .11 | −.01 | .13* | .30*** | .11 | −.10 | −.10 | −14* | −.02 | −.08 | .23*** | −.25*** | −.07 | −.27*** | −.14* | .14* |
| 2. Emotional exhaustion T1 | | – | .04 | −.03 | −.07 | .54*** | −.04 | −.00 | .08 | .24*** | −.01 | −.07 | −.09 | −.07 | −.01 | −.11 | .12 | .03 | −.04 | −.31*** | −.18** | .03 |
| 3. Teacher immigrant background | | | – | −.07 | −.17** | .04 | .06 | .23*** | .10 | −.01 | −.03 | .00 | −.01 | −.04 | .03 | .14* | −.05 | .12* | −.03 | −.02 | .11 | .10 |
| 4. Gender[a] | | | | – | −.22*** | −.27*** | −.07 | −.07 | −02 | −.12* | −.06 | .02 | .20** | −.07 | .13* | −.12* | .06 | .13* | .06 | −.01 | .04 | .02 |
| 5. Age | | | | | – | −.12* | −.13* | .02 | .03 | .02 | −.06 | −.04 | .08 | .17** | .00 | .06 | −.11 | .25*** | .06 | −.03 | .18** | −.09 |
| 6. Neuroticism | | | | | | – | −.04 | .03 | .07 | .30*** | −.03 | −.07 | −.13* | .06 | .00 | −.15* | .09 | −.14* | −.13* | −.36*** | −.23*** | −.08 |
| 7. Openness | | | | | | | – | .01 | −.05 | −.02 | .14* | −.11 | .11 | −.05 | −.07 | .22*** | −.10 | .06 | −.04 | .15* | .12 | .02 |
| 8. Students with an immigration background (%) | | | | | | | | – | .52*** | .20*** | −.31*** | .02 | −.39*** | −.04 | .03 | .17** | −.10 | −.01 | −.25*** | −.03 | .07 | .16** |
| 9. Language barriers | | | | | | | | | – | .16** | −.13* | −.00 | −.33*** | .00 | .08 | .08 | .15* | −.08 | −.09 | −.12 | .03 | .17** |
| 10. Class disruption | | | | | | | | | | – | −.11 | −.17** | −.20*** | .01 | .06 | −.02 | .08 | −.18 ** | −.10 | −.34*** | −.17** | .13* |
| 11. Class size (n) | | | | | | | | | | | – | −.03 | .15* | −.00 | −.01 | −.08 | .05 | −.05 | .09 | −.01 | −.12* | −.15* |

**Table 1** (continued)

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12. Time since last vacation (weeks) | | | | | | | | | | | | – | −.22*** | .24*** | −.09 | −.06 | −.08 | .34*** | .00 | .10 | −.03 | −.05 |
| 13. School type[b] | | | | | | | | | | | | | – | −.12* | −.10 | −.16** | .03 | .26*** | .27*** | −.05 | −.07 | −.22*** |
| 14. Federal state[c] | | | | | | | | | | | | | | – | .03 | −.07 | .03 | −.50*** | −.05 | .05 | −.02 | .27*** |
| 15. Assimilative beliefs | | | | | | | | | | | | | | | – | −.09 | .14* | .02 | −.04 | −.07 | −.12* | .04 |
| 16. Multicultural beliefs | | | | | | | | | | | | | | | | – | −.15* | .04 | −.11 | .15* | .17** | .15* |
| 17. Stereotypes about immigrant students as a burden | | | | | | | | | | | | | | | | | – | −.11 | .06 | −.22*** | −.36*** | .03 |
| 18. Practical experience (1st or 2nd year)[d] | | | | | | | | | | | | | | | | | | – | .17** | .06 | .05 | −.34*** |
| 19. Practical experience with immigrant students | | | | | | | | | | | | | | | | | | | – | −.07 | −.10 | −.11 |

**Table 1** (continued)

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20. General teaching self-efficacy | | | | | | | | | | | | | | | | | | | | – | .33*** | .01 |
| 21. Specific self-efficacy in teaching immigrant students | | | | | | | | | | | | | | | | | | | | | – | .03 |
| 22. Teaching load (hours/week) | | | | | | | | | | | | | | | | | | | | | | – |
| *M* | 2.19 | 2.06 | 0.12 | 1.33 | 27.5 | 1.97 | 2.84 | 20.6 | 1.58 | 3.06 | 25.7 | 2.42 | 4.37 | 18.5 | 4.35 | 4.74 | 3.16 | 1.17 | 1.56 | 3.07 | 3.09 | 10.76 |
| *SD* | 0.73 | 0.57 | 0.33 | 0.47 | 3.84 | 0.52 | 0.44 | 20.8 | 0.73 | 1.18 | 5.12 | 2.39 | 1.53 | 4.99 | 0.80 | 0.61 | 0.97 | 0.37 | 0.50 | 0.35 | 0.49 | 2.72 |

