Individual and cultural factors in teachers' attitudes towards inclusion: A meta-analysis

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Abstract

The success of inclusive education is dependent upon classroom teachers implementing adaptations for children with disabilities. Given that willingness to make such adaptations is influenced by teacher attitudes, the current study examined teachers' attitudes towards inclusive education through a meta-analysis of 64 samples that were found via a systematic literature search. The results indicated that teachers hold a positive attitude towards inclusion of children with disabilities in mainstream schools and that these attitudes are moderated by an interplay of cultural and demographical factors. The findings offer a renewed basis for intervention research into improving educational opportunities for children around the world.

Keywords: inclusive education; teacher attitudes; meta-analysis; cultural factors; demographics

Introduction

Inclusion is a broad vision which aims to enhance the participation and acceptance of all children within mainstream education (Brownell, Sinedelar, Kiely, & Danielson, 2010; Farrell, 2000; Lindsay, 2007). Inclusive education is therefore intended to maximise the educational experience of children with disabilities within mainstream schools. This is not just an approach to educate children with disabilities but is instead a reform to support the diversity of learners (UNESCO, 2001, 2005). Inclusive schools acknowledge that all children have the right to, and will benefit from, a meaningful and challenging curriculum (Nind & Wearmouth, 2006; van der Veen, Smeets, & Derriks, 2010). Every child is viewed as a valued member of the school community and educated in a way which is appropriate for that individual (Artiles, Kozleski, Dorn, & Christensen, 2006; Booth, Ainscow, Black-Hawkins, Vaughn, & Shaw, 2000).

The move towards inclusive education has gained momentum in the past few decades. For example, educational legislations which mandate inclusion are now in effect across the world (United Nations Convention on the Rights of the Child. 1989, 2006; UNESCO Salamanca Statement, 1994; No Child Left Behind Act, 2001; Convention on the Rights of Persons with Disabilities, 2006, 2014). Despite such legalisation, it is classroom teachers who determine the success of inclusion. As schools become more inclusive, teachers' roles are increasingly diversified. Teachers must adjust their practices to accommodate children of all abilities. Curricular, resource and instructional adaptations are required to meet the needs of the child (Avramidis & Norwich, 2002; De Boer, Pijl, & Minnaert, 2011; Janney & Snell, 2004; Nolet & McLaughlin, 2000). Evidence suggests that teachers' inclusive classroom behaviour is influenced by their attitudes towards inclusion (Monsen, Ewing, & Kwoka, 2014; MASKED FOR PEER-REVIEW). As such, it is important that research examines the nature of teacher attitudes towards inclusive given that this may influence teaching practices

and thus the educational experience of children with disabilities in mainstream schools. Such an understanding will bring us closer to interventions aimed at supporting teachers to support learners with disabilities.

An abundance of research has focussed on teacher attitudes towards inclusion. Teacher attitudes relate to the overall evaluation of inclusion and whether this is viewed positively or negatively (e.g. Avramidis & Norwich, 2002). Numerous studies have examined teacher attitudes towards inclusion. In attitude research, it is common practice to measure attitudes using questionnaires (Dawes, 1972; Eagly & Chaiken, 1993; Oppenheim, 2000; Reid, 2006; Swamy, 2007). As a result, research examining teacher attitudes towards inclusion has predominantly adopted questionnaire methodologies. Some evidence suggests that teachers have positive attitudes towards inclusive education (e.g. Avramidis, Bayliss, & Burden, 2000; Avramidis & Kalyva, 2007; Segal & Campbell, 2012; MASKED FOR PEER-REVIEW), viewing inclusion as advantageous and enjoyable. On the other hand, others report attitudes to be neutral (e.g. Galovic, Brojcin, & Glumbic, 2014; Kuyini & Mangope, 2011; Memisevic & Hodzic, 2011) or negative (e.g. Alquraini, 2012; Rakap & Kacmarek, 2010; Symeonidou & Phtiaka, 2009; Thaver & Lim, 2014). This variability raises questions regarding the nature of teacher attitudes and few studies investigate why these attitudes differ. Instead, studies focus on describing attitudes rather than consider where these attitudes come from. This is problematic given that understanding teacher attitudes towards inclusion is often the starting point in the design of effective and efficient interventions to enhance teachers' inclusive behaviour. Synthesising the research to date and investigating moderating factors will shine light on the range of attitudes that teachers hold towards inclusion, as well as provide an opportunity to investigate underlying factors.

Scruggs and Mastropieri (1996) were the first to use meta-analysis to examine mainstream teachers' perceptions of inclusion. They transformed attitude measures into

percentages of teachers holding positive attitudes toward inclusion. Results from 28 studies demonstrated that around two thirds of the sample supported the concept of inclusion but a smaller number were willing to include a child with a disability in his or her classroom. Only around half of the sample believed there were benefits of inclusion.

It should be noted that Scruggs and Mastropieri's review included studies published between 1958 and 1995. The introduction of more legislation since this time and thus more opportunity for educators to become accustomed to successful inclusive practices may mean that findings today are very different. Moreover, the authors examined whether participants agreed or disagreed with inclusive education. While this is a useful dichotomy, there is a need to examine attitude strength (i.e. how positive or negative the attitudes were) by taking into account the range of attitude scores presented in each study. Another issue relates to our point above that the meta-analysis focused on the direction of teacher attitudes towards inclusion without investigating the origins of these attitudes. Identifying ways in which teachers form inclusive attitudes is key in developing interventions to enhance these beliefs. Enhancing these beliefs is required for teachers to start acting in an inclusive manner during their lessons. In addition to examining the nature of teacher attitudes towards inclusion, it is therefore important to identify factors which influence the direction and strength of these attitudes.

Given that inclusive education legislation is enforced globally, research on teacher attitudes towards inclusion has been conducted in many countries. Surprisingly, there is a dearth of research investigating the role culture might play in teacher attitudes towards inclusion. Leyser, et al. (1994) conducted a cross-cultural study of teacher attitudes towards inclusive education. Countries included in the study were the USA, Germany, Israel, Ghana, Taiwan and the Philippines. All participants completed the same questionnaire. Results suggested that there were differences in attitudes between countries with teachers in the USA

and Germany holding the most positive attitudes. Attitudes of teachers in the other nations represented were predominantly neutral. The most negative attitude score was obtained from Israeli teachers.

These findings suggest that there are country specific factors that affect teacher attitudes. Leyser and colleagues explained these findings by pointing out issues surrounding limited resources within specific schools and lack of teacher training. However, they ignored the possible influence of wider cultural factors. The countries in this study differ widely on Hofstede's (1984, 2001) cross-cultural paradigm and each of these factors could influence societal views towards minorities and children with disabilities. Hofstede argued that there are six values that together are a country's culture: power distance (the degree to which society accept that power is unequally distributed), individualism (how much individuals within a society are integrated into groups), masculinity (a society which prefers achievement, heroism, assertiveness and material rewards for success), uncertainty avoidance (the degree of tolerance for a society that is ambiguous), long term orientation (relates to associating the past with current and future actions or challenges) and indulgence (the amount of freedom that the society gives individuals). These components are commonly considered in cross-cultural research. To date, however, this framework has not been applied to examine cross-cultural factors impacting teacher attitudes towards inclusion. While there is debate on the internal consistency of these scales (Spector, Cooper, & Sparks, 2001), they have been shown to reliably predict other phenomena (Hofstede, 2001). Investigating the moderating effects of cultural factors in a meta-analysis is an easy way to gauge whether cultural factors play a role in attitudes towards inclusion, without the extensive fieldwork that an empirical research project attempting to measure these differences would entail. We set out to conduct a meta-analysis using the Leyser et al. paper as a starting point as this paper investigated attitudes towards inclusion in various countries, and as it is published close in

time to the meta-analysis by Scruggs and Mastropieri. This meta-analysis assesses the literature on inclusion since 1994, considers continuous scales to determine attitude strength and investigates moderating factors that could explain why attitudes between samples differ.

