





Research paper

Exploring pre- and in-service teachers' (non-)critical cultural and multilingual awareness and responsiveness in classroom situations through voice-recorded video-based assessment

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ABSTRACT

Sensitizing teachers to support multicultural and multilingual students facing educational disadvantages is crucial. This study explores German (pre-service) teachers' (non-)critical cultural and multilingual awareness and responsiveness. By applying qualitative-quantitative content analysis, we categorized participants' voice-recorded responses to staged videos of culturally and linguistically challenging classroom situations into four levels of awareness and responsiveness. We found low levels of awareness and responsiveness that correlated positively with beliefs about multilingualism, scientific activity, language subjects, and practice-oriented opportunities to learn (OTL) about culturally and linguistically responsive teaching (CLRT). Teacher education must develop OTL promoting knowledge and critical reflection on culture, language, and CLRT.

1. Introduction

Cultural and linguistic diversity has been increasing worldwide, driven by globalization and immigration. Germany has received an influx of immigrants since the Second World War (Berkel-Otto et al., 2021). It is estimated that more than a quarter of the German population has a migrant background, with children using multiple family languages and German as a Second Language (GSL) (Berkel-Otto et al., 2021; Federal Office of Statistics, 2024). Accordingly, cultural and linguistic diversity has become the norm in German schools, considering that students encounter different cultures, languages, and language varieties when they travel, use (social) media, or communicate with multilingual and multicultural peers (Brandt & Gogolin, 2016). However, in Germany, children with a migrant background are often underserved as they are more likely to enter primary school with language deficits, attend lower-performing secondary schools, or drop out of school, which reinforces inequalities further (Ebert & Heublein, 2017; Gresch, 2012; Haag et al., 2012). Culturally and linguistically diverse learners are rarely represented in textbooks or teaching practices, which tend to focus on white intercultural realities, racializing non-dominant cultures, ethnicities, or perspectives (R'boul & Saidi, 2024a). Unreflected biases, stereotypes, and non-critical understandings of diversity in educational settings sustain Otherization, Culturalization, and

Eurocentrism and may further demoralize culturally and linguistically diverse students (Appel et al., 2015; R'boul & Saidi, 2024b). The lack of culturally and linguistically responsive teaching (CLRT) practices, which promote an inclusive classroom climate and appropriate curriculum content (García, 2017; Lucas & Villegas, 2013), is likely to increase educational disparities and perpetuate the cycle of underachievement for multicultural and multilingual students (Vavrus, 2008). CLRT has shown positive outcomes such as improved test scores, motivation, and engagement of students with diverse backgrounds (e.g., Bui & Fagan, 2013). Nevertheless, both classroom practice and teacher education have been criticized for superficial alignment with liberal multiculturalism and multilingualism and potential perpetuation of stereotypes and power structures (e.g., Cross, 2005; McLaren, 1995; Sato & Este, 2018). Therefore, aspects of criticality have become a focus of current research on CLRT, leading to the concepts of critical consciousness or critical cultural and multilingual awareness and responsiveness (e.g., Ducar, 2024; Ladson-Billings, 1995, 2014). Critical approaches enable (pre-service) teachers to appreciate cultural and linguistic diversity as they critically examine the structural and social forces that maintain the supremacy of white racial hegemony in educational settings (e.g., Ducar, 2024; Gay & Kirkland, 2003). Additionally, these approaches encourage (pre-service) teachers to actively counteract this dominance by adapting teaching materials, selecting learning content tailored to the diversity of

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their students, discussing relevant topics in class, and constantly self-reflecting (e.g., Gay & Kirkland, 2003; Kehl et al., 2024). In Germany, teacher education neither systematically includes an examination of critical cultural and multilingual awareness or responsiveness nor methods of CLRT; thus, teachers are often unprepared when teaching multicultural or multilingual students (Becker-Mrotzek et al., 2012; Berkel-Otto et al., 2021). Overall, a lack of CLRT-relevant OTL in teacher education is discussed internationally (e.g., Bailey & Snowden, 2021; Herzog-Punzenberger et al., 2020; Markey et al., 2021; Vikøy & Haukås, 2021). Considering such challenges, it is imperative to conduct research on the status quo of pre- and in-service teachers' (non-)critical cultural and multilingual awareness and responsiveness regarding multiculturalism and multilingualism in schools to improve teacher education. The aim of our study was to assess the extent to which pre- and in-service teachers demonstrated critical cultural and multilingual awareness and responsiveness at different levels along a continuum (Cormier, 2021, Chapter 3.2.3). These levels included varying degrees of awareness, responsiveness, and related criticality. The use of parentheses in "(non-)critical" indicates that variations of the same construct were measured as pre- and in-service teachers' awareness and responsiveness differing in the presence and degree of critical reflection on cultural and linguistic diversity in schools. While most scientific studies in this field (e.g., Bailey & Snowden, 2021; Hammer et al., 2018; Otwinowska, 2014, 2017) used standard quantitative or qualitative methods (e.g., interviews and paper-pencil surveys), we aimed to explore participants' critical cultural and multilingual awareness, meaning their (non-) perception of culturally and linguistically challenging aspects in classroom situations, and their responsiveness, meaning the level of cultural and linguistic sensitivity regarding their intended (re)action to those perceived situations, using an innovative approach. We measured pre- and in-service teachers' initial oral responses to staged videos of culturally and linguistically challenging classroom situations showing teachers being non-aware of these challenges and (re)acting culturally

and linguistically non-responsive and identified different levels of awareness and responsiveness. The following research questions guided this study.

2. Research questions

- 1) Which levels of (non-)critical cultural and multilingual awareness and responsiveness can be identified among pre- and in-service teachers based on their oral responses to culturally and linguistically challenging classroom situations?
- 2) How do pre- and in-service teachers demonstrate (non-)critical cultural and multilingual awareness and responsiveness and how are these constructs related?
- 3) How are participants' personal and academic backgrounds, CLRT-related OTL, and beliefs about multilingualism related to their (non-)critical cultural and multilingual awareness and responsiveness?

Fig. 1 illustrates the measured concepts and their relations and influencing factors to be explored, which are reflected in Research Questions 2 and 3.

3. Theoretical framework and literature review

3.1. Teachers' awareness and responsiveness in the teacher competency model

Teachers' situational awareness refers to their real-time knowledge of what is happening in the classroom, encompassing both immediate sensory perceptions and the stored episodic knowledge acquired through their classroom experience (Wolff et al., 2021). Situational awareness integrates teachers' perceptions and interpretations of events and supports their ability to project how events will unfold and make

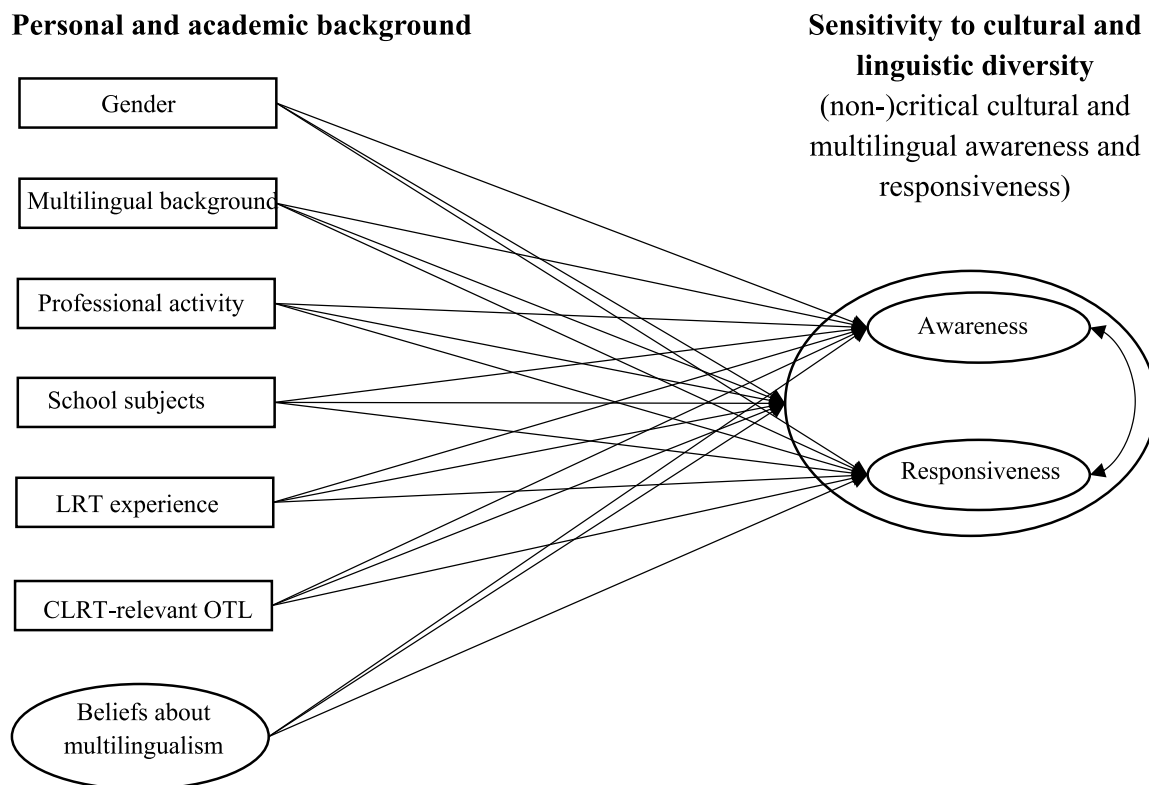


Fig. 1. Conceptualization of the measured concepts, and their relations and influencing factors.