[a]1 = female, 2 = male; [b]2 = academic track school (*Gymnasium*), 1 = all other school types; [c]0 = federal state one, 2 = federal state two; [d]1 = first year of preparatory service, 2 = second year of preparatory service. T1 = measurement point one; T2 = measurement point two

*$p < .05$; **$p < .01$; ***$p < .001$

**Table 2** Model 1 including assimilative beliefs. relation between teacher-reported emotional exhaustion at the end of the school year (T2) and working conditions (Block 1), personal prerequisites for action (Block 2) and perceived professional competence (Block 3)

| | Step 1 | | | Step 2 | | | Step 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | 95% CI | E | B | 95% CI | E | B | 95% CI | E |
| *Block 1* | | | | | | | | | |
| Emotional exhaustion (T1) | 0.47*** | [0.32, 0.63] | 0.08 | 0.46*** | [0.31, 0.62] | 0.08 | 0.49*** | [0.34, 0.66] | 0.08 |
| Gender[a] | −0.02 | [−0.18, 0.15] | 0.08 | −0.02 | [−0.18, 0.14] | 0.08 | −0.03 | [−0.19, 0.13] | 0.08 |
| Age (years) | 0.01 | [−0.02, 0.02] | 0.01 | 0.01 | [−0.02, 0.02] | 0.01 | 0.01 | [−0.01, 0.03] | 0.01 |
| Teacher immigrant background | 0.04 | [−0.19, 27] | 0.00 | 0.04 | [−0.20, 0.26] | 0.11 | 0.08 | [−0.19, 0.32] | 0.12 |
| Neuroticism | 0.34*** | [0.17, 0.52] | 0.09 | 0.34*** | [0.18, 0.52] | 0.09 | 0.34*** | [0.17, 0.52] | 0.09 |
| Openness | 0.21** | [0.05, 0.37] | 0.08 | 0.22** | [0.07, 0.38] | 0.08 | 0.22** | [0.05, 0.4] | 0.09 |
| Students with an immigration background (%) | −0.00 | [−0.01, 0.00] | 0.00 | −0.00 | [−0.01, 0.00] | 0.00 | −0.00 | [−0.06, 0.00] | 0.00 |
| Language barriers | 0.09 | [−0.02, 0.14] | 0.06 | 0.06 | [−0.06, 0.2] | 0.06 | 0.05 | [−0.06, 0.20] | 0.06 |
| Class disruption | 0.09** | [0.02, 0.14] | 0.03 | 0.08* | [0.02, 0.14] | 0.03 | 0.07* | [0.01, 0.14] | 0.03 |
| Class size | 0.02* | [0.01, 0.03] | 0.01 | 0.02* | [0.01, 0.03] | 0.01 | 0.02* | [0.00, 0.03] | 0.01 |
| Time since the last vacations (weeks) | −0.02 | [−0.05, 0.01] | 0.01 | −0.01 | [−0.04, 0.01] | 0.01 | 0.02 | [−0.01, 0.05] | 0.02 |
| School type[b] | −0.01 | [−0.29, 0.09] | 0.09 | −0.11 | [−0.31, 0.08] | 0.1 | −0.02 | [−0.21, 0.17] | 0.1 |
| Federal state[c] | 0.26*** | [0.08, 0.41] | 0.09 | 0.26*** | [0.09, 0.41] | 0.08 | 0.11 | [−.08, 0.28] | 0.09 |
| *Block 2* | | | | | | | | | |
| Assimilative beliefs | | | | −0.06 | [−0.15, 0.03] | 0.05 | −0.05 | [−0.14, 0.04] | 0.05 |
| Stereotypes about immigrant students as aburden | | | | 0.11** | [0.04, 0.19] | 0.04 | 0.12** | [0.03, 0.2] | 0.04 |
| *Block 3* | | | | | | | | | |
| General teaching experience (1st or 2nd year cohort)[d] | | | | | | | −0.38** | [−0.61, −0.16] | 0.12 |
| Practical experience with immigrant students | | | | | | | −0.01 | [−0.17, 0.14] | 0.08 |
| General teaching self-efficacy | | | | | | | 0.04 | [−0.16, 0.27] | 0.11 |
| Specific self-efficacy in teaching immigrant students | | | | | | | 0.05 | [−0.11, 0.22] | 0.08 |