While investigating cultural factors is interesting and necessary, there are other factors that also need to be considered. For example, study characteristics such as year of publication, type of disability investigated and questionnaire response rate are potential moderators of attitudes towards inclusion. In relation to year of publication, it could be argued that with experience, teachers have become more confident and accustomed to inclusive education legalisation. Thus teacher attitudes may be more positive in recent publications. Although this is supported by some (Clough & Lindsay, 1991), others have found no effect of year of publication (Scruggs & Mastropieri, 1996). An updated investigation of this is needed. In addition, teacher attitudes towards inclusion are influenced by the child's disability type. Evidence suggests that teachers are more positive towards children with physical disabilities than those with behavioural or learning disabilities (e.g. Alghazo & Naggar Gaad, 2004; Lifshitz, & Naor, 2001). A problem with this relates to the issue of which disabilities are assessed. Many studies do not specify which disabilities teachers should consider when reporting their attitude and those that do often vary with regards to which specific disability they focus on.

The final study characteristic worth noting relates to response rate of the questionnaires. Selection bias can skew results from descriptive survey studies. This selection bias can both overestimate attitudes towards inclusion (when people with a negative or neutral opinion do not complete the survey), or underestimate these attitudes (when people with a negative opinion are more likely to complete the survey to ventilate criticism). By investigating possible the moderating effects of response rate, we can estimate the selection bias, which can inform future research on attitudes.

The nature of teacher attitudes is also impacted by participant characteristics such as type of teacher (i.e. practicing teacher or pre-service teacher), and teacher sex. While a number of studies focus specifically on practicing teachers' attitudes towards inclusion (e.g. Deng, 2008; MacFarlane & Woolfson, 2013; Malinen, Savolainen, & Jiacheng, 2012; Sheehy, & Budiyanto, 2015), others target pre-service teachers (e.g. Ahsan, Deppeler, & Sharma, 2013; Forlin & Chambers, 2011; Sharma, Moore, & Sonawane, 2009; Yuknis, 2015). Fewer studies consider both teacher types (e.g. Bradshaw & Mundia, 2006). Synthesis of this research is vital in understanding whether teacher type influences the nature of attitudes towards inclusion and subsequently whether changes in attitudes in the future are to be expected. The role of teacher sex has also been examined but has produced inconsistent findings. Some have found that male teachers hold more positive attitudes towards inclusion than their female counterparts (Ojok, & Wormnæs, 2013). However, others have found the opposite effect (e.g. Avramidis et al., 2000; Vaz et al., 2015) or no effect at all (Leyser, Kapperman, & Keller, 1994).

In addition to Hofstede's cultural framework, there is a need for study and sample characteristics to be included as moderators in a meta-analysis of teacher attitudes towards inclusion. In doing so, this brings us closer to understanding not only the nature of teacher attitudes but also the origins of these. Understanding the origin of teachers' attitudes towards inclusion allows for more successful evidence-based interventions which target teacher attitudes towards inclusion, improve teachers' use of inclusive strategies, and ultimately enhance children's educational experiences and achievements.

Current Study

To sum up, there are three gaps in the inclusion literature that need to be covered in order to design effective and efficient interventions to provide high quality education for

children with disabilities. 1) We need to determine teachers' general attitudes towards inclusive education. 2) We need conclusive evidence as to whether personal demographics (e.g. teacher sex; practicing teacher or pre-service teacher) influence teachers' attitudes. 3) We need to assess the impact of cultural factors on teachers' attitudes towards inclusion. To address these gaps, we conducted a meta-analysis of teacher attitudes towards inclusion to determine the direction and strength of teachers' attitudes towards inclusion. We then conducted moderator analyses to investigate potential individual and cultural factors that moderate these attitudes.

Methods

Search strategy

PsychINFO, Web of Science, PubMed, ERIC and SciencDirect databases were searched from 1 January 1994 up to 1 July 2019. The following search terms were used: Teacher* AND attitude* OR belief* AND inclusive education OR inclusion OR mainstream* OR child* with disability*.

Inclusion/exclusion criteria

To be included, studies needed to quantitatively investigate teachers' attitudes towards inclusion of children with disabilities (behavioural, intellectual or physical) in mainstream classrooms and focus on general classroom teachers or pre-service teachers in primary education. Only studies reported in English were included. The type of study design was not considered to be a criterion as we were interested in the baseline attitudes of (pre-) service teachers, rather than their attitudes after an intervention or experimental manipulation. Therefore, any measure of (pre-)service teachers' attitudes towards inclusion that took place *before* an experimental manipulation could be included, as well as studies that solely measured these attitudes. Studies were excluded if they 1) used a qualitative design, 2) did

not report attitudes, 3) focused on attitudes towards specific students the teachers engaged with, 4) used vignette studies to gauge responses in hypothetical situations, or 5) involved subject specific teachers rather than those who teach the whole curriculum. For 11 studies that did not report the required statistics to compute an effect size and study weight, authors were contacted for additional information. Authors who did not respond were contacted a second time. If authors could not be reached, did not reply, or could not provide the required information, their study was excluded from the analysis. In cases where moderating factors were not measured or reported, the study would be included in the meta-analysis, but not in the specific moderator analysis for which information was lacking.

Moderators

In addition to investigating the overall direction of attitudes towards inclusion, we used the existing literature to identify several relevant factors that might affect these attitudes. These moderators can broadly be categorised in dimensions: 1) Study characteristics, 2) sample characteristics, and 3) cultural factors. Relevant information relating to these moderators was extracted from the papers. The moderators were double-coded with consensus reached based on discussion in the case of disagreements between the coders. Initial agreement between coders ranged from 89% to 98% across variables.

Study characteristics

The study characteristics moderators are ‘year of publication’, ‘type of disability’, type of scale, and ‘study response rate’. To investigate the possibility that attitudes towards inclusion have changed over time, we included year of publication as a continuous moderator. The second study characteristic worth investigating is the type of disability that teachers are asked about. As most studies do not specify a disability, and the ones that do will

vary in which specific disability they focus on, this moderator is a dichotomous factor, where studies are either coded as 'general disability' or 'specific disability'. A third study characteristic is the type of attitude scale used. Across the sample, a variety of scales are used both in terms of items included, as well as answering possibilities. Some scales are devised for the purpose of the study, others studies use standardised scales measuring attitudes towards inclusion. To assess whether the type of scale moderates the attitudes towards inclusion, we added a dichotomous moderator where studies are coded as 'self-devised scale' or 'standardised scale'. The fourth study characteristic that was used as a moderator is the response rate of the surveys used to measure attitudes towards inclusion. Most studies used convenience sampling for their data collection. By running response rate as a separate moderator analysis, we can investigate whether a form of self-selection bias might affect the overall attitudes, which would have implications for the trust that can be put in the findings.