Notes: LRT = Linguistically Responsive Teaching; CLRT = Culturally and Linguistically Responsive Teaching; OTL = Opportunities to learn.

decisions about whether to take action in classroom situations (Wolff et al., 2021). According to Walton and Osman (2022, p. 7), pedagogical responsiveness is defined as “a disposition or orientation to pedagogy that is sensitive, open, and empathetic, not only to individual or groups of students but to wider factors in that community and context.” This concept extends beyond recognizing students’ needs, content demands, or environmental influences; thus, it requires professional judgment that results in action (Walton & Osman, 2022). Walton and Osman (2022) characterize pedagogical responsiveness through inclusivity and student-focus, knowledge work, dialogue and relationality, community orientation, and principles of social justice and equity. The interconnected nature of these characteristics fosters a dynamic and nuanced understanding of pedagogical responsiveness, contributing to its complexity, expression, and significance (Walton & Osman, 2022).

Drawing on the idea of teachers’ competence as a continuum of dispositions, situation-specific skills, and performance (Blömeke et al., 2015), as shown in Fig. 2, teachers’ awareness is located as perception within the situation-specific skills. Teachers’ responsiveness is reflected in the model on the one hand as decision-making, i.e., situation-specific skills, and on the other hand, as behavior in specific classroom situations and, thus, as performance. Just as teachers’ dispositions influence their perceptions and decision-making and, in turn, their performance in the classroom, teachers’ beliefs and knowledge form the basis for their awareness, affecting their responsiveness (Civitillo et al., 2019).

3.2. Critical cultural and multilingual awareness and responsiveness in education

Critical cultural and multilingual awareness and responsiveness have become crucial to pedagogical practice within the growing discourse of cultural and linguistic diversity in schools (e.g., Kehl et al., 2024; Smith et al., 2022). A key component of those approaches is the concept of criticality, which involves not only critical thinking but also a critical reflection on one’s beliefs, values, and assumptions (Barnett, 1997). According to Barnett (1997), criticality extends beyond intellectual critique to include a commitment to critical action; thus, teachers must not only reflect on but also act against unjust social structures. Criticality invites teachers to challenge the knowledge they encounter, their beliefs and biases, and the broader socio-political systems that shape educational practices (Barnett, 1997; Johnston et al., 2011).

3.2.1. Teachers’ critical cultural and multilingual awareness

Based on the construct of multicultural education (see Roxas et al., 2017), critical cultural awareness enhances teachers’ ability to critically examine perspectives, practices, and products from different cultures, including their own (Byram, 1997). Being critically culturally aware involves more than just presenting factual information about geography, history, or politics; rather, it focuses on exploring the complexity of hidden meanings and underlying values and understanding how these

interact with the broader social and political contexts in which they are embedded (Guilherme, 2002). Instead of simply acknowledging cultural differences or analyzing stereotypes, critical cultural awareness raises attention to structural injustice (Giroux, 2012). Critical multilingual awareness is an extension of the concept of Teacher Language Awareness (Andrews, 2007), defined as a critical understanding of power structures inherent in language use (Alim, 2010; García, 2009). It means that teachers should be aware of students’ diverse language practices and backgrounds and sensitized to the social dynamics that privilege certain languages over non-dominant varieties in the school environment (García, 2017). The criticality implanted in critical cultural and multilingual awareness invites teachers to engage in a transformation process, both personally and pedagogically (Nieto, 2000). Teachers must assess how their practices contribute to or challenge inequality and work to create inclusive and just learning environments (García, 2017).

3.2.2. Teachers’ critical cultural and multilingual responsiveness

Critical cultural and multilingual responsiveness, reflected in the resulting concept of CLRT, is relevant to any school subject and includes orientations and practices fundamental to supporting multilingual and multicultural students (Lucas & Villegas, 2013; Villegas & Lucas, 2002; Yoon, 2023). It includes understanding how to communicate language, culture, and identity as interconnected elements and acknowledging and effectively incorporating the cultural and linguistic diversity of their students into classroom activities and discussions (Lucas & Villegas, 2013). In reference to the concepts of teachers’ critical awareness (e.g., Alim, 2010) or critical consciousness (Gay & Kirkland, 2003; Ladson-Billings, 1995) the criticality implanted in critical cultural and multilingual responsiveness means embracing cultural and linguistic diversity while challenging the power dynamics that perpetuate the dominance of white racial hegemony in educational contexts (see Ducar, 2024; Kehl et al., 2024). To actively counteract this dominance, teachers should adapt their planning and teaching to the diverse needs of their students, particularly those from linguistically and culturally marginalized backgrounds, by applying practices such as scaffolding and translanguaging, providing extralinguistic support, or selecting culturally relevant topics and materials (García, 2017; Lucas & Villegas, 2013). Research suggests that critical cultural and multilingual awareness is essential to the development of critical cultural and multilingual responsiveness (see Smith et al., 2022) as CLRT must be carried out with a critical awareness of how culture and language are shaped by power structures (Nieto, 2000).

3.2.3. Developing pre- and in-service teachers’ critical cultural and multilingual awareness and responsiveness

Pre- and in-service teachers should not only recognize cultural and linguistic differences but also challenge the power structures that cause discrimination against non-dominant populations (Nieto & Bode, 2008). Therefore, teacher education must enable them to reflect on their

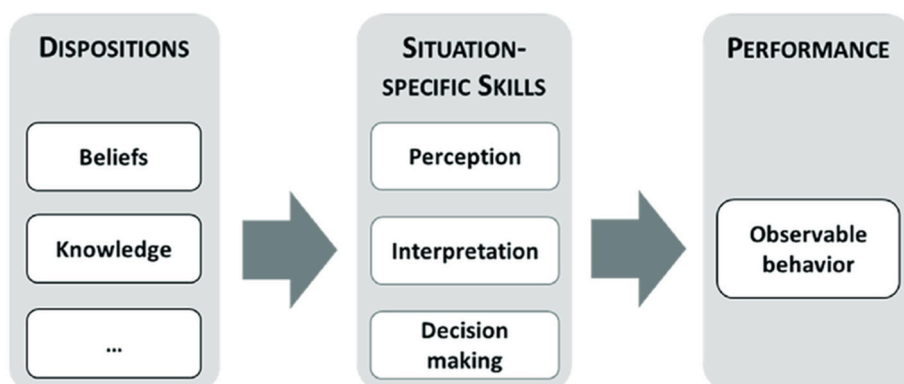


Fig. 2. Teacher-competence-as-continuum model (Petermann & Vorholzer, 2022; based on Blömeke & Kaiser, 2017).

privileges and identities to recognize inequalities in the system as well as their role in it (Barnett, 1997; Ukpokodu, 2003; Whiting & Cutri, 2015).

The Cultural Proficiency Continuum proposed by Cormier (2021) provides a useful framework for understanding how teachers engage with cultural diversity, which can be extended to linguistic aspects. The continuum reflects a spectrum of cultural awareness and responsiveness, ranging from Cultural Destructiveness, where cultural differences are actively suppressed, to Cultural Proficiency, where teachers not only respect but actively advocate for cultural diversity and social justice. This progression begins with Cultural Incapacity, where teachers may trivialize or stereotype other cultures, moving toward Cultural Blindness, where cultural differences are ignored (Cormier, 2021). Cultural Pre-Competence refers to a stage in which teachers recognize their limitations in engaging with cultural diversity but show a desire to improve (Cormier, 2021). In contrast, Cultural Competence entails teachers actively aligning their pedagogical approaches with the tenets of cultural diversity (Cormier, 2021). Finally, the highest level, Cultural Proficiency reflects a state in which teachers are committed to transforming their teaching practices to foster inclusion and social justice (Cormier, 2021).