**Table 2** (continued)

| | Step 1 | | | Step 2 | | | Step 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | 95% CI | E | B | 95% CI | E | B | 95% CI | E |
| Teaching load (hours/ week) | | | | | | | −0.01 | [−0.23, 0.35] | 0.02 |
| $R^2$ | .45 | | | .47 | | | .49 | | |
| $\Delta R^2$ | .45*** | | | .02* | | | .02 | | |

[a]1 = female, 2 = male; [b]2 = academic track school (*Gymnasium*), 1 = all other school types; [c]0 = federal state one, 2 = federal state two; [d]1 = first year of preparatory service, 2 = second year of preparatory service.CI = confidence interval. T1 = measurement point one/beginning of the school year. T2 = measurement point two/end of the school year

*$p < .05$, **$p < .010$, ***$p < .001$

**Table 3** Model 2 including multicultural beliefs. relation between teacher-reported emotional exhaustion at the end of the school year (T2) and working conditions (Block 1), personal prerequisites for action (Block 2) and perceived professional competence (Block 3)

| | Step 1 | | | Step 2 | | | Step 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | 95% CI | E | B | 95% CI | E | B | 95% CI | E |
| *Block 1* | | | | | | | | | |
| Emotional exhaustion (T1) | 0.48*** | [0.33; 0.63] | 0.08 | 0.46*** | [0.31; 0.61] | 0.08 | 0.50*** | [0.35; 0.65] | 0.08 |
| Gender[a] | −0.02 | [−0.19; 0.14] | 0.08 | −0.04 | [−0.21; 0.12] | 0.08 | −0.05 | [−.21; 0.11] | 0.08 |
| Age (years) | 0.01 | [−0.02; 0.02] | 0.01 | 0.01 | [−0.01, 0.03] | 0.01 | 0.01 | [−0.01; 0.00] | 0.01 |
| Neuroticism | 0.35*** | [0.17; 0.52] | 0.09 | 0.35*** | [0.17; 0.52] | 0.09 | 0.34*** | [0.17; 0.52] | 0.09 |
| Openness | 0.20* | [0.04; 0.36] | 0.08 | 0.21** | [0.05; 0.38] | 0.83 | 0.22** | [0.05; 0.38] | 0.08 |
| Students with an immigration background (%) | −0.00 | [−0.01; 0.00] | 0.00 | −0.00 | [−0.01; 0.00] | 0.00 | −0.00 | [−0.01; 0.00] | 0.00 |
| Language barriers | 0.10 | [−0.00; 0.21] | 0.06 | 0.05 | [−0.07; 0.17] | 0.06 | 0.05 | [−0.07; 0.16] | 0.06 |
| Class disruption | 0.09** | [0.02; 0.14] | −0.00 | 0.08* | [0.01, 0.13] | −0.00 | 0.08* | [0.00, 0.14] | −0.00 |
| Class size | 0.08** | [0.02; 0.15] | 0.03 | 0.08* | [0.01; 0.14] | 0.03 | 0.07* | [0.01; 0.14] | 0.03 |
| Time since the last vacations (weeks) | −0.02 | [−0.05; 0.01] | 0.02 | −0.01 | [−0.04; 0.02] | 0.02 | −0.02 | [−0.02; 0.05] | 0.02 |
| School type[b] | −0.09 | [−0.27; 0.09] | 0.09 | −0.09 | [−0.27; 0.09] | 0.09 | 0.01 | [−0.18; 0.20] | 0.10 |
| Federal state[c] | 0.25*** | [0.10; 0.40] | 0.08 | 0.26*** | [0.11; 0.40] | 0.08 | 0.10 | [−0.08; 0.28] | 0.09 |
| *Block 2* | | | | | | | | | |
| Multicultural beliefs | | | | 0.01 | [−0.13; 0.14] | 0.07 | 0.02 | [−0.12; 0.15] | 0.07 |
| Stereotypes about immigrant students as a burden | | | | 0.11** | [0.04; 0.19] | 0.04 | 0.12** | [0.04; 0.19] | 0.04 |
| *Block 3* | | | | | | | | | |
| General teaching experience (1st or 2nd year cohort)[d] | | | | | | | −0.41*** | [−0.46; −0.15] | 0.12 |
| Practical experience with immigrant students | | | | | | | −0.00 | [−0.16; 0.15] | 0.08 |
| General teaching self-efficacy | | | | | | | 0.03 | [−0.17; 0.23] | 0.11 |
| Specific self-efficacy in teaching immigrant students | | | | | | | 0.06 | [−0.08; 0.22] | 0.08 |
| Teaching load (hours/ week) | | | | | | | 0.00 | [−0.03; 0.33] | 0.02 |

