



Research paper

Judging a book by its cover? Investigating pre-service teacher's stereotypes towards pupils with special educational needs

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ABSTRACT

Stereotypes about pupils with special educational needs are prevalent both in society and among pre- and in-service teachers. However, little is known about the specific stereotypes pre-service teachers associate with autistic pupils, pupils with Down syndrome, and pupils with dyslexia. We explored these in two studies. Study 1 ($N=13$) involved qualitative interviews to identify potential stereotype content. Study 2 ($N=213$) used these findings to create a questionnaire to quantify these stereotypes. We found distinct stereotypes associated with all three groups of pupils. For successful inclusion, teachers must recognize the uniqueness of each pupil, including those with different diagnoses.

1. Introduction

In recent years, inclusion has become an important topic all over the world and in educational contexts in particular. In accordance the United Nations' Convention on the Rights of Persons with *Disabilities* (United Nations, 2006), which became effective in 2008, the development of inclusive educational systems has become an important task for the state in many countries (Pit-ten Cate & Krischler, 2020). Hence, pupils with special educational needs increasingly have the opportunity to attend regular schools. Empirical findings show that both pupils with and without special educational needs can benefit from inclusive school settings (Krämer, 2021; Szumski et al., 2017).

Important variables for the success of the inclusive school arrangement are the teachers: They make important decisions affecting the school on a daily basis. Such decisions can be influenced by their attitudes (Borg et al., 2011). Eagly and Chaiken (1993) defined attitudes in the multi-component model as the evaluations of certain social groups.

An inclusive school environment requires a positive attitude as well as the belief that all students possess inherent competence (Guðjónsdóttir & Óskarsdóttir, 2016). However, teachers hold neutral (Dignath, Rimm-Kaufman, van Ewijk, & Kunter, 2022) or only

moderately positive attitudes toward the overall concept of inclusive education both internationally (A. de Boer et al., 2011; Lindner et al., 2023; Guillemot, Lacroix, & Nocus, 2022) as well as in Germany specifically (Hellmich et al., 2019). When it comes to the inclusion of individual pupils with specific special educational needs, their attitudes vary: while the inclusion of pupils with learning difficulties, for example, is associated with more positive attitudes, teachers expressed more negative attitudes towards the inclusion of those with intellectual disabilities and behavioural problems, like autistic pupils (A. de Boer et al., 2011, 2012; Lindner et al., 2023). However, not all researchers have chosen to investigate the factor of type of disability because it is based on a medical model of disability as opposed to a social model (Kielblock & Woodcock, 2023). As attitudes have been shown to impact behaviour (Borg et al., 2011) and when investigated, attitudes do vary depending on the type of disability (A. de Boer et al., 2011, 2012), the different types of disabilities could lead to different behaviour.

In addition to attitudes as a whole, the multi-component model (Eagly & Chaiken, 1993) defines three components of attitudes: the affective, the cognitive and the behavioural component, which will be explained more in-depth in the theoretical background. Studies show that stereotypes as part of the cognitive component of those attitudes

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play an important role in inclusive school context: teachers' stereotyped expectations have an effect on their behaviour, judgments, and decisions, and thus on the development of the pupils concerned – irrespective of their individual needs (H. de Boer et al., 2018; Murdock-Perriera & Sedlacek, 2018).

At the same time, pupils with special educational needs are not a very homogenous group, so stereotypes towards different groups of pupils with special educational needs will differ. When it comes to autistic pupils, pupils with Down syndrome, and pupils with dyslexia, for example, some studies show significant differences in the stereotype content (Cuskelly & Gunn, 2006; Draaisma, 2009; Jamal, 2019). However, there is limited research on all three groups, and most studies focus on the general population instead of teachers or pre-service teachers. The latter may be especially interesting subjects for research as pre-service teachers, on the one hand, have very little practical experience and, on the other, have long careers ahead of them. In this study, therefore, we aim to investigate the specific stereotypes pre-service teachers report towards autistic pupils, pupils with Down syndrome, and pupils with dyslexia.

2. Theoretical background

2.1. Stereotypes and the stereotype content model

According to the multi-component model (Eagly & Chaiken, 1993) introduced above, attitudes consist of three components: The cognitive component refers to thoughts, beliefs or ideas about an object or a person/group. Stereotypes are part of this component. The second component encompasses feelings or emotions towards an object or a person/group, including prejudices (Eagly & Chaiken, 1993). The behavioural component refers to, among other things, the fact that individuals often behave in accordance with their attitudes (Fazio, 1990).

A Stereotype is generalized knowledge about the characteristics, traits and behaviours of members of a particular social group, which are usually shared within a culture (Sherman, 1996). Individual differences between group members are not taken into account (Allport, 1954). They must be distinguished from personal beliefs as the two are separate concepts that do not necessarily align: someone's personal beliefs about a group may or may not be congruent with the stereotype about said group (Devine, 1989). Stereotypes can be positive or negative or both (Eagly & Chaiken, 1993); a group can, for example, be associated with high intelligence as a positive stereotype and a lack of friendliness as a negative stereotype. Stereotypes are rooted in social categorization, a fundamental and universal part of human information processing (Tajfel et al., 1971). People that have one (or more than one) trait in common are assigned to the same category or social group. This categorization helps us to navigate the social world and reduces cognitive load because it makes the world around us more orderly and predictable (Killen & Rutland, 2011; Tajfel et al., 1971). Therefore, social categorization can be seen as a predecessor of stereotypes (Allport, 1954; Tajfel & Turner, 1979). Stereotypes arise because categories or groups of people are assigned certain characteristics which are then used to predict traits and behaviour, especially when no information is available about a person other than the social group they belong to (Macrae & Bodenhausen, 2000). Often, stereotypes develop through a shared social context: people learn stereotypes from their social environment (Martiny & Froehlich, 2020). As stereotypes are usually formed very early on in life and before personal beliefs, they are likely to be more automatic and easier to access than personal beliefs, especially in situations where someone has little motivation and/or cognitive resources (Devine, 1989; Macrae & Bodenhausen, 2000).

At this point, it is important to remember that stereotypes are not necessarily accurate representations of reality. Stereotypes can hinder our understanding of individuals because they overgeneralize and simplify individuals and their behaviour (Hilton & von Hippel, 1996). At the same time, as mentioned above, stereotypes serve a purpose because

they make information processing easier, and some aspects might actually apply to some individuals in a social group; they might even be based on prior experience with a member of a social group (Hilton & von Hippel, 1996). However, they become problematic when we assume that certain characteristics apply because an individual belongs to a social group without confirming whether they actually apply to this individual or not.

An influential framework for understanding and classifying stereotypes is the stereotype content model. Within this model, all stereotypes can be reduced to a distinct combination of the two dimensions warmth and competence. The emotions and behavioural tendencies toward that group vary depending on the warmth and competence stereotypes of a group (SCM, Fiske et al., 2002). The corresponding BIAS map differentiates distinct biases more thoroughly by associating characteristic emotions and behavioural tendencies with the four stereotype clusters (Cuddy et al., 2007, 2008). Groups perceived as high in both warmth and competence are admired and encourage facilitation both active (defined as helping) and passive (defined as associating). Groups low in warmth and competence are despised and harmed actively (defined as attack) and passively (defined as neglect) (Cuddy et al., 2007, 2008). Groups low in warmth and high in competence are envied and elicit active harm and passive facilitation. On the contrary, groups high in warmth and low in competence are pitied and elicit active facilitation and passive harm (Cuddy et al., 2007, 2008). In the school context, this could mean, for example, that a child associated with a group high in warmth and low in competence is treated in an ambivalent way because the associated emotion "pity" is also ambivalent: teachers might try to help the child out of pity while also showing dismissive behaviours and patronizing the child (Cuddy et al., 2007; Weiner, 2005).

As previously mentioned in the context of the stereotype content model, stereotypes can have a significant influence on behaviour. They can control information processing in relation to the social group(s) someone belongs to (Jussim & Harber, 2005; Martiny & Froehlich, 2020). People either chose the information-integration strategy or the heuristic, stereotype-based strategy (e.g., Fiske & Neuberg, 1990). While the first one involves quite a bit of effort as it aims to deliberately integrate all available information, the latter is economical and efficient, but mostly based on activated stereotypes. Therefore, the resulting judgment is less reflective and prone to bias. Which one of the two strategies is activated depends on both cognitive as well as motivational factors (Macrae & Bodenhausen, 2000).

2.2. Stereotypes in the (inclusive) school context

Research shows that teachers have stereotyped expectations regarding their pupils (Glock & Kleen, 2020). Pupils most affected by such expectations usually belong to ethnic minorities, come from socially disadvantaged families, or have special educational needs (Bonefeld & Karst, 2020; Dunkake & Schuchart, 2015; Glock, 2016; Kleen & Glock, 2018; Pit-ten Cate & Krischler, 2020).