Jointly, the integrated concepts of critical cultural and multilingual awareness and critical cultural and multilingual responsiveness provide a relevant foundation for teachers to serve multicultural and multilingual students beyond mere acknowledgment of diversity to disrupt discriminatory practices and create more equitable learning environments. The Cultural Proficiency Continuum offers a framework for this progression, showing how teachers can evolve from stereotyping diversity to advocating for social justice.

Empirical studies such as ours examining the current state of pre- and in-service teachers' awareness and responsiveness not only indicate what (pre-service) teachers are already aware and capable of, but also provide relevant information on what they lack. Consequently, practical implications for improving teacher education and further training can be derived. The following subsection provides an overview of selected studies that have investigated (non-)critical cultural and multilingual awareness and responsiveness among pre- and in-service teachers.

3.3. Research on pre- and in-service teachers' (non-)critical cultural and multilingual awareness and responsiveness

Research on teacher professionalization regarding multiculturalism and multilingualism in schools has shown that although linguistic and cultural diversity is increasingly considered an asset, the development of awareness and responsiveness among pre- and in-service teachers varies widely (Semião et al., 2023). Within their systematic review, Semião et al. (2023) justify different levels of teachers' cultural and multilingual awareness about cultural and linguistic diversity based on their extensive knowledge about it. Various studies have also highlighted the inconsistency between (pre-service) teachers' awareness, meaning how they perceive cultural and linguistic diversity, and their responsiveness, meaning how they intend to or actually deal with it in the classroom. Pre- and in-service teachers are generally aware of the advantages of cultural and linguistic diversity (e.g., Brandt et al., 2024) however, simultaneously, they perceive it as a challenge when they believe that they are unprepared or not experienced enough to serve multilingual and multicultural students (e.g., Paulsrud et al., 2023; Tandon et al., 2017). Using questionnaires and focus group interviews, Otwinowska (2014) found that, despite considering multilingualism as an asset, Polish teachers were not adequately prepared or confident in its practical application. Likewise, several Norwegian studies have shown that teachers have a high level of cultural and linguistic awareness and openness to adopt CLRT; however, the implementation of CLRT in their actual teaching practice remains minimal (Lorenz et al., 2021; Xu & Krulatz, 2023). A mixed-methods case study by Lambeth and Smith (2016) found that US pre-service teachers perceived CLRT as a teaching method that promotes high-level discussions about racial issues and

enhances the confidence of multilingual and multicultural students but were rarely able to concretize a practical implementation.

International interview and survey studies have also identified positive correlations between (pre-service) teachers' levels of cultural and linguistic awareness or responsiveness and their own multilingual background, language school subjects, and professional experience (Hammer et al., 2016; Haukås, 2016; Otwinowska, 2014, 2017). Civitillo et al. (2019), who, like the authors of the present study, measured teachers' beliefs about multiculturalism as a separate construct in addition to their cultural responsiveness, demonstrated a remarkable correlation between participants' beliefs and their CLRT practices i.e., the more affirmative the beliefs, the higher the cultural responsiveness. Abdulrahim and Orosco (2020) showed, as part of their synthesis, that while mathematic teachers may have the knowledge to teach in a culturally responsive manner, successful practice also depends on their dispositions and willingness to reflect critically on their teaching methods and beliefs. As the importance of such criticality is increasingly recognized, some studies have explicitly investigated critical cultural and multilingual awareness and responsiveness among pre- and in-service teachers.

Guilherme (2002) explored Portuguese English teachers' critical cultural awareness through questionnaires, focus group discussions, and interviews. They showed interest in incorporating material on different cultures and adopting a critical perspective; however, few were able to address power dynamics in their classrooms (Guilherme, 2002). Nevertheless, participants recognized the need to challenge discriminatory attitudes toward cultural differences (Guilherme, 2002). Deroo and Ponzio (2023) evaluated a curriculum for pre-service teachers based on critical multilingual awareness and found that pre-service teachers' awareness of the social history of language, including linguistic imperialism and colonialism, was deepened, especially when they drew on their personal experiences in addition to the course content. Fu et al. (2023) found that exposure to multimodal art and written reflection helped two experienced teachers of color deepen their critical multilingual awareness, strengthening their commitment to implementing more culturally and linguistically sustainable pedagogical practices. Lindahl, Hansen-Thomas, Baecher, & Stewart, 2020 showed that experiences with study-abroad programs helped pre-service teachers of English as a Second Language (ESL) develop critical multilingual awareness, which led to their understanding of power dynamics in classroom language use.

However, some studies have revealed low levels of non-critical cultural and linguistic awareness and responsiveness. Case studies of two novice ESL teachers in the US revealed a lack of critical multilingual awareness as they did not reflect on their privileges of speaking standard English as their first language in relation to their students' linguistic backgrounds (Reeves, 2009). Other mixed-methods and qualitative research in Spain, Germany, and Norway showed that teachers considered culturally and linguistically diverse students as problematic or less competent compared to others, continuing to internalize monolingual habitus (Poveda et al., 2014; Prats et al., 2017; Siepmann et al., 2023; Vikøy & Haukås, 2021). Bottiani et al. (2018) highlight the gap between educational research on CLRT and its actual practical application in the classroom. Despite extensive literature on CLRT, empirical evidence for effective OTL in teacher education and further training remains limited due to a lack of standardized and psychometrically validated instruments that measure (pre-service) teachers' responsiveness and evaluate student outcomes (Bottiani et al., 2018).

These findings demonstrate the global need for improving teacher education and further training of pre- and in-service teachers to foster their critical cultural and linguistic awareness and responsiveness. This study aimed to uncover the levels of (non-)critical cultural and multilingual awareness and responsiveness amongst pre- and in-service teachers in Germany by quantifying their initial responses to videos of culturally and linguistically challenging classroom situations. In the following subsection, we explain the advantages of measuring (non-)

critical cultural and multilingual awareness and responsiveness through video-based assessment and provide examples from previous research.

3.4. Measuring (non-)critical cultural and multilingual awareness and responsiveness through video-based assessment

Video recordings of classroom situations, including self- and external recordings, help gain insights into teaching practices as they capture the dynamic nature of classroom (inter)actions and processes (Seidel et al., 2011). Teaching and learning approaches that involve video analysis offer a deeper understanding of classroom dynamics, specifically regarding student engagement, teacher-student interactions, and the effectiveness of instructional strategies (Mikeska et al., 2024). Additionally, videos of classroom situations are a tool for (pre-service) teachers to observe, reflect on, and discuss various aspects of (their) teaching, including content delivery, subject matter comprehension, and teaching methods (Mikeska et al., 2024). Van Es and Sherin (2002) argue that video-based assessment is crucial for helping teachers notice classroom interactions, enabling adaptive instruction. Barnhart and van Es (2015) demonstrate that targeted video training aids pre-service teachers in engaging with student thinking. Overall, research emphasizes the importance of video reflection in helping educators refine their observational skills, engage in student thinking, and become more aware and responsive in their instructional practices, which ultimately leads to improved teaching outcomes (Sherin & van Es, 2002, 2005). Considering noted differences in the depth and complexity of perceptions of video situations between novice and experienced teachers, video reflection can also be used as a measurement tool for (pre-service) teachers' perceptions or awareness that enables them to make decisions about their actions in the classrooms (Blömeke et al., 2015; Santagata & Yeh, 2016; Van Es & Sherin, 2002). However, observational tools that specifically focus on CLRT practices are lacking (Debnam et al., 2015; Lavigne & Oberg De La Garza, 2015). Therefore, it is important that researchers and teacher educators develop and use authentic video-based assessments specifically focusing on culturally and linguistically challenging classroom situations. Accordingly, the need for improvement in teachers' awareness of students' cultural and linguistic diversity could be identified and (pre-service) teachers could be engaged in reflective discussions on enhancing cultural and linguistic responsiveness in their teaching. Lavigne et al. (2022) explored the cultural responsivity and common conceptualizations of "good" teaching by observing and video-recording teaching practices in culturally and linguistically diverse elementary classrooms in the US and the Netherlands. Their findings suggest that normative illustrations of "good" teaching do not necessarily align with culturally responsive instruction, highlighting the importance of determining indicators of culturally relevant instruction in observation tools to accurately measure teaching quality for marginalized students (Lavigne et al., 2022). The authors encourage educators and researchers using observation instruments to carefully consider how these tools define "good" teaching, including (culturally responsive) teaching practices that are emphasized or overlooked (Lavigne et al., 2022). In Germany, Lemmrich and Ehmke (2024) used video stimuli of LRT-relevant classroom situations to measure pre- and in-service teachers' professional competencies in LRT. Their instrument recorded participants' oral responses regarding their perceptions and decision-making (Lemmrich & Ehmke, 2024). The videos used in the study were selected and verified as authentic by academic experts and educators (Lemmrich & Ehmke, 2024). The authors found that pre- and in-service teachers with teaching experience and additional qualifications in dealing with multilingual learners were more likely to perceive challenging classroom situations and make culturally and linguistically responsive teaching decisions (Lemmrich & Ehmke, 2024).