Sample characteristics

The sample characteristics of interest are 'type of teacher', and teacher sex, depicted as 'percentage of male teachers'. There are two types of teachers that are surveyed in the sample, primary school teachers, and pre-service teachers. Pre-service teachers are included in the meta-analysis as they are the teachers of the future. They will receive the most up to date education about teaching practices, societal views on morality and ethics, and practical tools to include students with disabilities in mainstream schools. Therefore, a dichotomous moderator (pre-service teacher or primary school teacher) is added as moderator.

There might also be sex differences in attitudes towards inclusion. To test this, the sex distribution of the sample can be added as a moderator. As most of the literature reports samples with a majority of females, with some samples not including any men, the percentage of men in each sample is used as moderator to investigate possible sex differences

in relation to inclusion attitudes. The percentage of male teachers is calculated based on information provided. When only information about a larger sample was provided, these numbers were used to estimate number of male/female teachers in the sample used for the meta-analysis.

Cultural factors

The literature included in the present research consists of studies carried out in a wide range of countries. As a result, cultural effects that influence attitudes can be tested through moderator analysis. We use Hofstede's cultural dimensions to create six cultural moderators: power distance, individualism, masculinity, uncertainty avoidance, long term orientation and indulgence (Hofstede, 2010; Hofstede, Neuijen, Ohayv, & Sanders, 1990). Hofstede's categorisation translates cultural dimensions on nation level into six scores from 0-100, each of which is used as a continuous moderator in our meta-analysis. For each included study, the country where the study was conducted was recorded and the scores on the six cultural dimensions were obtained through the country comparison tool on Hofstede's website (www.hofstede-insights.com). The included studies were conducted in 36 different countries. The moderator analysis for each cultural factor only included studies for which the dimension scores could be obtained. All six dimension scores were available for 25 countries, with a further 4 countries receiving partial scores (Jamaica, Kuwait and United Arab Emirates on all factors but long term orientation and indulgence, and Israel on all factors but indulgence), and 7 countries receiving no scores (Bosnia and Herzegovina, Botswana, Brunei, Cyprus, Seychelles, Uganda and Zimbabwe).

Meta-analysis strategy

The studies in the sample report attitudes towards inclusion on different scales such as overall mean scores on a four or five-point Likert scales, as a sum score, or as mean scores per item. For each study, the sample mean and standard deviation were extracted. If a study reported multiple means and standard deviations (e.g. mean score per item, or different subscales), these were transformed into a single mean and standard deviation by averaging the means and pooling the standard deviations. Then, the resulting mean scores were standardised in order to obtain an effect size and to calculate the variance. As the outcomes of the studies are means, standard deviations and sample sizes for a single group, a reference category is needed to calculate an effect size. The neutral point of the scale was used for this purpose. For studies reporting means and standard deviations on item level with an odd number of answering options, the coding for the neutral option was used as neutral point (e.g. three in a five-point Likert-scale ranging from totally disagree to totally agree). For studies reporting on item level with an even number of answering options, the mathematical neutral value was used (e.g. 2.5 in a four-point Likert scale ranging from totally disagree to totally agree). For studies reporting total scores across a scale or questionnaire, the neutral value for a single item was multiplied by the total number of items to calculate the neutral point. Then, the effect size was calculated as: d = (Mean - Neutral Point)/Standard Deviation. The effect size should be positive if the sample holds a positive attitude towards inclusion of students with disabilities in mainstream schools, and negative if they hold a negative attitude. To achieve this, the calculated effect size was multiplied by -1 for samples where a higher score depicted a more negative attitude. The sampling variance was estimated as follows: Variance = $1/n + d^2/(2*n)$. The inverse variance is used as weighing factor for each study. Given the variety in methods used and samples collected across studies, we decided to fit a random-effects model to the data with moderator analyses carried out. The metafor-package for R was used to run the analysis (Viechtbauer, 2010).

To investigate the robustness of the findings, we tested for publication bias using the trim and fill method (Duval & Tweedie, 2000b, 2000a). This method assesses the possibility of missing studies due to a lack of symmetry in the distribution of the included effect sizes. Using this function in the metafor-package results in both a visualisation of this possible symmetry, as well as an estimation of the number of effect sizes missing. It then estimates what the effect size would be if those samples were included in the meta-analysis. We adopted this method as it not only determines whether or not there is a publication bias, but it also provides insights into the extent of the publication bias.

To further test the robustness of the findings, we conducted a sensitivity analysis in the form of the leave-one-out method where the meta-analysis is run, excluding one sample at a time to see whether any single sample drives or alters the overall effect and/or significance level.

Results

Search results

The systematic literature search resulted in 50 papers that reported attitude measurements of 64 samples for which effect sizes could be calculated. For an overview of the study selection process, see the PRISMA flowchart in Figure 1, for the characteristics of all included samples, see Table 1.

[Insert Figure 1 about here]

[Insert Table 1 about here]

Overall effect

The 64 comparisons were the basis for our meta-analysis. We decided to fit a random-effects model to the data given the differences in samples and methods used. A Q-test

supported this decision, showing considerable heterogeneity in effect sizes ($Q(63) = 7356.28$, $p < .0001$). We found a medium sized, positive effect indicating that overall, teachers hold positive attitudes towards inclusion of children with disabilities in mainstream schools. ($d_+ = 0.51$, 95%CI [0.31, 0.71]). See Figure 2 for a forest plot of the included studies.

[Insert Figure 2 about here]

Publication bias

As the studies in the meta-analysis report attitudes towards inclusion, rather than experimental effects or relationships, we did not expect to find a publication bias, and indeed no such bias was detected as the trim and fill method estimated zero additional studies were expected (see the funnel plot in Figure 3).

[Insert Figure 3 about here]

Sensitivity analysis and selection bias

To test whether any single study had a substantial influence on the overall effect size, we carried out a sensitivity analysis using the leave-one-out method. This method calculates what the overall effect would be if any single study was left out of the sample. Applying this method to the attitudes data showed no categorical changes in effect size (e.g. from a medium effect to a large effect) and no changes in level of significance.

To test the possible influence of a selection bias on the overall effect, we ran a moderator analysis of the response rate for each sample. As there were many missing values, we ran this moderator on a subgroup of 32 samples. No significant effect of response rate on teachers' attitude was found $Q(1) = 0.60$, $p = 0.44$).

Moderators

We set out to test a model that included all moderators. However, there were missing values in various moderator variables either due to individual studies not measuring or reporting the values for the moderators (e.g. the sex of the participants), or the cultural dimension values not being available for the countries in which the studies were carried out. Including all moderators reduces the number of included samples in the model from 64 to 38. As this would lead to a significant loss of data, we opted for a two-way approach in which we analysed the impact of the moderators both through a model that includes all moderators, and can therefore account for interaction effects, as well as through separate tests for each individual moderator. This offers the opportunity to assess both the effects of individual moderators on a larger number of samples, as well as possible interaction effects of moderators. Below, the results of this two-way approach are discussed per moderator. For a side-by-side comparison of the two approaches, see Table 2.

[Insert Table 2 about here]

Year of publication

Tested individually, attitudes seem to become more positive over time, as the year of publication as moderator shows a significant effect on attitudes towards inclusion ($d_+ = 0.03$, *95%CI* [0.00, 0.06], $Q(1) = 4.22$, $p = 0.04$). However, this effect disappears when including all moderators ($Z_{\text{score}} = 0.73$, $d_+ = 0.02$, *95%CI* [-0.03, 0.06], $p = 0.46$).