As inclusion has led to more heterogeneous classrooms, everyday situations have become even more complex (Pit-ten Cate & Krischler, 2020). For example, teachers have to diagnose the more heterogeneous learning prerequisites of their pupils in order to make pedagogical and didactic decisions and monitor learning progress on an everyday basis (Helmke & Weinert, 2021). They need to select and implement teaching methods that suit the needs of their pupils, in order to accommodate pupils with special educational needs in their classroom. This can be challenging for teachers and requires more cognitive resources. At the same time, teachers generally feel inadequately prepared for and have many concerns about the inclusion of pupils with special educational needs (Dignath, Rimm-Kaufman, van Ewijk, & Kunter, 2022) and are therefore less willing to accept pupils with special educational needs (Blanton et al., 2011, pp. 1–32). Hence, especially in these everyday situations when teachers' motivation and cognitive resources are low, stereotypes may come into play more frequently. Research confirms this

increase and shows that teachers tend to use more heuristic judgement processes – including stereotypes – in these kinds of situations (Krolak-Schwerdt et al., 2013, 2018).

Lower teacher expectations regarding certain groups of pupils, therefore, may not only be the result of accurate judgments of individual pupils but also the result of group stigmatization and stereotyping by teachers (Hornstra et al., 2010). As for pupils with special educational needs, teachers evaluate their performance compared to pupils without special needs less favourably (Pit-ten Cate & Krischler, 2020). In addition to lowered expectations and biased judgments of performance, these stereotypes can also lead to a lack of individualized attention and reduced opportunities for participation (Gajda et al., 2022).

2.3. Teacher stereotypes regarding pupils with special educational needs

So far, we have discussed stereotypes and their effects on the group of pupils with special educational needs as a whole. However, pupils with special educational needs themselves are a very heterogeneous group with very different abilities and support requirements. Therefore, in the context of stereotypes, looking at the group as a whole may not be differentiated enough: for example, some studies have found that teachers express less concern about including children with physical disabilities compared to those with cognitive or social special needs or behavioural problems (Alghazo & Gaad, 2004; Levins et al., 2005). When it comes to the latter, certain groups of children are more common in schools and face certain, distinct stereotypes. We therefore decided to focus on the following three groups within this category: autistic pupils, pupils with Down syndrome, and pupils with dyslexia. We chose these three groups because each of them have very different stereotype content (e.g., Gilmore et al., 2003; Gwernan-Jones & Burden, 2010; Wood & Freeth, 2016), so we therefore expect teachers to view them in very different ways. Furthermore, there may actually be a lot of variance within each group when it comes to behaviour and needs for assistance, but it may not be perceived because strong stereotypes override it.

Firstly, people on the autism spectrum are frequently portrayed in the media, contributing to its high visibility. It has a relatively high prevalence in the population with an estimated 1 in 65 children in Europe being diagnosed (Bougeard et al., 2021). According to the dictionary of the American Psychological Association (APA Dictionary of Psychology and APA Dictionary of Psychology), the term “spectrum” acknowledges the diverse ways symptoms manifest in terms of severity, presentation, and individual abilities. These symptoms include challenges in social communication, interaction, and behaviour. Depending on where children are on this spectrum, their educational needs differ greatly (Kucharczyk et al., 2015).

Some studies have examined general stereotypes towards autistic people: Draaisma (2009) points out that, since Asperger published his first case study on autism in 1944, the scientific understanding of autism has changed significantly. However, certain stereotypes that date back to his work are still found today, even among experts (Draaisma, 2009). In movies, books, and TV series, an autistic person is usually stereotypically portrayed as either mentally handicapped or – most of the time – as “a savant with mental powers exceeding those of two Cray supercomputers” (Draaisma, 2009, p. 1477). The movie *Rain Man* is considered especially influential on people’s stereotypes by many researchers, but there are many more with similar ideas (Conn & Bhugra, 2012; Nordahl-Hansen et al., 2018). Furthermore, the worth of the characters in these movies, books or TV series comes from being a savant, as they are portrayed as not having a social life or anything else apart from their competence (Draaisma, 2009). This fits into the stereotype content model’s (Fiske, 2012; Fiske et al., 2002) and BIAS map’s (Cuddy et al., 2007) ideas of how people with high perceived competence and low perceived warmth are seen and treated: they are envied, but also discriminated against.

Several studies have examined teachers’ knowledge, attitudes, and self-efficacy expectations regarding the inclusion of autistic pupils into

regular classrooms. Although they report gaps in the understanding of characteristics and specific teaching methodologies (Van Der Steen et al., 2020), teachers generally hold positive attitudes toward including autistic pupils in their classroom, and they report having moderate to high (levels of) self-efficacy beliefs regarding the effective accommodation of these pupils (Corona et al., 2017; Lu et al., 2020; Park & Chitiyo, 2011). Yet, to our knowledge, no study has identified the specific stereotypes teachers or pre-service teachers report when it comes to autistic pupils.

According to the APA’s dictionary (n.d.), Down syndrome is identified by the existence of an additional chromosome 21 which leads to a range of disabilities. Usually, individuals with Down syndrome have mild to severe intellectual disabilities (APA Dictionary of Psychology, n. d.). The number of children with Down syndrome has been growing: in 2018, 126 in 100000 children were born with Down syndrome in the European Union, making it the most common chromosomal condition (World Health Organization, 2023).

Research in this field is limited, however, there are some studies investigating stereotypes towards people with Down syndrome. Most of these studies describe stereotypes among the general population (Carr, 1995; Cuskelly & Gunn, 2006; Enea-Drapeau et al., 2012; Fidler, 2006). Often, people with Down syndrome, especially children, are stereotypically described as friendly, affectionate, and happy (Fidler, 2006; Gilmore et al., 2003), as well as people who “get on well with other people” (Carr, 1995). A lot of the stereotypical descriptions depict children with Down syndrome as warm, but also rather passive and less competent than their peers. For example, lower activity levels, less persistence, and more distractibility seem to be associated with Down syndrome (Cuskelly & Gunn, 2006; Gunn & Cuskelly, 1991). Within the stereotype content model, Fiske classifies people with Down syndrome as high in warmth and low in competence (Fiske, 2012).

The studies that have examined (pre-service) teachers’ beliefs about the inclusion of pupils with Down syndrome come to the conclusion that, in a lot of cases, the (pre-service) teachers feel ill-prepared for this task (Campbell et al., 2003; Donohue & Bornman, 2015; Wishart & Manning, 1996). Wishart and Manning (1996), as well as Campbell et al. (2003), also found that teachers lacked knowledge about Down syndrome. However, there also seems to be a positive correlation here between the amount of relevant experience and/or training teachers have and their attitude towards children with Down syndrome in inclusive education (Campbell et al., 2003; Donohue & Bornman, 2015), as well as between teacher’ age and positive attitudes (Donohue & Bornman, 2015).

There are very few studies, however, describing the actual nature of teachers’ stereotypes towards pupils with Down syndrome, except for Gilmore et al. (2003) and Gunn and Cuskelly (1991), who reported that teachers have similar stereotypes to the general population.

Dyslexia is a neurological learning disability characterized by significant challenges in reading, spelling, and writing words. It is neither influenced by one’s intellectual abilities, nor caused by lack of motivation, limited instruction or similar factors (APA Dictionary of Psychology, n. d.). The European Dyslexia Association (*What Is Dyslexia – European Dyslexia Association, n. d.*) estimates that about 9–12% of the population is affected. Most research in this field does not specifically focus on dyslexia, but on learning difficulties in general (also including dyscalculia or dysgraphia, for example): adults with learning difficulties are often seen as less intelligent and less likely to succeed in the future, among other things (Jamal, 2019). They are also associated with lower productivity (Popovich et al., 2003) and dependency (Staniland, 2011). Regarding warmth and competence, dyslexia or learning difficulties were not investigated by Fiske et al. (2002) or Cuddy et al. (2007, 2008). However, other studies have shown that pupils with learning difficulties are seen as more warm than competent and as lower achieving (Krischler et al., 2018).