**Table 3** (continued)

| | Step 1 | | | Step 2 | | | Step 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | 95% CI | E | B | 95% CI | E | B | 95% CI | E |
| $R^2$ | .45 | | | .47 | | | .49 | | |
| $\Delta R^2$ | .45*** | | | .02 | | | .02 | | |

[a]1 = female, 2 = male; [b]2 = academic track school (*Gymnasium*), 1 = all other school types; [c]0 = federal state one, 2 = federal state two; [d]1 = first year of preparatory service, 2 = second year of preparatory service.CI = confidence interval. T1 = measurement point one/beginning of the school year. T2 = measurement point two/end of the school year

*$p < .05$, **$p < .010$, ***$p < .001$

at T1 significantly predicted emotional exhaustion at T2 (AS: $b = 0.47$ [0.32, 0.36], $p < .001$; MC: $b = .48$ [0.33, 0.63], $p < .001$). Pre-service teachers with higher emotional exhaustion at the beginning of the school year (T1) were also more likely to have a higher emotional exhaustion at the end of the school year (T2). No effect was found for participants' immigrant background, gender, time since the last holidays, school type, or the extent of linguistic impairment in class. The situational and personal background variables included in the first block explained 44.1% (MC, $R^2 = .441$, $p < .001$) to 44.6% (AS, $R^2 = .446$, $p < .001$) of the model variance.

#### 3.2.2 Hypothesis 2: cultural value beliefs

In the second step, cultural beliefs were additionally included in the regression analyses. Although neither multicultural nor assimilationist beliefs were significantly related to emotional exhaustion at T2, stereotypes about students with an immigration background as a burden were (AS: $b = .11$ [0.04, 0.19], $p = .01$; MC: $b = .11$ [0.04, 0.19], $p = .003$). Pre-service teachers with more negative stereotypes about students with an immigration background experienced more emotional exhaustion at T2 than their peers with fewer stereotypes did. The significant predictors from step one remained significant. Cultural beliefs increased the explained variance by 1.9% (MC, $p = .01$) and 2.2% (AS, $p = .01$) to 46.1% (MC, $R^2 = .46$) and 46.8% (AS, $R^2 = .47$), respectively.

#### 3.2.3 Hypothesis 3: perceived professional competence and teaching experiences

In the last step, pre-service teachers' perceived professional competencies and their teaching experiences were included in the regression analyses. Teachers' practical experience, operationalized by the preparatory service cohort (first or second year), significantly predicted emotional exhaustion at T2 (AS: $b = -.38$ [−0.61, 0.16], $p < .001$; MC: $b = -.41$ [−0.46, 0.15], $p = .004$). Advanced pre-service teachers in the second year of preparatory service reported less emotional exhaustion than their colleagues in the first year did when controlling for emotional exhaustion at T1. No relationship was found for experience in teaching students with an immigration background before the preparatory service and teaching self-efficacy. The previously found relationship between federal state and emotional exhaustion at T2 disappeared when including perceived personal competence and teaching experiences. Perceived professional competence and teaching experiences increased the explained variance by 2.1% (AS, $p = .055$) and 2.2% (MC, $p = .038$), respectively, to 49.0% (AS: $R^2 = 49$; MC: $R^2 = .49$) for the full model.