In summary, previous research has demonstrated a wide range of levels of (non-)critical cultural and multilingual awareness and responsiveness among pre- and in-service teachers. Most studies in this

field have relied on standard (mixed) methods such as quantitative questionnaires, or qualitative interviews. Only limited studies have used video-based assessments to evaluate critical cultural and multilingual awareness and responsiveness. This study aimed to address this research gap by employing a novel mixed-method approach: We measured pre- and in-service teachers' initial voice-recorded responses to videos showing culturally and linguistically challenging classroom situations. This video-based approach reduces external and self-report bias. Unlike transparent questionnaires or interviews, which may lead to socially desirable answers due to the influence of an interviewer's probing, situating participants in real-world classroom scenarios through video assessment enables them to provide more authentic responses. These responses allowed us to identify different levels of (non-)critical cultural and multilingual awareness and responsiveness through qualitative-quantitative content analysis. Drawing on the concept of teachers' awareness and responsiveness situated in the teachers' competence model (Blömeke et al., 2015), we additionally measured pre- and in-service teachers' beliefs about multilingualism and CLRT-relevant OTL they had dealt with during their studies or further training using quantitative questionnaires. To the best of our knowledge, only a few studies examined the relation between (pre-service) teachers' critical cultural and multilingual awareness and responsiveness and their beliefs about multilingualism. We then conducted correlation analyses between participants' innovatively quantified (critical) cultural awareness and responsiveness and their underlying beliefs about multilingualism as well as their experiences with CLRT-relevant OTL. By integrating video-based assessments and mixed-method approaches, our research provides a unique perspective on how (pre-service) teachers' awareness and responsiveness interact with their beliefs about multilingualism and attending CLRT-relevant OTL, contributing to the field meaningfully.

4. Method

To explore pre- and in-service teachers' critical cultural and multilingual awareness and responsiveness, we used data from the German research project *DaZKom-Video*,¹ which focuses on professionalization of pre- and in-service teachers' competencies in CLRT and professional beliefs about multilingualism. The cross-sectional study comprises a convenience sample of pre- and in-service teachers surveyed in 2019 at 13 different locations, including universities as well as public elementary and secondary schools across Germany. To prevent location-related effects on the findings, data were collected in the east, west, north, and south as well as urban and rural areas of Germany.

4.1. Sample

The sample of 185 participants comprised 62.7% pre-service teachers, 29.8% in-service teachers, and 3.2% researchers in educational sciences. Table 1 shows the distribution of personal and academic characteristics within the sample. The average age was 29; 82.2% of them were women and 17.8% were men. Training courses were distributed across various educational sectors, including primary, middle, and high schools, as well as "other" institutions such as vocational and special education centers. The distribution of school subjects was as follows: 57.8% of the sample had studied one language subject, 28.6% had studied two, and 28.6% did not study any language subject. While 31.9% had no professional experience with multilingual learners, 46.5% had corresponding teaching-related experience. Only 16.2% had LRT expertise through an additional qualification, and 5.4% had conducted scientific research in this field. On average, the participants had

¹ DaZKom-Video: „Performanznahe Messung von Deutsch-als-Zweitsprache-Kompetenz bei (angehenden) Lehrkräften“ (2020–2022). Applicants: Andrea Daase, Timo Ehmke, Barbara Koch-Priewe, Anne Köker, Udo Ohm. Funded by the BMBF.

Table 1
Sample description.

		<i>n</i>	%	<i>M</i>	<i>SD</i>
Age (in years)				28.68	10.88
Gender	Female	152	82.2		
	Male	33	17.8		
Multilingual background	Yes	13	7		
	No	172	93		
Professional activity	Pre-service teacher	116	62.7		
	In-service teacher	55	29.8		
	Scientist	6	3.2		
	Missing	8	4.3		
Training Course	Primary School	72	38.9		
	Middle School	57	30.8		
	High School	35	18.9		
	Other	19	10.3		
	Missing	2	1.1		
Language school subjects	0 languages	53	28.6		
	1 language, 1 other	107	57.8		
	2 languages	25	13.5		
Experience in LRT	None	59	31.9		
	Teaching experience	86	46.5		
	Additional qualification	30	16.2		
	Scientific experience	10	5.4		
CLRT-relevant OTL ^a	Thematic			2.56	0.78
	Practice-oriented			1.82	0.74
	OTL in total			2.35	0.73
Beliefs about multilingualism ^b				3.09	0.41

Notes: *M* = Mean; *SD* = Standard Deviation; LRT = Linguistically Responsive Teaching; CLRT = Culturally and Linguistically Responsive Teaching; OTL = Opportunities to learn.

^a 1 = never, 2 = in one session, 3 = in several sessions, 4 = in a complete course, 5 = in several complete courses.

^b 1 = strongly disagree, 2 = rather disagree, 3 = rather agree, 4 = strongly agree.

attended one CLRT-relevant session during their studies or further training ($M = 2.35$, $SD = 0.73$), and held overall affirmative beliefs about multilingualism ($M = 3.09$, $SD = 0.41$).

4.2. Measuring (non-)critical cultural and multilingual awareness and responsiveness through voice-recorded video-based assessment

The data used in this study were collected from the German research project *DaZKom-Video* with a video-based test instrument to assess pre- and in-service teachers' performance in CLRT rather than cognitive facets of competence. With this setup, we follow the idea of competence as a continuum of cognitive facets (e.g., knowledge, beliefs), situation-specific skills (perception, decision-making), and performance (behavior in the specific classroom situation) (Blömeke et al., 2015).

The present study employed a mixed-method approach, specifically a convergent parallel design, to integrate both qualitative data, participants' voice-recorded responses to the videos, and quantitative data, participants' beliefs, and CLRT-relevant OTL. First, the participants engaged in the video-based assessment. The video stimuli were presented in randomly changing order to prevent sequence effects. Subsequently, we administered the multiple-choice questionnaire on participants' beliefs about multilingualism, CLRT-relevant OTL, and their personal and academic characteristics.

The test leaders initially introduced the test in accordance with a manual that outlined the testing procedure, its background, and its focus on multiculturalism and multilingualism in schools. A maximum of 30 participants in each test run were placed in different parts of the room as they responded orally to the video items while being voice-recorded. Shielding headsets with built-in microphones and tablets were provided to enable the participants to make the assessment independently.

The video vignettes were presented to the participants on the tablets, each accompanied by the two following items based on situation-specific skills and performance (Blömeke et al., 2015): 1) perception: "What do you perceive?" and 2) decision-making or performance: "How would you act?" (Lemmrich et al., 2020b). Voice-recorded oral responses instead of written answers made participants' reactions to the videos intuitive and spontaneous, capturing their actual performance more realistically (Lemmrich & Ehmke, 2024). Oral responses created time pressure which prevented planning, correction, and reflection processes that usually take place when writing (Lemmrich, Bahls, & Ehmke, 2020a).

In this study, we analyzed the collected data from a new perspective focusing on pre- and in-service teachers' sensitivity to cultural and linguistic diversity in schools, in particular their critical cultural and multilingual awareness and responsiveness. The open-response item on participants' perception was used to measure the (pre-service) teachers' critical cultural and multilingual awareness on scale 1, whereas the item on decision-making or performance indicates (pre-service) teachers' responsiveness regarding their intended (re)action on scale 2. The average score of both scales, the critical cultural and multilingual awareness, and responsiveness indicated the (pre-service) teachers' "general sensitivity" to cultural and linguistic diversity in schools.