Focusing on the attitudes of teachers and pre-service teachers, studies have found they generally share the same stereotypes as the general public (Krischler & Pit-ten Cate, 2019; Woodcock & Hitches,

2017). To our knowledge, there have been no studies thus far that use the stereotype content model's framework to describe stereotypes regarding autistic pupils or pupils with Down syndrome. There are, however, studies using this framework in the context of stereotypes about pupils with learning difficulties, which include dyslexia. Regarding warmth and competence, teacher's warmth ratings were higher than competence ratings, but they were not much higher than the mean of the scale (Krischler et al., 2018; Krischler & Pit-ten Cate, 2019). Just labelling pupils with "learning difficulties" seems to activate certain stereotypes: teachers were more likely to hold lower educational expectations for adolescents labeled with learning difficulties than for similarly achieving and behaving adolescents without that label (Shifrer, 2013). Which stereotypes those lower expectations could be based on and whether there is more to them than warmth and competence ratings would be fruitful subjects for study.

3. The present study

Stereotypes towards autistic people, people with Down syndrome, and people with dyslexia that are distinct from one another have been identified in the literature, and they may be influenced by different factors, such as severity of the condition, prevalence, and representation in mass media. Unlike stereotypes of Down syndrome and dyslexia, which often centre on deficits in intellectual ability and academic performance, autistic pupils are more likely to be seen as exceptionally intelligent, at least in one area, in accordance with the savant stereotype, even though only 10% actually have savant abilities (Treffert, 2014). Stereotypes toward Down syndrome and dyslexia also seem to be more widely recognized, simpler and more homogenous, while stereotypes of autism seem to be more complex and diverse. To gain a better understanding of the stereotypes of pre-service teachers toward these three groups, we investigated how they perceive and judge autistic pupils, pupils with Down syndrome, and pupils with dyslexia. Research suggests experience plays a role in both the perception of inclusion as well as someone's own competence and expertise concerning pupils with special educational needs (Burke & Sutherland, 2004; Lindner et al., 2023). Therefore, it is especially important to focus on how pre-service teachers with very little experience and expertise perceive these groups. In addition to applying the stereotype content model and its dimensions, we were also interested in the stereotype content beyond these two dimensions. The existing research implies that stereotypes concerning these three groups may be more complex, but this additional complexity has not been researched explicitly. At the same time, stereotypes can have an essential impact on equity in education. Stereotypical attributions made by teachers can shape their beliefs about how to teach these pupils. They can also have a long-term impact on teachers' classroom behaviour, their interactions with these pupils, and may affect teachers' judgments about these pupils' performance and social behaviour. It is important, therefore, to investigate the stereotypes pre-service teachers report about autistic pupils, pupils with Down syndrome, and pupils with dyslexia. We formulated the following research questions and hypotheses for this study.

3.1. Study 1

What stereotype content do pre-service teachers associate with autistic pupils, pupils with Down syndrome, and pupils with dyslexia?

3.2. Study 2

Hypothesis 1: Within the stereotype content model, the attributed stereotypes of pre-service teachers with respect to the categories of competence and warmth among the three different special educational needs groups are as follows.

- a. Autistic pupils are rated high in competence and low in warmth.

- b. Pupils with Down syndrome are rated low in competence and high in warmth.
- c. Pupils with dyslexia are rated low in competence and neutral in warmth.

Hypothesis 2: The three different special educational needs rank differently on these two attributed stereotype dimensions, namely.

- a. Pupils with Down syndrome are seen as the warmest, followed by pupils with dyslexia. Autistic pupils are seen as the least warm.
- b. Autistic pupils are seen as the most competent, followed by pupils with dyslexia. Pupils with Down syndrome are seen as the least competent

Exploratory research question: Based on the findings of Study 1, which other dimensions can be used to describe stereotypes towards autistic pupils, pupils with Down syndrome, and pupils with dyslexia.

4. Method

We utilized an exploratory sequential design using qualitative exploratory findings (Study 1) to identify important variables and develop a questionnaire for subsequent quantitative analysis (Study 2). In Study 1, we interviewed pre-service teachers about stereotypes regarding autistic pupils, pupils with Down syndrome, and pupils with dyslexia. The data was subjected to a qualitative in-depth analysis to identify important adjectives describing these pupils, which serve as indicators of stereotypical attributions. In Study 2, we quantified these adjectives in an online questionnaire. In this way, we were able to determine the stereotype content that a broader range of pre-service teachers had towards autistic pupils, pupils with Down syndrome, and pupils with dyslexia. Participation in all studies was voluntary, and ethics approval was obtained from the local ethics committee prior to the start of the studies. Participants were informed about the studies' aims, confidentiality, and data protection and gave informed consent before participation.

4.1. Study 1

4.1.1. Aim

The aim of this study was to investigate which stereotype content pre-service teachers associate with autistic pupils, pupils with Down syndrome, and pupils with dyslexia, respectively.

4.1.2. Participants

In Study 1, we interviewed a sample of $N = 13$ ($M = 23.85$ years, $SD = 2.71$, 61.54% female) pre-service teachers. Participants ranged from freshmen in their first year of study to advanced master students in their final semesters. They studied different school subjects - from languages to social and natural sciences - as part of teacher education programmes for five different types of schools in Germany.

4.1.3. Instruments

To assess pre-service teachers' stereotype content towards these three groups of pupils, we developed a structured interview that was based on the scientific literature for evaluating stereotypes. The interview assessed pre-service teachers' stereotypes toward autistic pupils, pupils with Down syndrome, and pupils with dyslexia. For this purpose, we asked the participants to list at least five characteristics that correspond to societal ideas about autistic pupils. They were instructed to not necessarily think of an individual pupil they may know or had thought of, but of the group of all autistic pupils as a whole. This approach was adapted from Fiske et al. (2002) and is widely used in many studies (e.g., Ghavami & Peplau, 2013). There are two reasons why we decided to use this approach. Firstly, as Fiske points out, "this instruction was intended to reduce social desirability concerns and to tap perceived cultural

stereotypes.” (Fiske et al., 2002, p. 884). The second intention is especially important for us as we were not interested in personal beliefs of the pre-service teachers but rather the stereotypes. As previously mentioned, stereotypes as generalized knowledge do not necessarily align with one’s personal beliefs – it is possible to have a certain stereotype that does not reflect one’s personal beliefs. Unlike Ghavami & Peplau, we did not use the word “stereotype” to avoid priming.

Finally, we asked participants about demographic information such as age, gender, semester of study, type of teaching degree programme, studied school subjects, and experience with children with any of the three types of special educational needs. The interview protocol can be found in Appendix B.

Participants were asked the demographic questions first, followed by questions about their stereotypes towards the three groups of pupils with special educational needs using a structured interview with open-ended questions. Depending on how much they said, additional questions were posed to help them verbalize their thoughts. After that, they were specifically asked for characteristics society might attribute to these pupils. The same questions were asked for all three types of special educational needs.

Telephone interviews (average duration: 34 min) were conducted in February and March of 2022 by two trained interviewers. All parts of the interview except the answers to demographic questions were recorded with the consent of the participants.

4.1.4. Data analysis

We transcribed the recorded interviews and carried out the analysis using the qualitative content analysis method described in Kuckartz and Rädiker (2022) and MAXQDA 2022; VERBI Software, 2021). After coding training, the transcribed interviews were independently coded by two coders in several rounds with *consensual coding*, applying the method of structuring content analyses (Kuckartz & Rädiker, 2022), and were compared afterwards. 692 segments were coded. Initial intercoder reliability was calculated at 74% agreement. At this point, there were 30 codes for autism, 25 for Down syndrome, and 22 for dyslexia. To improve reliability, differences in coding due to code segments of different lengths or semantic deviations were resolved first. Then category definitions were adapted and concretised. In cases of disagreement, a third person was consulted to serve as a supervisor (Kuckartz, 2016). Then, the data material was coded again independently by the coders using the adapted category system, resulting in an intercoder reliability of 94%. The remaining differences were discussed again by the coders, and a final way of coding was agreed upon. The final specification of the category system and category definitions were made. There were 26 codes for autism, 22 for Down syndrome, and 21 for dyslexia.

4.2. Study 2

4.2.1. Aim

In Study 2, our aim was to quantify and add to the findings of Study 1. We therefore wanted to investigate how stereotypes differ in terms of competence and warmth across three different special educational needs: autism, Down syndrome, and dyslexia. Additionally, the study aimed to explore additional dimensions beyond competence and warmth that could be used to describe stereotypes towards pupils with these special educational needs.

4.2.2. Participants

The sample consisted of $N = 213$ pre-service teachers from all over Germany. The average age was 23.68 years ($SD = 4.17$) and 78% of participants were female. Regarding their semester of study, it spanned from the first semester to the fourteenth semester with an average of 6.22 ($SD = 3.10$) semesters. Regarding the type of teaching degree program, almost half of the pre-service teachers (41%) were on the academic track. Within secondary education, only 9% were on the intermediate track and 8% were on the vocational track. 19% were on the

elementary school track and 24% were on the special educational needs track. The frequency of the different subjects of study can be found in Appendix A.