In the full model the most significant predictors of emotional exhaustion at T2 (besides emotional exhaustion at T1) were either situational concerning class disruption (for AS: b = .07 [0.01, 0.14], $p = .02$; for MC: $b = .08$ [0.00, 0.14], $p = .04$) and class size (for AS: $b = .02$ [0.00, 0.03], $p = .028$; for MC: $b = .07$ [0.01, 0.14], $p = .01$) or personality variables, specifically neuroticism (for AS: $b = 0.34$ [0.017, 0.52], $p < .001$; for MC: $b = 0.34$ [0.017, 0.52], $p < .001$) and openness (for AS: $b = 0.22$ [0.05, 0.40], $p < .001$; for MC: $b = .22$ [0.05, 0.38], $p = .01$). Furthermore,

practical experience and stereotypes about students with an immigration background as a burden had an influence.

### 3.3 Moderator analyses: influence of cultural value beliefs

Although the regression analyses did not reveal a significant main effect for cultural beliefs or for the proportion of children with an immigrant background, we conducted univariate analyses of covariance (ANCOVA) to investigate a potential moderating effect of multicultural and assimilative beliefs.

Results of the univariate analysis of covariance (ANCOVA) with assimilative beliefs, showed a significant overall effect, $F(189, 76) = 1.50$, $p = .022$, partial $\eta^2 = .078$, due to a significant main effect for emotional exhaustion at T1, $F(1, 76) = 1.566$, $p = .049$, partial $\eta^2 = .050$. For the multicultural belief model, we did not find a significant overall effect, $F(69, 196) = 1.36$, $p = .072$, partial $\eta^2 = .794$. The presumed moderating effect of cultural beliefs was not significant for either belief. The two-way interaction was not significant for assimilative beliefs (two-way interaction, $F(49, 76) = 0.721$, $p = .889$, partial $\eta 2^2 = .320$) nor for multicultural beliefs (two-way-interaction $F(54, 69) = 0.886$, $p = .676$, partial $\eta 2^2 = .409$). Additionally, the three-way interaction with language barriers was not significant for assimilative beliefs ($F(13, 76) = 0.637$, $p = .815$, partial $\eta 2^2 = 0.099$) nor for multicultural beliefs ($F(15, 69) = 0.604$, $p = .862$, partial $\eta 2^2 = .116$).

## 4 Discussion

The purpose of this paper was to contribute to the current discussion on the role of cultural diversity in the development of emotional exhaustion in pre-service teachers. We used a longitudinal approach to investigate the relation between cultural diversity and emotional exhaustion while controlling for previous emotional exhaustion. In addition to cultural diversity, the study includes other factors highlighted by the teacher stress model (Rudow, 1994). Based on the current discussion and drawing from the teacher stress model, we hypothesized that there was a relationship between cultural diversity and emotional exhaustion, and that situational and contextual factors, perceived competence, and teaching experience had an impact on emotional exhaustion.

### 4.1 Few associations between migration-related variables and teachers' emotional exhaustion

In sum, our results do not confirm that cultural diversity per se contributes to increased emotional exhaustion in pre-service teachers. We also could not find a moderating effect of assimilative and multicultural beliefs on the relation between cultural diversity and emotional exhaustion. Interestingly, while the actual proportion of students with an immigration background in the teacher's class did not

contribute to the pre-service teachers' emotional exhaustion, their stereotypes about students with an immigration background as burden did. The more participants agreed that students with an immigration background were a burden in the classroom at T1, the more pronounced their emotional exhaustion was at T2.

There is also previous research that suggests that cultural diversity per se is not driving the relation with stress and burnout, but rather how teachers perceive and value cultural diversity (Alesina et al., 2018; Glock, Kleen et al., 2019, Glock, Kovacs et al.,2019; Gutentag et al., 2018; Parkhouse et al., 2019; Tsouloupas et al., 2010). This assumption is in line with well-established stress models, such as the transactional stress model (Lazarus & Folkman, 1987) or the teacher stress model (Rudow, 1994), which served as framework for the current study. Both models emphasize the importance of the evaluative component in the development of stress responses, such as emotional exhaustion.