Pre-service or primary school teachers

While student teachers show more positive attitudes towards inclusion ($d_+ = 0.66$, 95%CI [0.34, 0.97]), than primary school teachers ($d_+ = 0.41$, 95%CI [0.15, 0.67]), this

difference is not significant ($Q(1) = 1.36$, $p = 0.24$). When taking into account the other moderators, there is a marginally significant effect, with pre-service teachers showing more positive attitudes towards inclusion than primary school teachers ($Z_{score} = 1.71$, $d_{diff} = 0.51$, 95%CI [-0.07, 1.10], $p = .09$).

Teacher Sex

There is a marginally significant negative moderating effect of the percentage of male participants on attitudes towards inclusion by itself ($d_+ = -0.01$, 95%CI [-0.02, 0.00], $Q(1) = 3.11$, $p = .08$) and when all moderators are included ($Z_{score} = -1.93$, $d_+ = -0.02$, 95%CI [-0.03, 0.00], $p = .05$). This suggests that men might hold more negative attitudes towards inclusion than women.

Type of disability

Most of the studies in this meta-analysis report attitudes that are related to general disabilities, without providing examples of specific disabilities that teachers should keep in mind while answering the attitude questions. We find that studies focusing on a specific disability ($d_+ = 0.58$, 95%CI [0.08, 1.08]) show more positive attitudes than studies asking about attitudes regarding disabilities in general ($d_+ = 0.49$, 95%CI [0.27, 0.72]), but this difference is not significant ($Q(1) = 0.10$, $p = 0.75$). There is also no significant effect of type of disability in the model that includes all moderators ($Z_{score} = 0.71$, $d_{diff} = 0.28$, 95%CI [-0.49, 1.05], $p = .47$).

Scale type

The majority of samples ($k = 49$) report attitudes towards inclusion on standardised scales, with a smaller set of samples ($k = 15$) using scales specifically designed for the

described research project. The effect size of samples with own scale measurements is larger than samples completing standardised measurements ($d_+ = 0.68$ versus $d_+ = 0.46$), but this effect is not significant ($Q(1) = 0.86$, $p = .35$). The type of scale is also not a significant moderator when all moderators are included ($Z_{score} = 0.31$, $d_{diff} = 0.10$, 95%CI [-0.51, 0.70], $p = .76$).

Cultural dimensions

When investigated individually, four of the six cultural dimensions show significant effects: power distance, individualism, uncertainty avoidance and indulgence. Of these four dimensions, positive effects are found for individualism ($d_+ = 0.02$, $Q(1) = 39.95$, $p < .0001$) and indulgence ($d_+ = 0.02$, $Q(1) = 12.48$, $p < .0001$), while power distance ($d_+ = -0.02$, $Q(1) = 13.94$, $p < 0.0001$) and uncertainty avoidance ($d_+ = -0.01$, $Q(1) = 4.56$, $p = 0.03$) show negative effects. When all moderators are included in the model, only individualism shows a significant moderating effect ($Z_{score} = 2.05$, $d_+ = 0.02$, 95%CI [0.00, 0.03], $p = .04$), with masculinity showing a marginally significant effect ($Z_{score} = 1.86$, $d_+ = 0.02$, 95%CI [0.00, 0.04], $p = .06$). Both factors show positive effects, meaning that increases in countries' scores on these variables is related with more positive attitudes towards inclusion of children with disabilities in mainstream schools. Including the cultural factors vastly increases the amount of heterogeneity accounted for, indicating the importance of culture when investigating teachers' attitudes towards inclusion. When including all moderators bar the cultural factors, only a small amount of heterogeneity is accounted for, $R^2 = 9.39\%$. Including the cultural factors results in a large amount of heterogeneity accounted for with $R^2 = 45.62\%$.

Discussion

The results of the meta-analysis show that teachers hold a positive attitude towards inclusion of students with disabilities in mainstream schools. These attitudes are likely the result of a complex interplay of various demographic and cultural factors. The findings show that the common practice of testing single demographic factors in empirical studies (e.g. subgroup analysis of attitudes of men and women) is unlikely to produce significant differences, while considering a range of factors together can provide insights into underlying mechanisms and individual differences. The moderating effects of cultural factors are evidence that attitudes towards inclusion do not occur in a vacuum, but are a product of societal, and possibly historical, artefacts that shape society and inform common values. The fact that only individualism shows a significant effect when taking into account all moderators (with masculinity showing a marginally significant effect), suggests that the cultural factors cannot be investigated in a vacuum either and that taking into account all cultural factors together is key in understanding where these attitudes towards inclusion stem from.

Our findings indicated that overall, teachers' hold a positive attitude towards inclusion. This provides evidence to suggest that teachers view inclusion as advantageous and enjoyable. Previous studies have produced contradictory results with some reporting positive attitudes among teachers (e.g. Avramidis et al., 2000; Avramidis & Kalyva, 2007; Segal & Campbell, 2012; MASKED FOR PEER-REVIEW), others' reporting neutral attitudes (e.g. Galovic et al., 2014; Kuyini & Mangope, 2011; Memisevic & Hodzic, 2011) and others finding teachers are negative towards inclusion (e.g. Alquraini, 2012; Rakap & Kacmarek, 2010; Symeonidou & Phtiaka, 2009; Thaver & Lim, 2014). Given this previous inconsistency, our finding is important and offers clarity to a previously unclear area. When studies are examined as a whole, teachers are positive towards working with children with

disabilities. This is an encouraging finding given that teachers are at the forefront of inclusion and can influence the child's educational experience.

The finding of an overall positive attitude differs from that of Scruggs and Mastropieri's (1996) meta-analysis. They found that only around half of the sample believed there were benefits of inclusion suggesting a neutral attitude towards inclusion. The present meta-analysis shows positive attitudes for two-third the samples (44 out of 64 samples) with effect sizes of the positive attitude samples being larger than samples with negative attitudes in an absolute sense. The difference in findings may be a result of the time between publications. Increased inclusive legislation, more awareness of inclusion within teacher education programmes (Symeonidou, 2017) and thus more opportunity for educators to work with children with disabilities in mainstream schools may have contributed to this shift in attitudes over time.

Our findings also indicated a role of culture. Specifically, when taking into account all moderators, we found a significant effect of countries' scores on Hofstede's (1984, 2001) cultural dimension of individualism showed more positive attitudes towards inclusion of children with disabilities in mainstream schools. This finding extends Leyser et al's (1994) who, in their cross-cultural inclusive education study, found differences in teacher attitudes as a result of the country teachers worked in. While one might expect collectivistic cultures to be more inclusive, as they consider the collective to be more important than the individual, the finding of a positive effect of individualism suggests that individual societies are more open to including children with special educational needs in their classrooms, perhaps because the individuality of those cultures reduces perceived potential negative effects such an inclusion would have on other children. The precise workings of this cultural moderator remain unclear and further, empirical, research is needed to understand this relationship.

Our meta-analysis is the first to provide evidence that teachers' attitudes towards inclusion differ on on Hofstede's (1984, 2001) cross-cultural paradigm. The finding that individualism significantly moderates attitudes towards inclusion, as well as the finding that four of the six dimensions (i.e. power distance, individualism, uncertainty avoidance and indulgence) show significant moderating effects when tested individually, has implications for future research. We recommend future studies examining teacher perceptions control for cultural factors given the important role the play in influencing attitudes in this context.