Concerning recruitment, the pre-service teachers were found through e-mail distribution lists for pre-service teachers at German universities as well as social media (Facebook and Instagram).

4.2.3. Instruments

To assess pre-service teachers’ stereotypes, we extended the stereotype content questionnaire by Fiske et al. (2002) by adding the adjectives found in Study 1. The general question, adapted from the validated German translation (Krischler et al., 2018); Krischler & Pit-ten Cate, 2019 of Fiske’s questionnaire, was, “What do you believe most people think: How [insert adjective] are pupils with autism [Down syndrome, dyslexia] thought to be?” In response to this question, the participants rated the adjectives derived from Study 1 as well as the ones from Fiske et al. (2002) and (Krischler et al., 2018) for each group of pupils respectively on a 6-point Likert scale ranging from 1 = *not at all* to 6 = *very much*. For demographic information, we asked about age, gender, semester of study, type of teaching degree programme, subjects of study, and experience with children with the three types of special educational needs. To avoid systematic order effects, the order in which the three special educational needs were presented was randomized.

4.2.4. Statistical analyses

To test our first hypothesis, we used a repeated measures MANOVA. When statistically significant main or interaction effects appeared, we calculated post hoc tests. For Hypothesis 2, in order to analyse whether the ratings of adjectives were strongly negative or positive, we used one sample t-tests. To identify a possible underlying factor structure, we computed factor analyses for each type of special educational need. We applied a 95% confidence interval level. To address missing data, we decided to use listwise case exclusion.

5. Results

5.1. Study 1 results

Out of the codes derived from the qualitative content analyses, 15 codes related to autism, 12 to Down syndrome, and eight to dyslexia were identified as relevant (see Table 1). Example quotes for each code can be found in Appendix C. Codes were not identified as relevant if they described a trait related to motor development instead of cognitive

Table 1

Adjectives from Study 1 most relevant for descriptions of the three groups of pupils.

Autism	Down syndrome	Dyslexia
lazy	lazy	lazy
frustration intolerant	frustration intolerant	frustration intolerant
aggressive	aggressive	aggressive
low achieving	low achieving	low achieving
not independent	not independent	not independent
displaying behavioural problems	displaying behavioural problems	displaying behavioural problems
not intelligent	not intelligent	not intelligent
socially incompetent	socially incompetent	
uncommunicative	uncommunicative	
	chaotic	chaotic
	warm-hearted	
	open	
impulsive		
impatient		
introverted		
savant		
gifted		
awkward		

Note. The original list of adjectives is in German.

abilities (e.g., “clumsy” in the context of autism) or focused more on general views of inclusion than autistic pupils per se (e.g., “not fit for inclusion”).

In the context of stereotype content associated with these three types of special educational needs, it is notable that quite a lot of different adjectives were used to describe them. While some adjectives may apply to multiple groups, others are more specific to a category. When it came to autism, a lot of adjectives were only used to describe this group of pupils. Interestingly, some pre-service teachers described this group as very intelligent (“gifted”, “savant”), while others thought the opposite to be true (“not intelligent”). This was unique to autism as pupils with Down syndrome and dyslexia were only described as “not intelligent”. As for Down syndrome on the other hand, perceived warmth (“open”, “warm-hearted”) was unique. Pupils with dyslexia were the group described with the least number of relevant adjectives and notably described as “not intelligent” as well, even though dyslexia does not influence a person’s intellectual abilities.

5.2. Study 2 results

The descriptive data regarding the three types of special educational needs – autism, Down syndrome, and dyslexia – are shown in Table 2. The response scale was almost always fully utilized, with a few exceptions.

Following the procedure outlined in Fiske et al. (2002), we compared the ratings for all adjectives to the mean of the scale (3.5) to test which adjectives were significantly strongly associated with autistic pupils, pupils with Down syndrome, and pupils with dyslexia, respectively. In Table 2, the means and standard deviations of the adjectives that differed significantly from the mean are marked in bold.

Firstly, Table 2 shows the results for autism. The results for Down syndrome listed in Table 2 show that most adjectives were rated either significantly higher or lower than the mean of the scale (marked in bold). For dyslexia, a few more adjectives did not differ significantly from the mean of scale (see Table 2).

Hypothesis 1. Rating the dimensions of the stereotype content model among the three different special educational needs

Table 2
Descriptive statistics of the rated adjectives for all three groups of pupils.

Adjectives	Autism		Down syndrome		Dyslexia	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Aggressive	3.44	1.20	2.53	1.25	3.03	1.18
Awkward	3.62	1.30	4.51	1.36	3.68	1.41
Communicative	1.87	1.02	4.17	1.32	3.49	1.27
Competent	3.62	1.30	2.07	0.82	2.47	1.02
Displaying behavioural problems	4.73	1.17	4.35	1.27	3.52	1.40
Frustration tolerant	2.04	1.01	2.57	1.17	2.73	1.09
Gifted	4.79	1.23	1.56	0.87	1.74	0.92
Good-natured	2.56	1.12	5.15	1.01	3.08	1.11
Impulsive	3.88	1.46	3.64	1.38	3.13	1.15
Independent	2.77	1.26	1.95	0.91	2.79	1.02
Intelligent	4.78	1.19	2.08	0.87	2.49	1.06
Introverted	4.60	1.36	2.91	1.39	3.45	1.10
Lazy	2.30	1.01	2.66	1.13	3.99	1.47
Low achieving	2.41	1.06	4.36	1.32	4.76	1.32
Savant	5.12	1.16	2.27	1.22	2.40	1.21
Self-confident	2.61	1.14	3.15	1.25	2.29	0.85
Sincere	3.64	1.39	4.75	1.18	3.37	0.86
Socially competent	1.49	0.68	3.37	1.39	3.55	1.01
Stupid	2.12	1.00	4.10	1.31	4.08	1.36
Tolerant	2.36	1.05	4.12	1.29	3.31	0.98
Warm-hearted	2.25	1.16	5.23	0.97	3.55	0.91

Note. Apart from a few exceptions, the minimum was always 1 and the maximum was always 6.

5.2.1. Hypothesis 1

We firstly examined whether the stereotypes for the three groups could be subsumed into the stereotype content model with its two defining dimensions of warmth and competence. We explicitly tested how the three groups differed according to the two dimensions as measured by the questionnaire by Fiske et al. (2002). To test this, we first computed the mean values for the four warmth (tolerant, warm, good natured, sincere) and competence (competent, confident, independent, intelligent) adjectives. We then compared the two dimensions to the mean of the scale (3.5; see Fig. 1). Internal consistency was mostly acceptable (see Table 3).

To test whether the type of special educational need had an influence on those stereotype dimensions, we used a repeated-measure MANOVA with type of special educational need (autism vs. Down syndrome vs. dyslexia) as within-subjects factor and the stereotype dimensions (warmth vs. competence) as the dependent measures. Main effects analysis showed an effect of both the type of special educational needs; WTS ($df = 2$) = 195.12, $p < .001$, and the two stereotype dimensions; WTS($df = 2$) = 539.53, $p < .001$. There was a statistically significant interaction between the effects of the type of special educational needs and the two stereotype dimensions: WTS($df = 2$) = 930.20, $p < .001$.

Hypothesis 2. Differences between the warmth and competence ratings among the three different special educational needs

5.2.2. Hypothesis 2

Regarding Hypothesis 2 and its sub hypotheses, paired sample *t*-tests showed that pupils with Down syndrome were rated as more warm than autistic pupils: $t(211) = 26.65$, $p < .001$, $d = 1.83$ and dyslexia, $t(206) = 22.61$, $p < .001$, $d = 1.57$. In addition, pupils with dyslexia were rated as more warm than autistic pupils: $t(210) = 10.07$, $p < .001$, $d = 0.67$, confirming Hypothesis 2a. As for competence (Hypothesis 2b), autistic pupils were rated as more competent than those with Down syndrome: $t(211) = 17.95$, $p < .001$, $d = 1.23$, and dyslexia, $t(209) = 13.03$, $p < .001$, $d = 0.90$. Pupils with Down syndrome were rated as less competent than pupils with dyslexia, $t(208) = -3.35$, $p = .001$, $d = 0.23$.

5.2.3. Exploratory research question: other dimensions to describe stereotypes towards the three different special educational needs

To reduce and simplify the data for our exploratory research question, we performed factor analyses. Since the previous data analyses showed that stereotype content differs greatly among the three special educational needs, factor analyses were performed separately for each of the three types of special educational needs. Bartlett’s Test for Sphericity was significant ($p < .001$) for all three datasets, indicating that the correlation matrix of the variables diverges significantly from the identity matrix (Tabachnick & Fidell, 2013). Moreover, KMO values were between 0.73 and 0.79, which indicates factor analysis is appropriate (Kaiser, 1974).