We used three staged videos of culturally and linguistically challenging classroom situations filmed by the research group of the *DaZ-Kom-Video*-project with teachers and students from the drama club of a test school. The performing teachers and students received short scripts based on empirical observations of real-life classroom situations from previous research projects. The edited video stimuli took 30 s to 3 min, each showing authentic culturally and linguistically challenging classroom situations in different secondary school subjects. In all staged scenarios, the teachers were unaware of these challenges and (re)acted in a culturally and linguistically non-responsive manner. In the video sequences, the entire class was not always visible; however, the teacher and the students engaging with the teacher were prominently featured. The videos' adequacy, CLRT relevance, and typicality for multilingualism and multiculturalism in schools were validated through expert ratings by three university experts in this field. Each video had the potential to elicit various authentic responses from participants reflecting different levels of awareness and responsiveness on the cultural proficiency continuum (Cormier, 2021).

4.2.1. Foreigner video

The staged video shows a classroom situation where the students are supposed to form groups of four for a work phase. Five students with diverse backgrounds sit at a table and discuss whom to exclude from the group based on the category "foreigner." They then ask the white teacher if he has noticed that all except one were foreigners. The teacher joins the discussion and says that most of the students were "no real foreigners, but well Mohammed was." As this video represents cultural incapacity, it offers the opportunity to evaluate whether participants are (critically) aware that the teacher does not break down the categorization of "being a foreigner," but rather reinforces it by differentiating and categorizing one student as different from the others based on his name. Answers concerning critical cultural and multilingual (non-)responsiveness indicate whether the participants would challenge this categorization by discussing and reflecting on such labels together with the students, thus demonstrating a cultural proficiency, or whether they would introduce (re)actions of cultural blindness or incapacity such as ignoring the issue or acting just as the teacher in the video.

4.2.2. Label video

At the beginning of a staged lesson, a white teacher gives an appealing speech about a discriminatory label for "sunflower seeds" being used by some of his students with diverse backgrounds and mentions additional stereotypical labels for food as negative examples. As this video highlights cultural incapacity, it can evaluate whether

participants are (critically) aware that the teacher rather reinforces the underlying problem of discrimination by naming other derogatory labels instead of reflecting critically on the issue with the students. Answers concerning (non-)responsiveness indicate whether the participants would start a conversation about why certain labels are harmful or engage students in reflecting on their language and its possible discriminatory impact on others, thereby exhibiting cultural competence or proficiency, or whether they would introduce (re)actions of cultural blindness or incapacity such as ignoring the issue or acting just as the teacher in the video.

4.2.3. Fruit video

This video is a staged scene of a domestic science class in secondary school. The white teacher asks her students with diverse backgrounds to categorize fruits and vegetables shown on the worksheet in front of them. She walks around the room, comes to a group table in response to a student's question, and answers several questions. At the end of the scene, one of the students asks: "How can Khaled say that a banana is a vegetable?" The video offers the opportunity to evaluate whether pre- and in-service teachers are (critically) aware that linguistic categorizations, in this case, the division into fruits and vegetables, vary according to cultural background. Participants with a high cultural and multilingual awareness would recognize that, contrary to the student's suggestion, Khaled's answer should not be dismissed as incorrect without further information, as he could have meant plantains, which are classified as vegetables. Answers regarding (non-)responsiveness indicate whether the participants would use the student's comment as an opportunity to discuss and reflect on the cultural relativity of linguistically categorizing fruits and vegetables in class, thereby demonstrating cultural proficiency or whether they would introduce (re)actions of cultural blindness such as ignoring the student's comment or considering Khaled's classification wrong without reflecting on the cultural circumstances.

Participants' perceptions or intended responses situated between the two extremes of cultural incapacity and cultural proficiency correspond to different levels of awareness or responsiveness, reflected in our coding guide. The general coding manual for identifying and differentiating between all four levels of (non-)critical cultural and multilingual awareness and responsiveness is explained in the following section.

4.3. Coding manual for identifying different levels of (non-)critical cultural and multilingual awareness and responsiveness

To explore differences in participants' responses regarding the (non-)critical cultural and multilingual awareness and responsiveness, we applied qualitative-quantitative content analysis. We developed three video-specific coding manuals inductively, consisting of four levels labeled with values from 0 to 3. Table 2 shows the general coding manual with the different levels of awareness and responsiveness with standardized labels for the different videos. These labels can be effectively linked to Cormier's (2021) cultural proficiency continuum to not only assess pre- and in-service-teachers' perceptions of cultural and linguistic diversity but also their ability to apply culturally and linguistically proficient actions in teaching contexts.

The highest awareness level was coded with 3 if participants recognized the cultural-linguistic situation in its entirety and critically reflected on it. To score level 3 of responsiveness, participants needed to indicate concrete culturally and linguistically responsive (re)actions. Participants scoring 3 exemplify Cormier's (2021) vision of cultural proficiency by recognizing and valuing the complexities of cultural and linguistic differences, engaging in practices that both honor and respond to these differences effectively and deconstructing stereotypes and promoting inclusivity. Participants scoring 2 for awareness recognize the cultural-linguistic situation and are aware of the need for some response, whereas their (re)actions on level 2 of responsiveness reflect an effort to value cultural-linguistic diversity, but more superficial than

Table 2

Standardized coding manual for different levels of (non-)critical cultural and multilingual awareness and responsiveness.

Scale	Level/ Value	Label
Awareness	3	Recognizing the cultural-linguistic situation in its entirety, valuing diversity, and critically reflecting on stereotypes, categorization, discrimination
	2	Recognizing the cultural-linguistic situation and valuing diversity
	1	Perceiving other methodic or pedagogical aspects (no relevance to the cultural-linguistic situation)
	0	Assessing the cultural-linguistic situation negatively or minimizing it
Responsiveness	3	Indicating a concrete culturally and linguistically responsive (re)action to the cultural-linguistic situation that values diversity, deconstructs stereotypes, categorization, discrimination and promotes inclusivity
	2	Indicating a (re)action to the cultural-linguistic situation that values diversity
	1	Indicating other methodic or pedagogical practices (no relevance to the cultural-linguistic situation)
	0	Indicating a non-valuing (re)action that maintains or reinforces the cultural-linguistic stereotypes, categorization, discrimination

those on level 3, without engaging in transformative or anti-oppressive practices. Therefore, level 2 reflects cultural and linguistic (pre-)competence on the cultural continuum by Cormier (2021). Answers on awareness or responsiveness without cultural or linguistic relevance were coded on level 1, as participants neither made exclusionary nor non-valuing statements. However, if respondents assessed the cultural-linguistic situation negatively or minimized it in the sense of colorblindness, an awareness level of 0 was assigned. Participants scored level 0 of responsiveness if they described non-valuing (re)actions that would maintain or reinforce stereotypes or ignore cultural and linguistic diversity. Therefore, level 0 corresponds to Cormier's (2021) cultural incapacity or cultural blindness.

The manuals were tested using data from the first pilot study conducted in Germany ($n = 137$). All responses were double coded by two independent raters, doubtful cases were identified and discussed, and if necessary, manuals were adjusted. With Cohen's k values, which ranged from 0.789 to 0.866, the inter-rater reliability for the two raters was almost perfect. The final video-specific manuals include closed descriptions of values in addition to exemplary anchors. In the process of coding participants' responses, only the highest-valued aspects were considered, except for level 1. In the case of answers with no relevance to the cultural-linguistic situation (level 1), if the responses contained aspects of value 0, a lower value was assigned.

4.4. Beliefs about multilingualism in schools

After assessing participants' (non-)critical cultural and multilingual awareness and responsiveness, we measured their beliefs about multilingualism using a quantitative questionnaire developed from a comprehensive literature review, which demonstrated good psychometric quality (Fischer & Ehmke, 2019; Fischer et al., 2018). The pre- and in-service teachers' beliefs were obtained with 21 items on three scales ($\alpha = 0.861$): (1) valuing family languages other than German ($\alpha = 0.829$), (2) feeling responsible for language teaching ($\alpha = 0.704$), and (3) valuing multilingualism in class ($\alpha = 0.84$) (scales' labeling based on Hammer et al., 2018). The participants were asked to provide a rating on a four-point Likert scale in response to statements regarding multilingualism, expressing their degree of affirmation or disaffirmation: (1) strongly disagree, (2) rather disagree, (3) rather agree, and (4) strongly agree. We recoded reversed-polarity items during the data analysis.