The significant cultural effects also imply that interventions proven to be effective in some countries do not necessarily translate to similar levels of success in other parts of the world. One suggestion would be to investigate whether making cultural values such as individualism salient changes inclusion attitudes. This would be a next step in designing interventions aimed at changing teachers' attitudes towards inclusion.

Our results also showed that individually, demographic variables (pre-service or primary school teachers, teacher sex and type of disability) did not impact on the nature of teachers' attitudes towards inclusion. The finding that type of teacher on its own is not a moderator of teacher attitudes is useful given that most studies opt to examine practicing teachers' attitudes (e.g. Deng, 2008; MacFarlane & Woolfson, 2013; Malinen et al., 2012; Sheehy, & Budiyanto, 2015) or pre-service teacher attitudes (Ahsan et al., 2013; Forlin & Chambers, 2011; Sharma et al. 2009; Yuknis, 2015) rather than both. Our findings also indicate that when examined individually, teacher sex might moderate attitudes, but the effect is only marginally significant. The impact of teacher sex on inclusive attitudes has produced mixed results to date (e.g. Avramidis et al., 2000; Leyser et al., 1994; Ojok, & Wormnæs, 2013; Vaz et al., 2015). We argue that as individual variables, demographics are not likely to influence perceptions towards inclusion. However, it needs to be acknowledged that our findings suggest that in the bigger picture, when multiple moderators are taken into account,

individual differences might play a role. This suggests a need for future research to examine the interplay between demographic variables.

Implications

Our findings have important implications for inclusive practice and policy. The finding that teachers hold positive attitudes towards inclusion should encourage policy makers that mainstream schooling staff are accepting of children of all abilities. The importance of culture suggests that interventions aimed at enhancing or supporting teachers' inclusive beliefs or behaviour need to take this into account. If cultural aspects are included when attempting to influence attitudes towards inclusion, interventions may be more successful. Further, although inclusive education is mandated internationally, we cannot expect all teachers across cultures to view this in the same way and automatically be on board. This suggests that interventions aimed at enhancing teacher beliefs towards inclusion may be cultural specific. Finally, the role of demographic variables on teacher attitudes also hints that there may be a need to design interventions specifically aimed at various subgroups of the teacher population. Decision-makers in relation to teacher education should use such findings when designing appropriate inclusive education training.

Our findings are not only relevant for teachers, policy makers and those interested in designing interventions to improve inclusion practices, but also for other populations such as children with special educational needs, their classmates and family. The positive views of teachers towards inclusive education might be echoed by children's peers and family. Future research into the role of cultural and demographic factors on their attitudes towards inclusion can not only be used to confirm or contradict our current findings, but also provide new insights in how to best shape the learning experience for children with special educational needs in mainstream schools.

Limitations

While the meta-analysis identifies significant moderators that have not previously been considered in this field, thereby providing new avenues of research and possible starting points for interventions, there are four limitations to our findings. One limitation is the relatively high level of missing data in our moderator codings. This is due to a lack of measurements of some moderating factors on a study level. Additionally, while the values for the six cultural factors in Hofstede's paradigm are available for many countries, here too missing data resulted in lower numbers of studies that could be included in the combined model. As around 40 per cent of the comparisons had to be removed to run the combined model, it is possible that this introduced some bias to our findings in that part of the analysis. However, the significant moderating effects of cultural factors in both the single moderator tests as well as the significant moderating effect of individualism in the combined model strengthen our belief that culture plays an important role in teachers' attitudes towards inclusion.

The second limitation is that while the proportion explained variance was five times higher when including the cultural factors in the moderator model (45% versus 9%), there is still variance that was not accounted for. One possibility is that there is a moderating effect of teacher age. We did not include this factor as a moderator due to the wide range in measurement styles on a study level, where some studies measured age in years while others used age bands, years of working experience, or working experience in age bands, if some form of age was measured at all. Future empirical research could test possible age effects and identify other moderating factors.

The third limitation is the measurement of the attitudes. While there was a subgroup of studies using the same attitude scales (e.g. the ATIES), there was a wide range of attitude measurements across the studies, which might have caused measurement invariance or a

possible measurement error based on the answering possibilities and differences in number of items included in the attitude scales. While we did not find significant differences in effect size between samples that used standardised scales, or samples that completed scales that were devised for that specific study, we cannot rule out that these differences have had a (small) effect.

Finally, the meta-analysis did not differentiate between different disability types. The majority of studies included opted to measure disabilities in general with only a smaller number focusing on specific disabilities. This meant we could not check for differences among various disabilities. This is problematic given that certain disabilities (e.g. intellectual disabilities and socio-emotional disorders) can cause aversive reactions from teachers. Future research examining teacher attitudes towards different disabilities is warranted.

Conclusion

We conducted a meta-analysis of teacher attitudes towards inclusive education. The results showed that attitudes towards inclusion are the result of a complex interplay of demographic and cultural factors, which offers a renewed basis for intervention research into improving educational opportunities for children around the world. The identification of the influence of cultural factors suggests that interventions can be more successful if these cultural aspects are included when attempting to influence attitudes towards inclusion. The significant cultural effects also imply that interventions proven to be effective in some countries do not necessarily translate to similar levels of success in other parts of the world. Furthermore, the combined model of demographic variables suggests specific subgroups of teachers may benefit most from intervention. The study brings us closer to understanding the nature of teacher attitudes towards inclusion and can inform the development of interventions aimed at enhancing these beliefs.

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Figure and table captions

Figure 1. Flow chart for identification of relevant studies.

Figure 2. Forest plot of all included samples.

Figure 3. Funnel plot of all included samples.

Table 1. Characteristics of included studies.

Table 2. Overview of moderator and subgroup analysis.

Authors	Year	Type of teachers	Country	Type of disability	Self-developed scale	Sample size	Response rate	Percentage Male Teachers	Power distance	Individualism	Masculinity	Uncertainty avoidance	Long-term orientation	Indulgence	Effect Size
Ahmmed et al.	2014	In-service teachers	Bangladesh	General	No	708	53.2	39.41	80	20	55	60	47	20	-0.80
Ahsan et al.	2013	Pre-service teachers	Bangladesh	General	No	890	N/A	38.90	80	20	55	60	47	20	0.53
Alghazo & Naggar Gaad	2004	In-service teachers	United Arab Emirates	General	Yes	152	60.8	42.11	90	25	50	80	N/A	N/A	-0.59
Alquraini	2012	In-service teachers	Saudi Arabia	Specific	No	175	66.0	53.76	95	25	60	80	36	52	-0.08
Avramidis & Kalyva	2007	In-service teachers	Greece	General	No	155	N/A	48.39	60	35	57	100	45	50	0.57
Avramidis et al.	2000	Pre-service teachers	United Kingdom	General	No	128	N/A	51.85	35	89	66	35	51	69	1.09
Bender et al.	1995	In-service teachers	United States of America	General	Yes	127	91.7	7.87	40	91	62	46	26	68	0.61
Bradshaw & Mundia	2006	Pre-service teachers	Brunei	General	No	46	N/A	28.92	N/A	N/A	N/A	N/A	N/A	N/A	0.46
Civitillo et al.	2016	Pre-service teachers	The Netherlands	General	Yes	139	N/A	12.20	38	80	14	53	67	68	0.04
Deluca et al.	2014	In-service teachers	Zimbabwe	General	Yes	183	N/A	40.98	N/A	N/A	N/A	N/A	N/A	N/A	0.97
Deng	2008	In-service teachers	China	General	Yes	223	88.5	39.10	80	20	66	30	87	24	0.37
Desombre et al.	2019	In-service teachers	France	General	No	401	N/A	19.96	68	71	43	86	63	48	1.28
Emam & Mohamed	2011	In-service teachers	Egypt	General	No	95	N/A	N/A	70	25	45	80	7	4	-0.07