5.2.3.1. Autistic pupils. We used scree plots and parallel analyses to determine the number of factors to extract for each dataset. Five factors were indicated for autism. However, the first exploratory factor analysis with principal axis extraction and an orthogonal (varimax) rotation showed signs of overfactoring as only one variable loaded on the last factor (cf. Gorsuch, 2013). We therefore conducted a second factor analysis with only four factors, which revealed one dominant factor (eigenvalue = 3.55) that accounted for 41% of variance in the scores. The three other factors (with eigenvalues of 1.82, 1.71 and 1.61) accounted for 21%, 20%, and 18% of the variance, respectively. Table 4 presents the adjectives and their factor loadings.

Regarding content, the first factor (“academic competence”) unites eight adjectives describing intelligence and school performance. Items describing the lack thereof loaded negatively on the factor. The second factor (“warmth”) included the four adjectives used by Fiske et al. (2002) to measure warmth. Five adjectives loaded on the third one

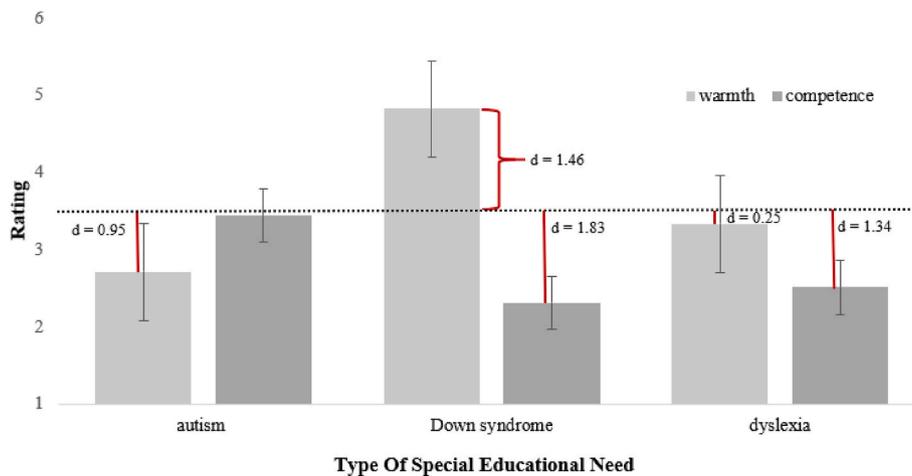


Fig. 1. Warmth and competence rating as well as effect sizes for the significant t-tests for all three groups of pupils.

Table 3

McDonald’s Omega for the warmth and competence dimensions for autism, Down syndrome and dyslexia.

Special educational need	Dimension	Items	McDonald’s Ω
Autism	Warmth	4	0.74
	Competence	4	0.72
Down syndrome	Warmth	4	0.87
	Competence	4	0.67
Dyslexia	Warmth	4	0.78
	Competence	4	0.72

Table 4

Results from the exploratory factor analysis for autism.

Adjectives	Factor loading			
	1	2	3	4
Factor 1: Academic competence				
Intelligent	.86	.03	.15	-.10
Gifted	.72	-.02	.10	-.13
Low achieving	-.70	.16	.20	.05
Stupid	-.69	.10	.13	.04
Competent	.66	.09	.00	.00
Savant	.51	.11	.26	-.27
Independent	.47	.23	-.16	.36
Lazy	-.31	-.16	.06	.25
Factor 2: Warmth				
Good-natured	.00	.85	-.07	.14
Warm-hearted	-.11	.68	.09	.27
Tolerant	-.05	.45	-.23	.08
Sincere	.26	.39	.02	.04
Factor 3: Behavioural problems				
Impulsive	-.06	-.01	.73	.22
Aggressive	-.04	-.13	.59	.08
Displaying behavioural problems	.10	.15	.59	-.11
Awkward	-.07	-.04	.33	-.18
Frustration tolerant	-.05	.11	-.26	.14
Factor 4: Social skills				
Communicative	-.21	.20	.02	.68
Socially competent	-.20	.16	-.20	.59
Introverted	.34	-.03	.10	-.41
Self-confident	.14	.16	.05	.34

Note. Factor loadings above 0.30 are in bold.

(“behavioural problems”) describing behavioural problems, while the fourth (“social skills”) loaded four adjectives describing social skills or, again, the lack thereof which then loaded negatively. We therefore chose to allocate the two adjectives “independent” and “introverted” (loading

negatively as well), which loaded on both the first and the fourth factors, to the factor describing social skills instead of the factor describing academic competence. To test the internal consistency of these factors, we first inverted the adjectives that loaded negatively on the factors and then computed McDonald’s Omega, which, respectively were all acceptable (academic competence Ω = .89, warmth Ω = 0.74., behavioural problems Ω = .70, and social skills Ω = 0.68; McDonald, 1999).

5.2.3.2. Pupils with down syndrome. As for Down syndrome, parallel analysis suggested four factors. The exploratory factor analysis with principal axis extraction and an orthogonal (varimax) rotation revealed four factors with eigenvalues of 2.87, 2.22, 2.21, and 1.66, accounting for 32%, 25%, 25% and 19% of the variance, respectively. The loading pattern is presented in Table 5.

Regarding content, the first factor (“warmth”) comprises five adjectives including the four adjectives of the already mentioned warmth dimension by Fiske et al. (2002), as well as one additional adjective. The

Table 5

Results from the exploratory factor analysis for Down syndrome.

Adjective	Factor loading			
	1	2	3	4
Factor 1: Warmth				
Good-natured	.83	-.05	.08	.14
Warm-hearted	.80	-.05	.15	.18
Sincere	.73	-.01	-.03	.11
Tolerant	.56	.01	-.15	.19
Frustration tolerant	.24	.23	-.19	.10
Factor 2: Intelligence				
Intelligent	.00	.70	.00	.15
Competent	-.05	.65	-.18	.12
Gifted	-.03	.61	-.10	-.16
Savant	.06	.59	.04	-.09
Factor 3: Behavioural problems				
Aggressive	-.25	.13	.72	.02
Impulsive	-.03	-.01	.67	.26
Displaying behavioural problems	.11	-.10	.58	-.04
Stupid	.14	-.28	.48	-.28
Awkward	.38	-.27	.43	-.12
Lazy	-.06	-.04	.31	-.09
Low achieving	.21	-.30	.31	-.16
Factor 4: Social skills				
Communicative	.35	.00	-.04	.67
Introverted	-.08	.17	.07	-.59
Socially competent	.41	.24	-.17	.47
Self-confident	.24	.20	.04	.43

Note. Factor loadings above 0.30 are in bold.

second factor (“intelligence”) included four adjectives. Here, the adjectives more narrowly described intelligence instead of a more general academic competence (in contrast to the rating for autism). The third factor (“behavioural problems”) described again, as the name suggests, possibly problematic behaviour with seven adjectives. Here, the adjective “awkward”, which also loaded similarly on the “warmth” factor, was thought to fit better to this factor in terms of content. “Awkward” can refer to the way someone behaves in terms of problematic behaviour but might also influence perceived warmth as a consequence of said behaviour. Therefore, the third factor (“behavioural problems”) has a more direct connection and was chosen. The last factor (“social skills”) included four adjectives describing social skills in accordance with the eponymous factor for autism. The two remaining adjectives that loaded on more than one factor fit this description and loaded slightly higher on this factor. One adjective, “independent”, loaded similarly on three factors and was not clearly allocatable. So, overall, the factor structure had quite a bit of resemblance to the factor structure for autism.

The internal consistency was good or acceptable (warmth $\Omega = 0.87$, intelligence $\Omega = 0.79$, behavioural problems $\Omega = .79$, and social skills $\Omega = 0.76$; McDonald, 1999).

5.2.3.3. Pupils with dyslexia. Finally, for dyslexia, parallel analysis suggested four factors. Again, the exploratory factor analysis with principal axis extraction and an orthogonal (varimax) rotation showed signs of overfactoring as only two variables loaded on the last factor (cf. (Gorsuch, 2013). We therefore conducted a second analysis with three factors (Table 6). Factor one had an eigenvalue of 3.28, factor two 2.49 and factor three 1.53. They accounted for 45%, 34%, and 21% of the variance, respectively.