That we did not find a protective effect for multicultural beliefs is also consistent with previous research in a school context (Dubbeld et al., 2019a, 2019b; Horenczyk & Tatar, 2002), which also found no effect on general and diversity-related burnout. Assimilative beliefs, contrary to our findings, have been previously associated with higher stress and burnout rates among teachers (Dubbeld et al., 2019a, 2019b; Gutentag et al., 2018; Tatar & Horenczyk, 2003). One possible reason for that could be that all data we used was based on self-reports. When it comes to topics such as migration, assimilation, or even xenophobia, self-reporting can be distorted for reasons of social desirability. This could be particularly problematic in Germany, where social hostility is a sensitive issue due to the Holocaust history of the mid-twentieth century. The data could therefore be biased towards multiculturalism, which could have masked an effect. This is supported by the fact that assimilationist beliefs averaged 2.7 (more likely to disagree), while multicultural beliefs averaged 4.7 (more likely to agree). Since our study provides evidence that migrant students' perceptions were biased by teachers' stereotypes, the question arises whether pre-service teachers also carry some stereotypes about certain stressors that have a self-fulfilling prophecy effect on what is interpreted as stressors and to what extent it is so interpreted (see Glock & Böhmer, 2018). In our study, we also observed a protective effect of the preparatory service cohort (first or second year). One possible explanation is that the duration of the teacher training was only 1.5 years in one federal state, so the participants were no longer working at a school by the second measurement point. Besides simple cohort effects, the lower exhaustion in the second year of the preparatory service could also be a, albeit limited, indication that daily contact with students, along with gaining practical experience and routines, may reduce existing stereotypes about students or stressors. Such an effect would be in line with current research that reports lower stereotypical bias in in-service teachers compared to pre-service teachers (Bonefeld et al., 2022; see also Glock, 2016b; Glock, Kovacs et al 2019; Kokkinos, 2007; Walker-Dalhouse & Dalhouse, 2006). Furthermore, studies suggest that teachers' attitudes toward cultural diversity can be changed during their university education (Fischer & Ehmke, 2019; Profanter & Hachfeld, 2022; Walker-Dalhouse & Dalhouse, 2006): The more advanced students were in their studies (Fischer & Ehmke, 2019; Profanter & Hachfeld, 2022) or their preparatory service (Walker-Dalhouse & Dalhouse, 2006), the more positive their

attitude towards-cultural heterogeneity became. Further, it is possible that contextual differences (Horenczyk & Tatar, 2002) between studies contributed to the different results and that other contextual variables not captured in existing studies contribute more to burnout than cultural diversity per se. In our study, like in others on general burnout (Kennedy et al., 2021; Kokkinos, 2007), contextual factors such as class size and frequent classroom disruptions, which have not been considered in existing research on diversity-related burnout, also had a significant impact. It is likely that in urban, culturally diverse schools, such as those studied by Dubbeld et al., (2019a, 2019b), high student numbers and other contextual factors would explain burnout more strongly than diversity per se.

### 4.2 Prior emotional exhaustion

The strongest predictor of emotional exhaustion at T2 was emotional exhaustion at T1. The more exhausted pre-service teachers started the school year, the more exhausted they were at the end. This is consistent with previous research, showing that existing emotional exhaustion can predict future exhaustion up to two years in the future (Näring et al., 2012). It is striking, though, that participants in our sample reported lower levels of emotional exhaustion than in comparable earlier studies (e.g., Maslach et al., 1996; Schwarzer et al., 2000; Unterbrink et al., 2007), but a similar level of exhaustion as reported in comparable recent studies (Dubbeld et al., 2019a, 2019b). These findings suggest that stress and emotional exhaustion has gone down, while culturally diversity has grown.

Regarding personal background variables, like Dubbeld et al. (2019a), we did not find any effect of gender and age. Unlike Dubbeld et al., (2019a, 2019b), we also found no significant relation between teachers' immigrant background and burnout symptoms. In their study, immigrant teachers reported higher emotional exhaustion than native teachers did, while in our study emotional exhaustion did not differ for pre-service teachers with or without immigrant background. In our study, of the person-related variables, only personality, namely neuroticism and openness, predicted emotional exhaustion. Contrary to our assumption, for openness we also found a positive relationship with emotional exhaustion, meaning that teachers higher in openness reported more emotional exhaustion. Previous research, thus far, is inconsistent. While some find a protective effect for openness (Kokkinos, 2007; Lü et al., 2016), others find only a relationship with personal accomplishment, another burnout symptom, but none with emotional exhaustion (Cano-García et al., 2005; Pishghadam & Sahebjam, 2012). We found only one other study that also reported a positive association between emotional exhaustion and openness (Ghorpade et al., 2007). Ghorpade et al. (2007) examined the relationship between personality and burnout among university lecturers, also taking a complex theoretical view, as did our study. The findings of Goddard et al. (2006) showed that emotional exhaustion depended on how innovative the classroom environment was perceived to be. The resulting explanation for the positive relationship could be that the coincidence of an open personality and a less innovative school environment leads to higher

exhaustion. Since this data set does not include information on the innovativeness of the participating schools, this must be examined in future research.