Forlin & Chambers	2011	Pre-service teachers	Australia	General	No	67	N/A	2.90	36	90	61	51	21	71	0.96
Gaines & Barnes	2017	In-service teachers	United States of America	General	No	23	N/A	N/A	40	91	62	46	26	68	1.93
Galovic et al.	2014	In-service teachers	Serbia	General	No	322	80.0	11.80	86	25	43	92	52	28	-0.10
Gupta & Tandon	2018	Pre-service teachers	India	General	No	300	N/A	11.67	77	48	56	40	51	26	1.85
Kalyva et al.	2007	In-service teachers	Serbia	General	No	72	90.0	16.67	86	25	43	92	52	28	-0.12
Kurniawati et al.	2012	In-service teachers	Indonesia	General	Yes	207	N/A	N/A	78	14	46	48	62	38	1.81
Kuyini & Mangope	2011	Pre-service teachers	Botswana	General	No	87	N/A	63.22	N/A	N/A	N/A	N/A	N/A	N/A	0.16
Kuyini & Mangope	2011	Pre-service teachers	Ghana	General	No	115	N/A	63.48	80	15	40	65	4	72	0.24
Leyser & Romi	2008	Pre-service teachers	Israel	General	No	1145	N/A	12.89	13	54	47	81	38	N/A	1.00
Leyser et al.	1994	In-service teachers	Israel (non-kibbutz)	General	No	459	65.0	N/A	13	54	47	81	38	N/A	-0.57
Leyser et al.	1994	In-service teachers	Philippines	General	No	1077	80.0	N/A	94	32	64	44	27	42	-0.18
Leyser et al.	1994	In-service teachers	Ghana	General	No	725	75.0	N/A	80	15	40	65	4	72	-0.09
Leyser et al.	1994	In-service teachers	Israel (kibbutz)	General	No	159	65.0	N/A	13	54	47	81	38	N/A	0.04
Leyser et al.	1994	In-service teachers	Taiwan	General	No	593	75.0	N/A	58	17	45	69	93	49	0.07

Leyser et al.	1994	In-service teachers	Germany	General	No	140	66.0	N/A	35	67	66	65	83	40	0.76
Leyser et al.	1994	In-service teachers	United States of America	General	No	486	44.0	N/A	40	91	62	46	26	68	1.08
Lifshitz & Naor	2001	Pre-service teachers	Israel	Specific	No	103	76.2	1.90	13	54	47	81	38	N/A	0.30
MacFarlane & Woolfson	2013	In-service teachers	United Kingdom	Specific	No	111	32.5	5.41	35	89	66	35	51	69	1.03
Main et al.	2016	In-service teachers	Seychelles	General	No	43	86.1	4.65	N/A	N/A	N/A	N/A	N/A	N/A	0.18
Malinen et al.	2012	In-service teachers	China	General	No	451	N/A	13.09	80	20	66	30	87	24	0.47
Masked for peer review 1	XXXX	In-service teachers	XXXX	Specific	Yes	145	N/A	15.17	35	89	66	35	51	69	2.09
Masked for peer review 2	XXXX	In-service teachers	XXXX	Specific	No	35	N/A	17.00	35	89	66	35	51	69	1.83
McWhirter et al.	2016	Pre-service teachers	United States of America	General	No	119	96.0	22.13	40	91	62	46	26	68	1.89
Memisevic & Hodzic	2011	In-service teachers	Bosnia and Herzegovina	Specific	No	194	84.3	28.35	N/A	N/A	N/A	N/A	N/A	N/A	0.41
Ojok & Wormnæs	2013	In-service teachers	Uganda	Specific	No	125	96.2	69.42	N/A	N/A	N/A	N/A	N/A	N/A	-0.69
Parey	2019	In-service teachers	Trinidad	General	No	410	58.7	18.29	47	16	58	55	13	80	-0.33
Rakap & Kaczmarek	2010	In-service teachers	Turkey	General	No	194	38.8	57.22	66	37	45	85	46	49	-0.22
Salih & Al-Kandari	2007	Pre-service teachers	Kuwait	Specific	No	30	71.4	0.00	90	25	40	80	N/A	N/A	-0.86

Salih & Al-Kandari	2007	Pre-service teachers	Kuwait	Specific	No	31	68.9	0.00	90	25	40	80	N/A	N/A	-0.69
Samms	2017	In-service teachers	Jamaica	General	No	191	N/A	8.90	45	39	68	13	N/A	N/A	-0.11
Segall & Campbell	2012	In-service teachers	United States of America	Specific	Yes	53	73.0	15.60	40	91	62	46	26	68	2.26
Sharma & Nuttal	2016	Pre-service teachers	Australia	General	No	30	N/A	16.70	36	90	61	51	21	71	2.17
Sharma & Sokal	2015	Pre-service teachers	Canada	General	No	60	N/A	15.00	39	80	52	48	36	68	1.64
Sharma & Sokal	2015	Pre-service teachers	Australia	General	No	25	N/A	16.00	36	90	61	51	21	71	2.22
Sharma et al.	2009	Pre-service teachers	India	General	No	478	N/A	51.57	77	48	56	40	51	26	-0.55
Sharma et al.	2006	Pre-service teachers	Hong Kong	General	No	470	N/A	24.89	68	25	57	29	61	17	0.05
Sharma et al.	2006	Pre-service teachers	Singapore	General	No	97	N/A	24.74	74	20	48	8	72	46	0.27
Sharma et al.	2006	Pre-service teachers	Australia	General	No	292	N/A	25.00	36	90	61	51	21	71	0.99
Sharma et al.	2006	Pre-service teachers	Canada	General	No	201	N/A	24.88	39	80	52	48	36	68	1.33
Sheehy & Budiyanto	2015	Pre-service teachers	Indonesia	General	Yes	87	N/A	N/A	78	14	46	48	62	38	-0.18
Sheehy & Budiyanto	2015	In-service teachers	Indonesia	General	Yes	53	N/A	N/A	78	14	46	48	62	38	0.43
Subban & Mahlo	2017	Pre-service teachers	Australia	General	No	63	47.0	37.00	36	90	61	51	21	71	1.08