Regarding content, factor one (“academic competence”) included eight adjectives describing competence in the school context or the lack thereof which were very similar to the same factor for autism. The second factor (“social skills”) included eight adjectives: namely, all four adjectives describing warmth as well as several others which all together described good social skills. The adjectives “frustration tolerant” loaded on both the first (0.39) and the second (0.31) factor similarly and could not be clearly allocated to either one of them. This might be because a high frustration tolerance could have a positive effect on both one’s academic performance and one’s perceived social skills. Factor three (“behavioural problems”) included three adjectives. The adjectives

“stupid” and “lazy” also loaded on this factor, but loaded considerably higher on the competence factor and also fit its content better. “Introverted” did not load on any of the three factors.

The internal consistency was good or acceptable (academic competence $\Omega = .86$, social skills $\Omega = 0.84$, behavioural problems $\Omega = .64$; McDonald, 1999).

Overall, the found factor structures had a lot of similarities but subtle differences as well (see Fig. 2). For both autism and dyslexia, there was a factor describing academic competence. In the context of stereotypes towards pupils with Down syndrome however, this factor was a bit different and seemed to describe intelligence more precisely. While for both autism and Down syndrome, two separate factors described warmth and social skills, the adjectives loaded together on one broader interpersonal skills factor for dyslexia. For all three types of special educational needs, there was a factor describing problematic or negative behaviour.

5.2.4. Explorative results

Finally, we assessed to what degree pre-service teachers had prior experience with the three groups of pupils and whether this mattered for the stereotypes. To investigate whether those with prior experience (group one) differed from the ones without experience (group two) regarding the factors found in this study, we computed three permutational multivariate analyses of variance (PERMANOVA). For the first PERMANOVA investigating the difference between pre-service teachers with and without experience regarding autism, the dependent variables were academic competence, warmth, behavioural problems, and social skills. For Down syndrome, the dependent variables were intelligence, warmth, behavioural problems, and social skills. For dyslexia, the dependent variables were academic competence, behavioural problems, and social skills. We decided on the PERMANOVA instead of the multivariate analysis of variance (MANOVA) because the prerequisites of the MANOVA were not met as the groups of pre-service teachers we compared did not have the same size. All three PERMANOVAs for autism, Down syndrome, and dyslexia, respectively, were not significant. There was no statistically significant difference between the pre-service teachers with prior experience and those without prior experience regarding the ratings of the factors found in this study.

6. Discussion

The stereotypes (pre-service) teachers have may shape their beliefs and, eventually, their actions. In increasingly heterogeneous classes in particular, teachers have to address a greater number of special needs among their pupils. Stereotypes about different special educational needs play an important role here: teacher stereotypes can significantly impact children with special educational needs, as short-sighted, pre-conceived expectations may influence teacher behaviour, limit children’s access to support, and undermine their potential for growth and inclusion (H. de Boer et al., 2018; Murdock-Perriera & Sedlacek, 2018). This study investigated pre-service teachers’ stereotype content regarding autistic pupils, pupils with Down syndrome, and pupils with dyslexia. The results confirmed that pre-service teachers report stereotypes regarding the perceived warmth and competence of these pupils. However, the internal consistency of the scales was a bit low. In accordance with our second hypothesis, the stereotype content differed depending on the type of special educational needs. Given the further stereotype content found in Study 1, we identified additional dimensions that play a role in perceptions of all three special educational needs.

Regarding autism stereotypes, we expected pupils to be stereotypically portrayed as highly intelligent and yet cold and anti-social, consistent with prior research. These expectations were confirmed in both the qualitative and quantitative analyses, with the idea of pupils being gifted or savants being prominent.

Quantitatively, Hypothesis 1 could only partially be confirmed,

Table 6
Results from the exploratory factor analysis for dyslexia.

Item	Factor loading		
	1	2	3
Factor 1: Academic competence			
Low achieving	-.68	.11	.27
Stupid	-.67	.01	.36
Competent	.62	.29	-.17
Gifted	.61	.25	.00
Lazy	-.58	-.08	.43
Intelligent	.51	.44	-.07
Savant	.46	.05	.15
Awkward	-.42	-.05	.14
Factor 2: Social skills			
Socially competent	.00	.59	-.24
Warm-hearted	.13	.59	-.20
Sincere	.10	.56	-.20
Independent	.43	.46	-.02
Self-confident	.32	.40	.08
Good-natured	.17	.34	-.19
Communicative	-.15	.31	-.11
Factor 3: Behavioural problems			
Impulsive	-.04	-.16	.63
Displaying behavioural problems	-.22	-.27	.53
Aggressive	-.02	-.12	.43

Note. Factor loadings above 0.30 are in bold.

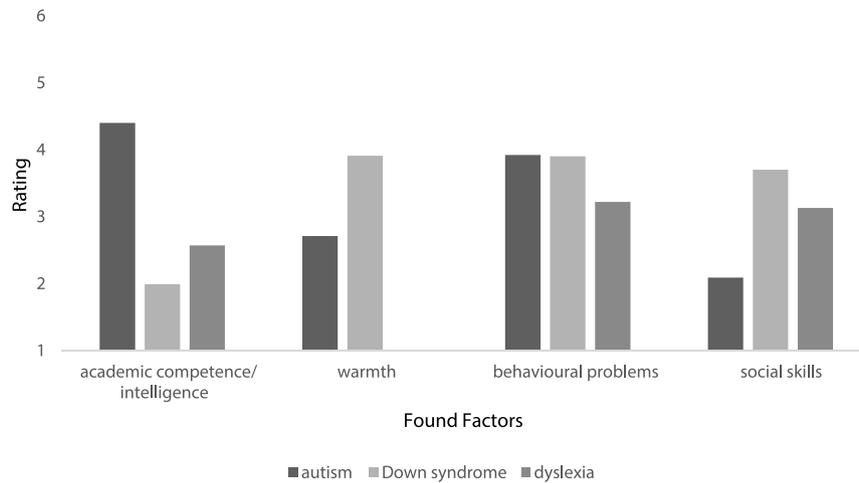


Fig. 2. Comparison and ratings of found dimensions for all three groups of pupils
Note. This figure demonstrates how the three groups of pupils are rated differently on the three or four different found factors.

raising a few questions. First, we will address where this attribution of lower warmth may come from. One possible reason for it could be the reduced social interaction and the more difficult perspective-taking among autistic pupils (Southall & Campbell, 2015), which is then generalized by pre-service teachers into a low warmth rating. This generalization may occur because pre-service teachers have not yet acquired much expertise in the causes and symptomatology of autism. As for competence, it was rated neutral instead of high, contradicting our hypothesis. Cuddy et al. (2007, 2008) suggests that, in the combination of low warmth and neutral competence, the latter may reflect a polarization effect or a less clear, less consensual stereotype. Different opinions of the pre-service teachers, when considered on a group level, may cancel each other out. Another explanation could be that, in this context, the competence dimension does not quite grasp the essence of the stereotype: pre-service teachers did rate these pupils as stereotypically very intelligent but not competent, independent, or self-confident. While the other three adjectives of the competence dimension are broader, being intelligent directly refers to intellectual capabilities. While pre-service teachers clearly describe autistic pupils as stereotypically intelligent, the stereotype might not encompass being generally competent in life – the competence seems to only apply to their intellectual abilities, sometimes even only in one area, hence the strong association with savant syndrome. This fits with the fact that, in mass media, a lot of characters on the autism spectrum are portrayed in this way (Draaisma, 2009), so pre-service teachers might come across this stereotype a lot in TV-series, movies and books. The low perceived warmth ratings fit previous findings (e.g., Fiske, 2012). Hypothesis 2 was also confirmed, which was especially interesting since, as already discussed, competence ratings were lower than expected. The comparison of the three groups will be discussed more in the following paragraphs about Down syndrome and dyslexia.

Our open approach in Study 1 had produced results that went beyond what the stereotype content model offers. We therefore searched for other possible stereotype dimensions and found, in keeping with the exploratory research question, several additional ones. Fiske et al.'s (2002) competence adjectives were divided between two of our dimensions. This supports our theory that one general competence dimension might not be enough to describe stereotypes towards autistic pupils. In terms of teacher behaviour, this could translate into less sympathy for these pupils because of low warmth and perceived social skills as well as more negative expectations of them. Academic expectations, however, would be extremely high.

For the Down syndrome group, the adjectives painted a more nuanced picture. Here, it is interesting to note that the stereotype of

pupils with Down syndrome as being passive and having lower activity levels (Cuskelly & Gunn, 2006; Gunn & Cuskelly, 1991) never came up in our samples of pre-service teachers. Rather, it appeared as if pupils with Down syndrome were stereotypically seen as pupils who try hard but are simply not as competent as other groups of pupils.