4.5. CLRT-relevant OTL

In the final section of the survey, participants were questioned about the extent and nature of CLRT-relevant OTL they encountered during their studies or further training ($\alpha = 0.942$). Based on Ehmke and Lemmrich (2018), thematic (22 items, $\alpha = 0.923$) and practice-oriented (9 items, $\alpha = 0.869$) OTL were measured with items such as, “During the course of your university studies or further training, how often were topics such as migration and multilingualism addressed?” or “During the course of your university studies or further training, how often did you test your own teaching materials for linguistically responsive lessons or language support?” Participants responded to the items on a five-point Likert scale: (1) never, (2) in one session, (3) in several sessions, (4) in a complete course, and (5) in several complete courses.

5. Results

5.1. Pre- and in-service teachers’ (non-)critical cultural and multilingual awareness and responsiveness

Based on participants’ oral responses to video impulses, pre- and in-service teachers’ sensitivity to cultural and linguistic diversity was captured on two scales, critical cultural and multilingual awareness and responsiveness.

In response to Research Question 1, “Which levels of (non-)critical cultural and multilingual awareness and responsiveness can be identified among pre- and in-service teachers based on their oral responses to culturally and linguistically challenging classroom situations?”, Table 3 offers an overview of how the four levels were distributed. Subsequently, the distribution of the measured levels is presented in greater detail. To provide a qualitative basis for substantiating the different levels, illustrative quotations from the participants are presented. These quotations also address the initial component of Research Question 2 “How do pre- and in-service teachers demonstrate (non-)critical cultural and multilingual awareness and responsiveness based on their (re)actions to culturally and linguistically challenging classroom situations?”.

The values in Table 3 show that level 3 of critical cultural and multilingual awareness as well as responsiveness was achieved by less than 6% of the sample for each item. Concerning the Fruit video, highly critical culturally and multilingually aware participants noticed that “a student doesn’t distinguish between fruit and vegetables as it is common here in Germany. In other countries, bananas are used as vegetables, e.g., as plantains. It is possible that the student has exactly this perception.” The Label video led to highly aware perceptions such as “The teacher is

Table 3
Distribution of the levels of (non-)critical cultural and multilingual awareness and responsiveness.

Scale	Video/Item	Level of awareness/ responsiveness			
		0	1	2	3
		%	%	%	%
Awareness	Foreigner video: What do you perceive?	21.6	48.6	24.3	5.4
	Label video: What do you perceive?	27	48.6	20	4.3
	Fruit video: What do you perceive?	15.1	52.4	30.8	1.6
Responsive-ness	Foreigner video: How would you (re)act?	44.9	21.6	32.4	1.1
	Label video: How would you (re)act?	31.4	24.9	39.5	4.3
	Fruit video: How would you (re)act?	11.9	47	38.9	2.2

Notes: 0 = non-valuing, 1 = non-relevant, 2 = aware/responsive, 3 = critically aware/responsive.

actually trying to explain that the students should not name the food using racist insults, but simultaneously he uses words that are very xenophobic. and doesn’t induce sensitization.” The following (re)action to the situation in the Foreigner video exemplifies high critical cultural and multilingual responsiveness on level 3: “I would discuss with the students what the term ‘foreigner’ actually means, what it means to be a foreigner; talk about it, about the definition and then you would quickly come to the conclusion that everyone is a foreigner if they are in another country and that these are all just external and self-attributions. Give the students a chance to think about it and question what all these categories actually mean.”

For items measuring awareness, 20–30% of the pre- and in-service teachers gave level 2 responses, whereas for responsiveness, 30–40% answered on level 2. Those participants were culturally and linguistically aware and responsive, but not as critically reflective and concrete as level 3 participants. Examples for awareness are responses such as “Somehow the teacher wants to make it clear that ‘foreigner’ is not the appropriate category here” for the Foreigner video and “There were so many terms that they (the students) didn’t know. Actually, these terms should have been clarified in advance. They should have known what a mirabelle plum is or what an aubergine looks like” for the Fruit video. Intended (re)actions on the same level of responsiveness were responses such as “I would ask the students why they use the term and encourage them to stop using it, at least in the classroom context” concerning the Label video.

Regarding the measured (non-)critical cultural and multilingual awareness, most participants reached level 1. Therefore, most participants do not perceive multilingualism and multiculturalism negatively but are also culturally and linguistically unaware as they focus on other didactic-pedagogical aspects. Examples of this level include “The teacher is unprepared” and “The work assignment is not clear for the students.” Intended (re)actions that were culturally and linguistically non-relevant were distributed more broadly between items. These included unspecific answers such as “I would talk more about it with the students” or responses with a didactic-pedagogical focus such as “I would have the students work in pairs and explain it to each other.”

The proportion of participants whose awareness or responsiveness was categorized as level 0 varied significantly depending on the item. In most cases, however, at least a fifth of the surveyed pre- and in-teachers showed perceptions and intended (re)actions that were colorblind, advocating non-responsive teacher behavior, not valuing, and consciously ignoring or minimizing the culturally and linguistically challenging classroom situations. Examples are “To be honest, I don’t know if I can take it that seriously. It seems more like a work avoidance strategy to me” as a response to the Foreigner video, “It was obviously a joke, I would have laughed briefly and then continued” as a reaction to the Fruit video, or “I would have ignored this label for food” for the Label video.

The least cultural and multilingual responsiveness was evoked by the Foreigner video as almost half of the participants (44.9%) intended to (re)act non-valuing to the culturally and linguistically challenging classroom situation. Exemplary answers contain colorblindness such as “I would say to the pupils that it doesn’t matter what country they come from. They are all the same,” minimization such as “I would ask the students if they had any problems other than their nationalities,” and reinforcement of cultural-linguistic categorization such as “As a teacher, I would limit the whole thing and check beforehand who is a foreigner and who is not, and always have a foreigner with a non-foreigner in a group so that there is more mutual support.”

To quantitatively answer the initial component of Research Question 2, “How do pre- and in-service teachers demonstrate (non-)critical cultural and multilingual awareness and responsiveness based on their (re)actions to culturally and linguistically challenging classroom situations?”, the average mean scores were examined. Table 4 presents the main results for the total instrument, comprising the two scales, awareness and responsiveness, each containing three items corresponding to the three different videos, along with the item-total correlation values.

With a mean score of 1.12 ($SD = 0.45$) participants’ general

Table 4
Descriptive statistics and item-total correlations for awareness and responsiveness scales.

Scale	Item	M	SD	Item-total correlation
Awareness	Foreigner video: What do you perceive?	1.14	0.81	0.538***
	Label video: What do you perceive?	1.02	0.8	0.518***
	Fruit video: What do you perceive?	1.19	0.7	0.467***
	Awareness scale in total	1.08	0.49	
Responsiveness	Foreigner video: How would you (re)act?	0.9	0.9	0.611***
	Label video: How would you (re)act?	1.17	0.93	0.67***
	Fruit video: How would you (re)act?	1.31	0.7	0.474***
	Responsiveness scale in total	1.22	0.52	
General sensitivity (awareness and responsiveness)		1.12	0.45	

Notes: M = Mean; SD = Standard Deviation; *** $p < 0.001$.
0 = non-valuing, 1 = non-relevant, 2 = aware/responsive, 3 = critically aware/responsive.

sensitivity, defined as the average total of all items related to awareness and responsiveness, was rather low, as a score of 3 is the maximum. The two scales of awareness ($M = 1.08$, $SD = 0.49$) and responsiveness ($M = 1.22$, $SD = 0.52$) differ regarding lower awareness scores. Inspecting the different video items revealed that participants' reactions to the *Fruit* video were the most aware ($M = 1.19$, $SD = 0.7$) and responsive ($M = 1.31$, $SD = 0.7$), whereas they responded the least aware to the *Label* video ($M = 1.02$, $SD = 0.8$) and the least responsive to the *Foreigner* video ($M = 0.9$, $SD = 0.9$).

With values between 0.467 and 0.67, the item-total correlation is acceptable for all items. Participants' awareness remained stable as an ANOVA analysis revealed no statistically significant differences among the three videos. Responsiveness, in contrast, seemed more situational as there were statistically relevant differences, but only between the *Foreigner* video and the other two video vignettes, with a small effect size of Cohen's $f = 0.28$.