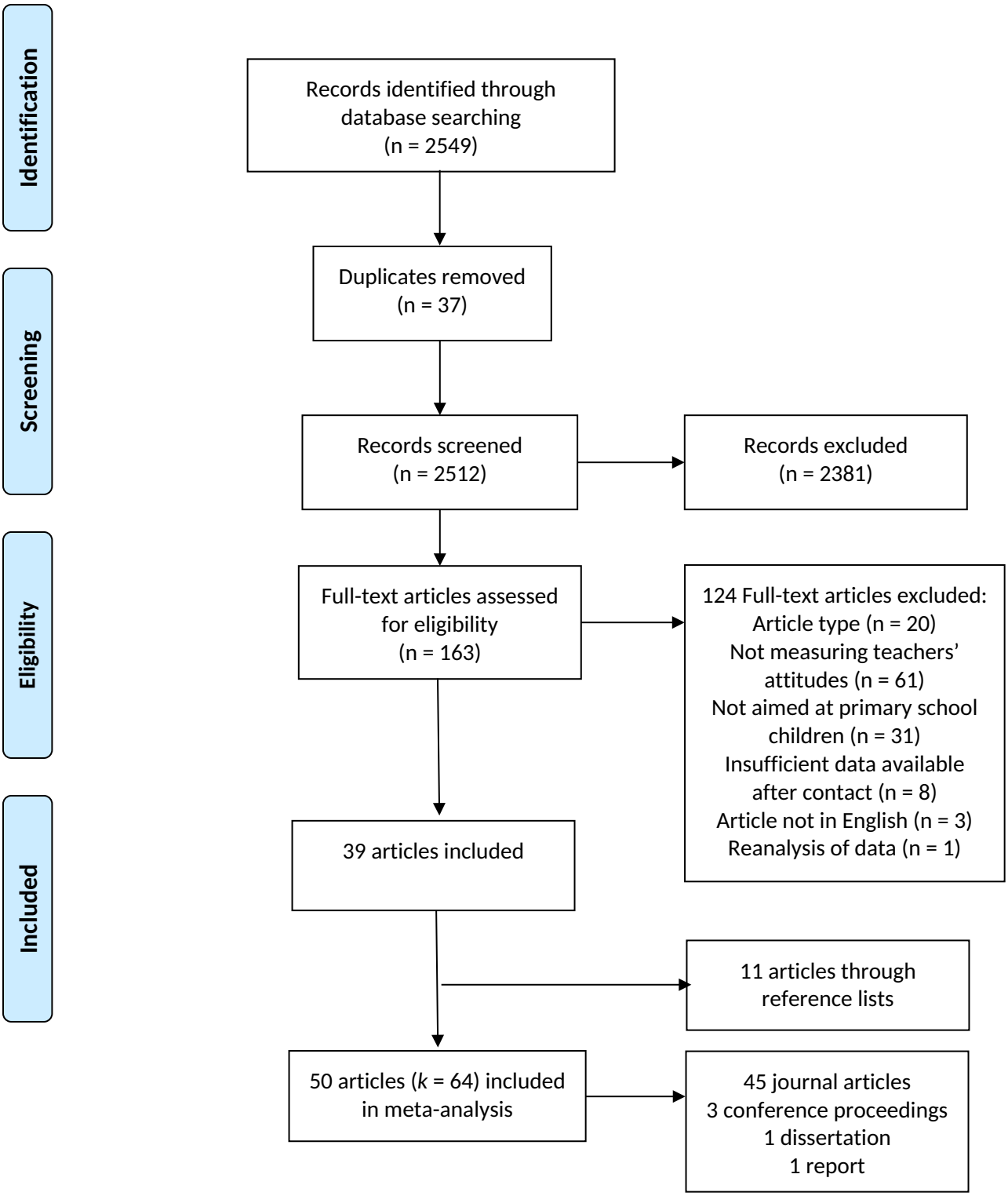
Subban & Mahlo	2017	Pre-service teachers	South-Africa	General	No	64	53.0	20.00	49	65	63	49	34	63	0.21
Symeonidou & Phtialka	2009	In-service teachers	Cyprus	General	Yes	521	41.5	14.59	N/A	N/A	N/A	N/A	N/A	N/A	-0.46
Thaver & Lim	2014	Pre-service teachers	Singapore	General	No	1538	86.9	33.29	74	20	48	8	72	46	0.31
Unianu	2012	In-service teachers	Romania	General	Yes	126	100.0	14.29	90	30	42	90	52	20	0.32
van der Veen et al.	2010	In-service teachers	Netherlands	General	Yes	2519	N/A	N/A	38	80	14	53	67	68	2.00
Vaz et al.	2015	In-service teachers	Australia	General	No	74	30.0	43.24	36	90	61	51	21	71	-0.27
Yada & Savolainen	2017	In-service teachers	Japan	General	No	359	N/A	43.70	54	46	95	92	88	42	0.52
Yan & Sin	2014	In-service teachers	Hong Kong	General	Yes	498	N/A	24.94	68	25	57	29	61	17	-0.22
Yuknis	2015	Pre-service teachers	United States of America	Specific	Yes	18	100.0	22.22	40	91	62	46	26	68	0.98

Table 1. Characteristics of included studies.

	Individual moderator and subgroup tests						Model including all moderators (*k* = 38)				
Moderator	***k***	***d***	***95%Ci lower limit***	***95%Ci upper limit***	***Z-value***	***p-value***	***d***	***95%Ci lower limit***	***95%Ci upper limit***	***Z-value***	***p-value***
Year of publication	64	0.0286	0.0013	0.0559	2.0539	0.04	0.015	-0.026	0.056	0.73	0.4645
Teacher Type							0.514	-0.074	1.102	1.71	0.0864
Primary School Teacher	38	0.4094	0.1475	0.6714	3.0638	0.0022					
Student Teacher	26	0.6553	0.3360	0.9746	4.0228	<.0001					
Teacher Sex	51	-0.0112	-0.0237	0.0012	-1.7643	0.0777	-0.015	-0.030	0.000	-1.94	0.0528
Type of Disability							0.280	-0.488	1.048	0.71	0.4749
Specific	11	0.5814	0.0823	1.0804	2.2832	0.0224					
General	53	0.4940	0.2696	0.7183	4.3158	<.0001					
Scale							0.096	-0.506	0.697	0.31	0.7554
Devised Scale	15	0.6823	0.2626	1.102	3.1862	0.0014					
Standard Scale	49	0.4552	0.2228	0.6875	3.8398	0.0001					
Cultural Dimensions											
Power Distance	57	-0.0161	-0.0246	-0.0077	-3.733	0.0002	0.017	-0.014	0.048	1.09	0.2742
Individualism	57	0.0184	0.0127	0.0241	6.3206	<.0001	0.017	0.001	0.032	2.05	0.0402
Masculinity	57	0.0136	-0.0037	0.0309	1.5428	0.1229	0.020	-0.001	0.041	1.86	0.0632
Uncertainty Avoidance	57	-0.0106	-0.0203	-0.001	-2.1355	0.0327	0.003	-0.009	0.015	0.43	0.6666
Long-Term Orientation	53	-0.0031	-0.0132	0.0069	-0.6149	0.5387	0.005	-0.009	0.019	0.73	0.4635
Indulgence	49	0.0184	0.0082	0.0286	3.5333	0.0004	0.012	-0.011	0.034	0.99	0.3240