Our first hypothesis was confirmed, in accordance with the stereotype content model. Our second hypothesis was confirmed as well. According to Fiske et al. (2002) and Cuddy et al. (2007), this combination of low competence and high warmth is associated with emotions like pity or sympathy. As for behaviour, this might result in a greater willingness to provide help which could be positive for pupils in the school context (Cuddy et al., 2007; Krischler & Pit-ten Cate, 2019). At the same time, it could also lead to dismissive and patronizing behaviours (Cuddy et al., 2007). We also found more distinct dimensions, in accordance with the exploratory research question.

Regarding dyslexia, the perception was surprisingly negative. In line with prior research about learning difficulties, pupils with dyslexia were stereotypically seen as less intelligent than other pupils. This contradicts the fact that a pupil must not have an intellectual disability to be formally diagnosed with dyslexia (APA Dictionary of Psychology, n. d.). Our results are in accordance with Popovich et al.'s (2013) findings where children with dyslexia were seen as less productive. The perceived dependency of these pupils mentioned by Staniland (2011) was similar to the pre-service teachers' rating of low perceived independence.

In accordance with Hypothesis 1, pupils with dyslexia were rated low in competence. The attribution of less "competent" probably results from a generalization of pupils' lower competence in reading or writing to intellectual competence in general. This raises the question of whether pre-service teachers are perhaps unaware of the diagnostic criteria for dyslexia or do not consider them in their stereotypical attributions. However, warmth ratings were also lower than expected. This finding contrasted with Krischler et al.'s (2019) finding of perceived relative high warmth and low competence for pupils with learning difficulties. The fact that dyslexia and learning difficulties are not the same thing may factor into this difference in results.

As expected, when compared to the other groups, they were perceived as less competent than those with autism, but more competent than those with Down syndrome (Hypothesis 2a). It was the other way around for warmth ratings (Hypothesis 2b). Our findings are therefore associated with different emotions and behavioural tendencies: according to Cuddy et al. (2007, 2008), this mixed stereotype found in our study may trigger feelings of contempt and disgust. The authors also theorize that these emotions may elicit passively harmful actions, for

example, demeaning paternalistic behaviours, neglect, or exclusion. Furthermore, these emotions might even motivate active harmful behaviour as “people tend to act actively against or passively without others who elicit contempt” (Cuddy et al., 2007, p. 634). As for the exploratory research question, we found three additional dimensions. Interestingly, instead of a warmth dimension, we found a much broader one for this group describing all sorts of interpersonal skills. As opposed to the findings for autism and Down syndrome, there was no differentiation between warmth and social skills. One explanation for this finding would be that pre-service teachers might look at dyslexia in a less differentiated way. This fits the findings of a current systematic review that teachers have a very limited understanding of dyslexia (Nevill & Forsey, 2023). Furthermore, in Germany, both autism and Down syndrome are defined as special educational needs while dyslexia is only defined as a specific learning disability, which means that fewer resources are directed towards supporting these pupils (e.g., Esser et al., 2002; *Sonderpädagogische Förderung*, n. d.).

6.1. Limitations and future research

Firstly, we only assessed stereotypes explicitly. Studies show that social desirability can conceal one’s true opinion on a topic (De Houwer, 2006) and that there tend to be higher correlations between attitudes/stereotypes and behavioural consequences such as performance ratings when the attitudes were implicitly measured (Glock et al., 2020). Therefore, it would be interesting to compare explicit and implicit measures and see whether or not we would find similar results.

Secondly, we only investigated pre-service teachers, not teachers. Pre-service teachers as future teachers are important because they could potentially carry certain stereotypes through their whole career. Still, an important limitation in this context is that pre-service teachers may have less experience and less knowledge about special educational needs than in-service teachers. And at the same time, pre-service teachers may also lack practical experience with these pupil groups, which may reinforce their beliefs both positively and negatively (Dignath, Rimm-Kaufman, van Ewijk, & Kunter, 2022). Given these limitations, our findings may not necessarily translate to in-service teachers, and further research is needed to identify the specific stereotypes in-service teachers report and to compare them to those of pre-service teachers.

Thirdly, we only investigated stereotypes associated with three groups of pupils with special educational needs that do not represent the full heterogeneity in the inclusive classroom. For example, 4.6 % of all children and adolescents in Europe have ADHD (Polanczyk et al., 2007) making it a rather prevalent and interesting group to look into.

Furthermore, the role of experience and contact with pupils belonging to our investigated groups when it comes to stereotypes would be interesting to explore. We investigated this and found no difference between pre-service teachers with and without experience – however, the way we assessed it might have not been the best, as we could not really specify the quality of the experience or contact, we just compared those with and without experience. In further studies, it would be advisable to approach this issue in a more nuanced way. In addition, it would be interesting to look at the effects of stereotypes towards pupils with special educational needs and other pupil variables that may also influence and interact with stereotypes about special educational needs, such as gender and/or socio-economic status. For ADHD for example, studies have found that parents have sex-specific biases regarding the behaviour of boys and girls with ADHD (e.g., Mowlem et al., 2019). This might also be the case for teachers and pre-service teachers.

6.2. Theoretical and practical implications

As previously discussed, the competence dimension did not seem to completely fit this context as there was a clear distinction between academic competence (for autism and dyslexia), or even just intelligence

(for Down syndrome), and social competence/skills. This might be due to the specific context: for example, pre-service and in-service teachers pre-service and in-service teachers probably do not see their pupils as competition when it comes to social status. Instead of caring about competence in regard to social status, pre-service and in-service teachers probably focus on competence in the school environment. Beyond these dimensions, we were also able to identify another dimension that was relevant for all three groups of special educational needs, namely behavioural problems. This seems to play a special role for teachers. This is understandable considering that classroom management is a challenge that many pre-service teachers worry about (Bromfield, 2006) and, at the same time, stereotypes and stereotypical beliefs of teachers are considered important for the success of inclusion in mainstream classrooms (e.g., Borg et al., 2011). For example, many of the fears of pre-service and in-service teachers pre-service and in-service teachers regarding inclusive education are also about not being able to effectively accommodate pupils with behavioural problems in their classrooms (Dignath, Rimm-Kaufman, van Ewijk, & Kunter, 2022). These pupils therefore should be given more attention in research on teacher professionalization in the context of inclusion.

Furthermore, to better understand pre-service teachers’ stereotypes in interaction with other crucial professional competencies, it would be important to examine relationships between stereotype content, personal inclusive beliefs, knowledge of special educational needs, and other variables. In addition, it is relevant to examine the extent to which stereotypes influence pre-service teachers’ learning: do their stereotypes impact knowledge acquisition or the development of personal inclusive beliefs, or possibly moderate the effectiveness of teacher education? Research has shown that beliefs can act as a filter in learning (Fives & Buehl, 2012), can stereotypes have a similar effect?

As for practical implications, the possible consequences of stereotypes pre-service teachers report about autistic pupils, pupils with Down syndrome, and pupils with dyslexia would also be a potential subject for further study. As previously discussed, the BIAS map (Cuddy et al., 2007, 2008) connects certain stereotypes with emotions and behaviours that might be especially important in the school context. In addition, the other perceived characteristics found in this study might also have consequences for how pre-service and in-service teachers pre-service and in-service teachers act. For example, it can have a positive effect on the self-confidence of pupils with Down syndrome when teachers expect them to have a high level of social skills and therefore approach the pupils positively. At the same time, however, it could be problematic if a teacher’s high expectations are not met in practice, leading to disappointment or even anger. Understanding the impact of such stereotyping requires research that examines the consequences of stereotyping attributions made by teachers on their behaviour toward these groups. For example, it would be interesting to combine a stereotype questionnaire like the one we used with a task where pre-service and in-service teachers interact directly with different pupils with and without special educational needs.

Finally, our findings emphasise the importance of interventions for pre-service and in-service teachers as the stereotypes found over-generalize and often do not reflect what autistic pupils, pupils with Down syndrome, and pupils with dyslexia are actually like. Intervention research has shown that pre-service teachers’ and teachers’ inclusive beliefs change following interventions regarding inclusion. They have a particularly positive effect on the development of inclusive beliefs when pre-service and in-service teachers also gain practical experience in inclusive classroom settings as part of an intervention with education in relevant theories (Dignath, Rimm-Kaufman, van Ewijk, & Kunter, 2022). Here, it would be exciting to investigate how interventions for pre-service and in-service teachers affect the development of stereotypes and stereotypical thinking and which kinds of interventions are particularly effective for breaking down educational barriers.