To answer the second part of Research Question 2, "How are the constructs of (non-)critical cultural and multilingual awareness and responsiveness related?", we inspected the two scales and conducted a correlation analysis. It was found that participants' total (non-)critical

cultural and multilingual awareness correlated significantly with their total responsiveness ($r = 0.707^{***}$).

5.2. Analyzing explanatory variables

To answer Research Question 3, "How are participants' personal and academic backgrounds, CLRT-related OTL, and beliefs about multilingualism related to their (non-)critical cultural and multilingual awareness and responsiveness?", we conducted correlation and regression analyses, as illustrated in Fig. 1.

Based on previous research on teachers' critical cultural and multilingual awareness and responsiveness, we examined the following variables: gender, multilingual background, professional activity, school subjects, professional experience in LRT, amount of CLRT-relevant OTL, and beliefs about multilingualism. Table 5 shows the results for participants' general sensitivity to cultural and linguistic diversity, meaning the correlation and regression values for their (non-)critical cultural and multilingual awareness and responsiveness, while Table 6 presents the

Table 5
Correlations and regressions between pre- and in-service teachers' (critical) cultural and multilingual awareness respectively responsiveness and their personal and academic backgrounds.

	Awareness		Responsiveness	
	r	Beta	r	Beta
Gender (0 = male, 1 = female)	0.107	0.035	0.129	0.094
Multilingual background	0.041	-0.001	0.058	0.021
Professional activity:				
Pre-service teacher	-0.129	0.267	-0.222**	0.038
In-service teacher	0.033	0.277	0.154*	0.196
Scientist	0.359***	0.37***	0.236**	0.162
Language school subjects	0.101	0.056	0.181*	0.141
Experience in LRT	0.114	0.076	0.154*	0.076
CLRT-relevant OTL:				
Thematic			0.155*	
Practice-oriented			0.225**	
OTL in total	0.109	-0.088	0.183*	-0.002
Beliefs about multilingualism	0.36***	0.304***	0.352***	0.263***
R ²	22.5%		20.2%	

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; LRT = Linguistically Responsive Teaching; CLRT = Culturally and Linguistically Responsive Teaching; OTL = Opportunities to learn.

Table 5
Correlations and regressions between pre- and in-service teachers' general sensitivity ((critical) cultural and multilingual awareness and responsiveness) and their personal and academic backgrounds.

	Correlation	Regression	Relative weight analysis	Correlation	Regression
	r	Beta	Raw	%	Rank
Gender (0 = male, 1 = female)	0.12	0.051	0.009	3.997	4
Multilingual background	0.053	0.009	0.001	0.529	9
Professional activity:					
Pre-service teacher	-0.152*	0.253	0.006	2.845	7
In-service teacher	0.068	0.302	0.008	3.567	5
Scientist	0.338***	0.339***	0.084	36.873	2
Language school subjects	0.148*	0.1	0.015	6.607	3
Experience in LRT	0.127	0.08	0.008	3.541	6
CLRT-relevant OTL:					
Thematic	0.118				
Practice-oriented	0.17*				
OTL in total	0.139	-0.065	0.005	2.01	8
Beliefs about multilingualism	0.366***	0.299***	0.091	40.031	1
R ²	22.8%				

Notes: * $p < 0.05$; *** $p < 0.001$; LRT = Linguistically Responsive Teaching; CLRT = Culturally and Linguistically Responsive Teaching; OTL = Opportunities to learn.

findings for their awareness and responsiveness separately.

As shown in Table 5, there were significant positive correlations between pre- and in-service teachers' general sensitivity to cultural and linguistic diversity and having professional activity in science, studying or teaching at least one language subject, participating in practice-oriented OTL about CLRT, and holding affirmative beliefs about multilingualism. There was a significant negative correlation for being a pre-service teacher. T-tests did not show statistically significant differences between pre- ($n = 116$) and in-service teachers ($n = 55$) regarding their (critical) cultural and multilingual awareness; however, in-service teachers were found to be significantly more culturally and linguistically responsive than pre-service teachers ($p = 0.007$; $d = 0.483$). The highest correlation coefficients were revealed for holding affirmative beliefs about multilingualism and being a scientist.

To further explore this, a regression model with participants' general sensitivity to cultural and linguistic diversity as the dependent variable was built, also shown in Table 5. The results indicated that scientific activity and holding affirmative beliefs about multilingualism were significant positive predictors of their (critical) cultural and multilingual awareness and responsiveness. To demonstrate which variables had the most relevance in predicting pre- and in-service teachers' (critical) cultural and multilingual awareness and responsiveness, a relative weight analysis (Mizumoto, 2023) was conducted, as shown in Table 5. Inspecting the ranks of different variables emerging from their relative weights in % showed that the participants' beliefs about multilingualism, and their professional activity in science were the most relevant factors in predicting their general sensitivity to cultural and linguistic diversity.

To compare how individual factors of the participants, CLRT-related OTL, and beliefs were related to their awareness or responsiveness, we conducted correlation and regression analyses for each scale independently, as illustrated in Table 6.

Examining the values for the different scales – the measured awareness through participants' perceptions and the measured responsiveness evaluated through their intended (re)actions – the highest factors correlating or predicting were the same: holding affirmative beliefs about multilingualism and being a scientist in the field of multilingualism. Being an in-service teacher, teaching or studying language school subjects, having practical experience in LRT, and participating in CLRT-relevant OTL correlated significantly with participants' (critical) cultural and multilingual responsiveness; however, there was no such correlation with pre- and in-service teachers' awareness. Moreover, participants' professional activity as a student correlated significantly negatively with their intended (re)actions to culturally and linguistically challenging classroom situations. Scientific activity in the field of multilingualism emerged as a significant positive predictor of participants' (critical) cultural and multilingual awareness, although it did not predict their responsiveness significantly.

6. Discussion

This study contributes to existing research on (pre-service) teachers' (non-)critical cultural and multilingual awareness and responsiveness by exploring pre- and in-service teachers' voice-recorded initial responses to culturally and linguistically challenging classroom situations through video-based assessment. In the following section, scientific relevance, limitations, and suggestions for further research, as well as practical implications, are discussed.

6.1. Scientific significance of the study

Although multiculturalism and multilingualism in schools have received increasing attention, limited studies have quantified findings on (pre-service) teachers' (non-)critical cultural and multilingual awareness and responsiveness.

Our study enhances the field of educational research by investigating

the (non-)critical cultural and multilingual awareness and responsiveness of pre- and in-service teachers using innovative voice-recorded video-based assessments. This novel use of authentic videos showing culturally and linguistically challenging classroom situations reduced the influence of external and self-report bias. While transparent questionnaires and interviews influenced by the interviewer's probing may lead to socially desirable responses, situating participants in real-world classroom scenarios enabled them to have more authentic reactions. Moreover, the innovative approach of voice-recording the participants' responses encouraged them to react immediately and spontaneously, instead of a planned or overthought response.

Moreover, our research quantified qualitative findings into awareness and responsiveness levels based on an innovative coding manual. We obtained a deeper understanding of pre- and in-service teachers' (non-)critical cultural and multilingual awareness and responsiveness by identifying four distinct levels for each construct. First, the coding manual provides an orientation for researchers and teacher educators to classify and compare pre-service teachers' awareness and responsiveness and promote their progress to a higher level in a targeted manner. Second, the quantified levels enabled us to perform correlation and regression analyses, resulting in novel insights into the relationships between pre- and in-service teachers' critical cultural and multilingual awareness and their responsiveness. Third, we obtained new information regarding how their awareness and responsiveness were related to their personal and academic background, CLRT-related OTL, and beliefs about multilingualism. Overall, our approach combined the strengths of qualitative and quantitative research, leading to a more comprehensive and nuanced understanding of participants' (non-)critical cultural and multilingual awareness and responsiveness than traditional questionnaire-based studies. Unlike purely qualitative interview studies, it still provides quantifiable data that can be used to calculate frequencies and correlations.

Concerning Research Question 1, different awareness and responsiveness levels from rejective, ignorant, or colorblind to accepting, valuing, or integrating were expected since previous research showed that pre- and in-service teachers' awareness and responsiveness varied widely (e.g., Brandt et al., 2024; Cormier, 2021; Reeves, 2009; Semião et al., 2023). Four different levels of awareness and responsiveness emerged from our study, unevenly distributed. As mentioned above, this may be a result of our innovative method as we asked participants for spontaneous oral responses instead of written answers that are more controlled by planning, correction, and reflection processes. For most items, at least a fifth of the pre- and in-service teachers exhibited colorblind perceptions or non-responsive (re)actions that did not value but deliberately ignored or minimized culturally and linguistically challenging classroom situations. This is concerning and highlights the need for teacher education and professional development programs to give pre- and in-service teachers the opportunity to foster cultural and multilingual awareness, reflect on their beliefs about culture and language, and acquire CLRT-relevant methods.