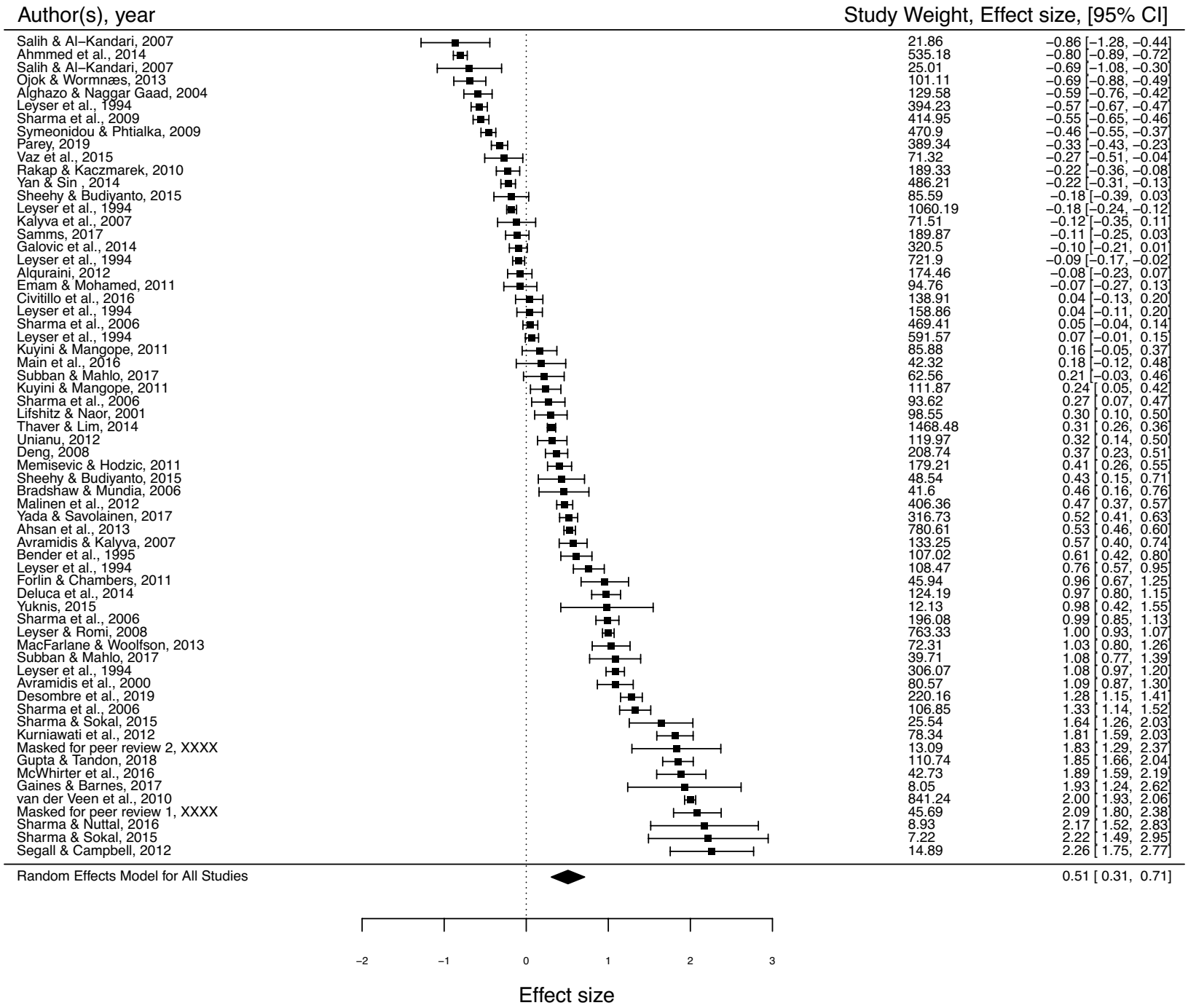
Table 2. Overview of moderator and subgroup analysis.

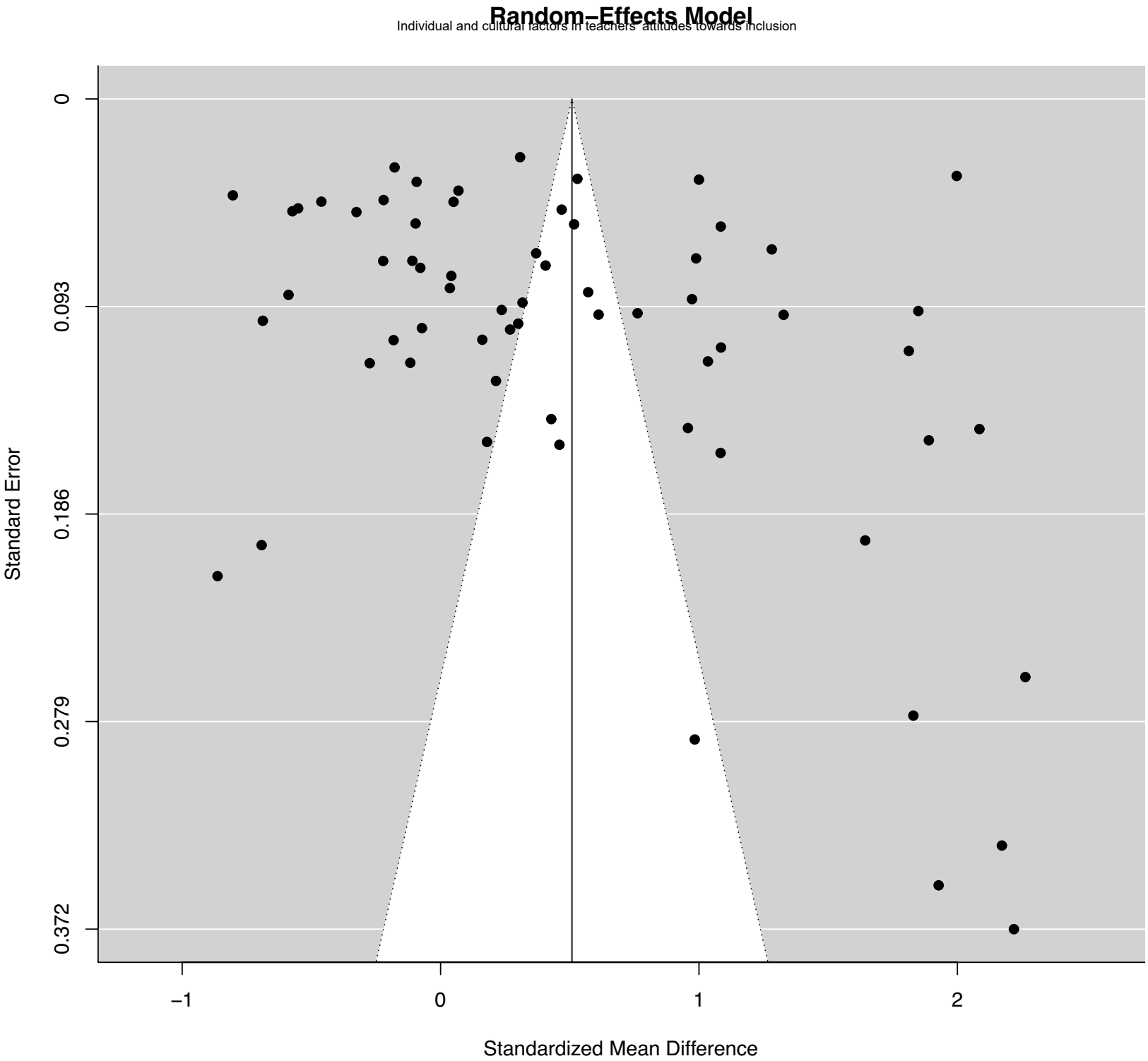
Figure 1. PRISMA Flow Diagram



Overview Studies

Individual and cultural factors in teachers' attitudes towards inclusion




Random−Effects Model
Individual and cultural factors in teachers' attitudes towards inclusion
Standard Error
0
0.093
0.186
0.279
0.372
−1
0
1
2
Standardized Mean Difference