7. Conclusion

Our findings show that pre-service teachers report distinct and rather strong stereotypes towards autistic pupils, pupils with Down syndrome, and pupils with dyslexia. Identifying these stereotypes improves our understanding of why these pupils are treated differently because they might be one reason for said treatment. Understanding that these stereotypes exist and that they might play such an important role may help make inclusion in education more successful. On the one hand, knowing that those stereotypes exist and what exactly they comprise is a crucial step towards designing interventions that address pre-service and in-service teachers' stereotypes and help them to overcome them as much as possible. On the other hand, the fact that the stereotypes differ depending on the type of special educational need is also important because it means that future interventions should address them separately. Therefore, these two findings can help promote inclusive practices for pre-service teachers and possibly in-service teachers and schools as well. For inclusion to succeed, it is crucial that pre-service and in-service teachers do not rely solely on stereotypes as their source of knowledge. Instead, it is essential that teachers recognize and understand that every pupil – pupils with and without diagnoses, pupils with different or similar diagnoses – is unique, and taking the time to assess and appreciate their individuality is a key factor for success.

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Appendix A

Pre-Service Teacher's Subjects of Study.

Subject	Frequency
Maths	70
Biology	21
Chemistry	19
Physics	17
Computer Science	8
German	80
English	28
French	2
Italian	1
Spanish	4
Latin	2
History	16
Geography	18
Politics	16
Religious Education and Ethics	25
Art	19
Music	16
Physical Education	11
Other (Economics, Subjects related to Special Educational Needs, Psychology etc.)	48

Note. Pre-service teachers could specify one to three different subjects.

Appendix B

Interview protocol.

Text

Hello, this is [Name]. I am a member of the [Name of the project]. Thank you for taking the time to answer some questions. You have already received some documents from us by e-mail: You have been informed about the study itself and data protection and have returned the signed consent form to us. Are there any questions you would like to clarify before we start? Do you want to withdraw your consent? [Await answer.] Okay, so let's start with some demographics first:
How old are you?

(continued on next page)

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CRediT authorship contribution statement

Charlotte S. Schell: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing. **Charlotte Dignath:** Conceptualization, Funding acquisition, Supervision, Writing – review & editing. **Hannah Kleen:** Conceptualization, Supervision, Writing – review & editing. **Nathalie John:** Conceptualization, Software, Writing – review & editing. **Mareike Kunter:** Conceptualization, Funding acquisition, Supervision, Writing – review & editing.

Declaration of competing interest

The authors state that there's no financial or personal interest or belief that could affect their objectivity, or if there is, stating the source and nature of that potential conflict.

Data availability

Data will be made available on request.

(continued)

Text

What gender do you identify with?
 What subjects are you studying?
 What semester are you in?

As you have probably already read, in this interview I will be asking you questions about inclusion, or primarily about the inclusion of children with autism, dyslexia and Down syndrome. I will closely follow a standardized guideline, which is why my way of speaking might seem a bit unnatural to you. I do this to ensure comparability between the different interviews. Please do not let this irritate you and tell me if you have not understood something correctly or if there is any ambiguity about a question.

Before we start, I would like to inform you that we will record the interview as mentioned in the consent form that you have already received via email. The anonymized audio file will be kept separate from all your other information. I'm going to start the audio recording now, okay?

[Wait for answer, then continue talking.]

The topic of inclusion in schools is exciting and important, but it also brings special challenges. Due to the heterogeneity and the associated diverse characteristics of the students, it can be a challenge for all involved, especially for pre-service and in-service teachers.

Such qualities or characteristics that we associate with certain groups of children in society are something we are all sometimes more, sometimes less aware of. Some of these ideas that are prevalent in society may or may not always correspond to your own ideas.

Please list at least 5 characteristics that correspond to societal ideas about children with autism. Do **not** think of an individual child you may know or have taught before, but of the group of all children with autism as such.

Thank you.

Next, we would like to ask you to rate the applicability of the following characteristics (from 1 = not at all/lowly pronounced, to 6 = markedly pronounced/very much) in children with autism:

On a scale of 1–6 as viewed by society, ...

1. How competent are children with autism thought to be?
2. How confident are children with autism assessed?
3. How independent are children with autism thought to be?
4. How intelligent are children with autism assessed?
5. How tolerant are children with autism thought to be?
6. How warm are children with autism rated?
7. How good natured are children with autism thought to be?
8. How sincere are children with autism assessed?

Thank you. If you do not have any questions, we'll come back to children with Down syndrome:

Again, please list at least 5 characteristics that correspond to societal ideas about children with Down syndrome. Think **not** necessarily of an individual child you may know or have taught, but of the group of all children with Down syndrome as such.

Again we would like to ask you to rate the following characteristics (from 1 = not at all/lowly pronounced, to 6 = markedly pronounced/very much) in children with Down syndrome:

On a scale of 1–6 as viewed by society, ...

1. How competent are children with Down syndrome thought to be?
2. How confident are children with Down syndrome assessed?
3. How independent are children with Down syndrome thought to be?
4. How intelligent are children with Down syndrome assessed?
5. How tolerant are children with Down syndrome considered to be?
6. How warm are children with Down syndrome assessed?
7. How good natured are children with Down syndrome thought to be?
8. How sincere are children with Down syndrome assessed?

Finally, I have a few questions for you about children with dyslexia:

Again, please list at least 5 characteristics that correspond to societal ideas about children with dyslexia. Think **not** necessarily of an individual child you may know or have taught, but of the group of all children with dyslexia as such.

Again, we would like to ask you to rate the following characteristics (from 1 = not at all/lowly pronounced, to 6 = markedly pronounced/very much) as they apply to children with dyslexia:

On a scale of 1–6 as viewed by society, ...

1. How competent are children with dyslexia thought to be?
2. How confident are children with dyslexia assessed?
3. How independent are children with dyslexia thought to be?
4. How intelligent are children with dyslexia assessed?
5. How tolerant are children with dyslexia thought to be?
6. How warm are children with dyslexia assessed?
7. How good natured are children with dyslexia thought to be?
8. How sincere are children with dyslexia assessed?

Do you yourself have experience working with children with special educational needs?
 If so: What experience do you have?

Then we have reached the end of our interview. Have a nice rest of the day and thank you for your time! Bye!

Appendix C

Example Quotes from the qualitative content analysis.

Table C1
 Example Quotes and Corresponding Codes for Autism-Related Statements

Code	Example quote
lazy	“not properly involved or are lazy”
frustration intolerant	“high potential for aggression or frustration”
aggressive	“they might also be aggressive in some way”
low achieving	“so I think that most of society also believes that children with autism will have more difficulties in learning”
not independent	“that they are perhaps a bit developmentally delayed and therefore need support again and again”
displaying behavioural problems	“disruptive perhaps for teaching”

(continued on next page)

Table C1 (continued)

Code	Example quote
not intelligent	"that they cannot be intelligent in the sense that other people are"
socially incompetent	"that the social competence is not so well developed"
uncommunicative	"because they cannot communicate the way other children do"
impulsive	"that they are impulsive, for example"
impatient	"impatient I might even say"
introverted	"I think that such children are rather introverted in their character"
savant	"that they have an isolated talent, that is, they are very intelligent in certain areas"
gifted	"have a higher intelligence quotient than average"
awkward	"[they are] not always behaving appropriately for the situation. That they avoid direct eye contact, for example."

Note. The original list of adjectives is in German.

Table C2

Example Quotes and Corresponding Codes for Down Syndrome-Related Statements

Code	Example quote
lazy	"that they also do not have so much desire"
frustration intolerant	"low frustration tolerance"
aggressive	"perhaps aggressive behaviour again"
low achieving	"cognitively speaking, they perform less well"
not independent	"and that they always need someone to explain it to them again. That they would always need support"
displaying behavioural problems	"probably they are considered chaotic, loud and wild"
not intelligent	"limited intellect, i.e. reduced intelligence in general"
socially incompetent	"that they are generally also simply seen as incapable of relationships or social interactions"
uncommunicative	"that they have difficulty communicating with others"
chaotic	"probably they are considered chaotic"
warm-hearted	"that they are in any case very loving people who can empathize very well with the sensitivities or emotions of others"
open	"that they approach other people openly and have no fear of contact"

Note. The original list of adjectives is in German.

Table B3

Example Quotes and Corresponding Codes for Dyslexia-Related Statements

Code	Example quote
lazy	"that they are perhaps also lazy in the sense that they are not trying hard enough"
frustration intolerant	"may also be frustrated more quickly, have a lower frustration tolerance"
aggressive	"such children may also be perceived as aggressive"
low achieving	"that in class, given there is the same task for everyone, they have difficulty keeping up or that certain tasks cannot be completed"
not independent	"then again also low independence"
displaying behavioural problems	"that classroom disruptions can also occur"
not intelligent	"many are labeled as stupid"
chaotic	"chaotic I would say"

Note. The original list of adjectives is in German.

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