Based on our findings for Research Question 2, we classified participants' (critical) cultural and multilingual awareness as rather low when compared to recent research (e.g., Brandt et al., 2024; Lorenz et al., 2021; Xu & Krulatz, 2023). The highest level was achieved by only a small percentage of participants, whereas the majority exhibited less critical reflections on the culturally and linguistically challenging classroom situations. As previous studies mostly assessed awareness via standard questionnaires or interviews (e.g., Bailey & Snowden, 2021; Hammer et al., 2018; Otwinowska, 2014, 2017), the potential of giving socially desirable answers was higher in comparison to our method, which could explain our comparatively low awareness values. Aligning with other studies (e.g., Lambeth & Smith, 2016; Prats et al., 2017; Vikoy & Haukås, 2021), we also found low levels of (critical) cultural and multilingual responsiveness that, in combination with the low awareness values, highlight the urgent need for further training and education for pre- and in-service teachers regarding multiculturalism

and multilingualism in schools. Smith et al. (2022) suggest that (critical) cultural and multilingual awareness is essential to the development of corresponding responsiveness. This was confirmed by our results as participants' (critical) cultural and multilingual awareness correlated positively with their responsiveness.

Regarding Research Question 3, factors such as being professionally active in science, holding affirmative beliefs about multilingualism, studying or teaching at least one language subject, and participating in practice-oriented OTL about CLRT correlated positively with participants' general sensitivity to cultural and linguistic diversity. Unlike previous studies (Otwinowska, 2014, 2017), no positive correlations with the multilingual background of the participants were revealed, which could be explained by the limited size of the comparison group of multilingual participants ($n = 7$). Aligning with other studies (e.g., Lemmrich et al., 2020b), we found significantly positive correlations between participants' (critical) cultural and multilingual responsiveness and their professional experience in LRT. However, no such positive correlations were revealed for their awareness or general sensitivity to cultural and linguistic diversity. Regarding our sample, a large part of participants' experiences in LRT was in the area of teaching, but it is unknown to what extent they experienced teaching multilingual learners. If their professional experiences consisted merely of substitute teaching, these participants might have been focused on situational adjustments without reflecting sufficiently on how their experiences and beliefs influenced their approaches in the classroom and, therefore, might have not developed a comprehensive awareness of the needs of multicultural and multilingual students. Overall, there was one significant negative correlation between participants' general sensitivity to cultural and linguistic diversity and being a pre-service teacher, which even increased when considering the scale of responsiveness separately. This could indicate the influence of pre-service teachers' lack of actual teaching experience, which is then particularly evident in relation to their responsiveness. The fact that (pre-service) teachers' language subjects affect their (critical) cultural and multilingual awareness and responsiveness positively seems plausible, as (pre-service) teachers with language subjects may receive(d) more CLRT-relevant input through OTL on subject-specific teaching methods or their interest in culture and language may be higher. In contrast to thematic OTL, practice-oriented OTL about CLRT correlated significantly positively with participants' general sensitivity to cultural and linguistic diversity. This highlights the importance of connecting theory and practice in CLRT-relevant OTL regarding dealing with multicultural and multilingual students. By creating more practice-oriented CLRT-relevant OTL for all (pre-service) teachers of all subjects, academic disparities could be addressed. Participants' beliefs about multilingualism and their professional activity in science had the greatest impact on predicting and correlating with their (critical) cultural and multilingual awareness and responsiveness. This is consistent with the results of Civitillo et al. (2019), who also found remarkable correlations between participants' affirmative beliefs and their implementation of CLRT practices. The strong influence of professional activity in science suggests that engaging with different scientific perspectives and conducting research can foster pre- and in-service teachers' critical cultural and multilingual awareness and responsiveness.

6.2. Limitations and scientific implications

Despite its theoretical contributions and empirical findings, the present study has certain limitations. First, the measurement of pre- and in-service teachers' (non-)critical cultural and multilingual awareness and responsiveness was based on their voice-recorded reactions to only three videos showing culturally and linguistically challenging classroom situations. This was done to keep the test length within reasonable time limits for the participants. Second, the results of this study provided insights into the extent to which pre- and in-service teachers exhibited (non-)critical cultural and multilingual responsiveness by analyzing

how they thought they would deal with culturally and linguistically challenging classroom situations. Importantly, the measured responsiveness does not necessarily align with the participants' actual professional practices, which might not be fully reflected by the findings and conclusions derived from this study. Third, the measured teaching experience in LRT is a background variable whose extent was not clearly defined. As the participants' experiences can range from substitute teaching to the responsibilities of a class teacher, correlation results were discussed accordingly. Finally, the participants who were coded level 1 could be classified as neutral in their awareness and responsiveness because they neither made exclusionary nor non-valuing statements. Nevertheless, we assumed a certain degree of minimization or colorblindness as they failed to recognize the culturally and linguistically complex nature of the situation. Given that the participants did not explicitly articulate this notion, our interpretation must be viewed with caution.

In terms of prospective studies, we suggest incorporating a mixed-methods design, which would involve conducting qualitative interviews with a select group of participants at each level. Moreover, we recommend experimental, longitudinal studies to evaluate the changeability of pre- and in-service teachers' (non-)critical cultural and multilingual awareness and responsiveness through CLRT-relevant OTL.

6.3. Practical implications and conclusions

Given the global community's long-standing multicultural and multilingual character, it is crucial for universities to assume the responsibility of equipping pre- and in-service teachers with the capacity to value cultural and linguistic diversity, recognize the power dynamics that perpetuate white racial hegemony, and proactively counteract its dominance. We recommend designing thematic CLRT-relevant OTL that enable (pre-service) teachers to reflect on their perceptions and beliefs about language and culture and implement practice-oriented OTL allowing them to discuss, test, and reflect on CLRT methods. In addition, we suggest that CLRT-relevant OTL make current research on cultural and linguistic diversity in schools more accessible to pre- and in-teachers and emphasize its benefits for culturally and linguistically responsive teaching practices. Moreover, teacher education programs should place a stronger emphasis on cultural and linguistic diversity by integrating more diverse perspectives and experiences into the curriculum. Additionally, ongoing professional development for practicing teachers should also focus on enhancing cultural and linguistic awareness and responsiveness through workshops, seminars, and mentorship programs to offer new perspectives and knowledge, as well as opportunities to reflect on internalized teaching practices and therefore, professionalize teachers' performance in the classroom (Blömeke et al., 2015). Viesca et al. (2024) suggest five orientations for a positive diversity climate as a framework for all educators who strive for equity through education. These are promoted as a foundation for practices and tools to be developed for teaching and learning spaces where diversity can be positive and productive.

In conclusion, this study sheds light on the importance of critical cultural and multilingual awareness and responsiveness in teacher education and practice. By identifying different levels of awareness and responsiveness and exploring their relationships with personal and academic background factors, CLRT-related OTL, and beliefs about multilingualism, our findings provide valuable insights for improving teacher education. Moving forward, it is imperative to continue researching and promoting strategies that facilitate the development of critically aware and responsive teachers who can effectively support various needs of their culturally and linguistically diverse students. These teachers must be able to reflect on their own beliefs and biases about language and culture and challenge power dynamics in their classrooms.

CRedit authorship contribution statement

Lotta Kardel: Writing – review & editing, Writing – original draft, Methodology, Formal analysis. **Timo Ehmke:** Writing – review & editing, Supervision, Funding acquisition. **Svenja Lemmrich:** Writing – review & editing, Data curation.

Disclosure statement

No potential conflict of interest was reported by the authors.

Ethical statement

The German Research Foundation (DFG) states that a study requires ethical approval whenever the participants have to endure high emotional or physical strains and cannot be fully informed about the purpose of the study, such as patients who undergo functional Magnetic Resonance Imaging (fMRI) or Transcranial Magnetic Stimulation (TMS) during the course of the study (https://www.dfg.de/foerderung/faq/geistes_sozialwissenschaften/).

The authors stated that this study did not affect any of the above-mentioned conditions and therefore did not require ethical approval. However, the participants signed a declaration of consent that contained information about the purpose of the study, the handling and processing of data, and data protection information.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors are unable or have chosen not to specify which data has been used.

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