### 4.3 Limitations

The study has several limitations that need to be considered when interpreting the results. First, our study only included mathematics teachers, so selection may have already occurred due to subject restriction. Mathematics is often viewed as a "universal language" that can be understood across languages and cultures. Given this, mathematics teachers might perceive cultural diversity as less relevant to their subject than, for example, history or other social science teachers. Against this assumption is the finding that our teachers on average reported high agreement with the multicultural subscale. In Germany, teachers must study and teach at least two subjects. We did not include information about our participants' other subject(s). Further research could investigate whether different subjects also play a role in how strongly teachers believe that cultural diversity matters for their subject and their teaching.

Secondly, the current study focused on the relationship between cultural diversity and emotional exhaustion. However, the definition of cultural diversity might have been too broad in that it also included children whose grandparents immigrated from abroad, but whose parents were already born and socialized in Germany. Accordingly, the age of arrival could be of importance (see Autorengruppe Bildungsberichterstattung, 2020), which was not investigated. In addition, a differentiation of students with an immigration background by country of origin would be helpful, as there is evidence that children from EU15 countries fit into the German education system better than children from other countries do (Autorengruppe Bildungsberichterstattung, 2020).

Thirdly, cultural diversity is only a small part of diversity, which, in combination with other factors, may lead to stress and burnout. While we also included diversity with regard to language difficulties, we did not capture other aspects of diversity, like children with special needs and other. Moreover, we also did not include information on rest breaks during the daily routine, and workload that might have had an influence. However, we controlled for earlier emotional exhaustion, so that a possible effect of an unfavorable recovery structure was accounted for in the analysis.

Moreover, the internal consistency (Cronbach's alpha) of emotional exhaustion was lower at T1, with a value of 0.7, compared to T2, where it increased to 0.83. Despite using the same instrument and approximately unchanged samples ($n = 282$ vs. $n = 287$), the most plausible explanation appears to be variations in the way participants responded, potentially due to a recall bias. It's possible that participants recalled their emotional exhaustion differently at the beginning of the school year compared to the end, resulting in more inconsistent responses. The number of items within a scale influences the value of Cronbach's alpha. In our case, having four items yields a Cronbach's alpha of $\alpha = .7$, which is considered sufficient (see Cortina, 1993).

Finally, yet importantly, the data set was collected over ten years ago. During this time, various impactful societal events have occurred. However, the dataset contains the data of student teachers who are now in the profession as teachers. Therefore, the insights gained from it still have practical relevance.

### 4.4 Practical implications

One important practical implication can be drawn from our findings and the literature reviewed. Although many studies have attempted to identify stressors in teachers' working lives, our results suggest that not only external stressors are responsible for teacher stress and burnout. Rather, it is internal processes, namely the way teachers themselves interpret (and consequently deal with) external conditions, which turn objective, situational factors into a subjective stressor. In other words, our findings show that it is not the students with an immigration background per se, but the interpretation of students with an immigration background as a burden and therefore as stresss that leads to emotional exhaustion. It implies that cognition could be an effective adjusting screw to prevent and counteract teacher stress and burnout (see also Gutentag et al., 2018; Pevec & Schachner, 2020; Simmons et al., 1999). Therefore, university instructors should aim to teach prospective teachers how to professionalize their thinking during their studies. Student teachers should be guided to consciously reflect and cultivate a positive perspective and to deal with biases and stereotypes. An effective method to challenge stereotypes about a specific group is through direct contact with that group (Crisp & Abrams, 2008; Glock, Kovacs et al., 2019). Moreover, attitudes towards students with an immigration background can evolve with increased experience (Profanter & Hachfeld, 2022; Walker-Dalhouse & Dalhouse, 2006). Therefore, in teacher education, the professionalization process should be accompanied by more extensive or longer practical phases.

## 5 Conclusion

The results of this study do not support the assumption that cultural diversity per se increases pre-service teachers' emotional exhaustion. Instead, other factors are responsible for teachers' exhaustion at the end of the school year, such as context (e.g., class size and classroom disruptions) and more stable teacher-related factors, such as personality, prior exhaustion, and stereotypes that migrant children were a burden.

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## Declarations

**Conflict of interest** The authors declared that they have no conflict of interest.



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