

Art. #2212, 12 pages, <https://doi.org/10.15700/saje.v43n1a2212>**Effect of inclusive practices on attitudes: A meta-analysis study****Nazlı Sıla Yerliyurt Günay** Celal Ece Kindergarten, Kastamonu/Cide, Turkey
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With the study reported on here we aimed to synthesise recent quantitative research to specify the effect of inclusive practices on attitudes via meta-analysis. Since attitudes have an integral role in the performance of inclusion programmes, within the scope of the study, the cumulative findings of experimental studies conducted on attitudes towards inclusive practices were reinterpreted. To this end, studies with a pretest-posttest control group carried out in 2000 and 2021 were scanned from databases according to the inclusion criteria. After the search process, 23 studies that met the inclusion criteria were selected from 54 studies. The overall sample size of the studies included 2,016 participants. The mean effect size calculations, heterogeneity test, moderator analyses and publication bias analyses were conducted through a comprehensive meta-analysis programme (CMA 3.0). The findings that were discussed in accordance with the random effects model (REM) suggest that inclusive practices have a positive effect on attitudes and this effect is at a large level ($g = 1.328$) with respect to Cohen's classification. This result indicates that inclusive practices have been strongly influenced by positive attitudes to yield favourable results. According to the moderator analyses, the highest effect sizes were found in the teachers' group ($g = 1,880$) according to group level and in primary education ($g = 1,374$) according to school grades. The attitudes towards inclusion have been strongly influenced by teachers' beliefs about the power of their teaching. More empirical studies on inclusive practices are recommended.

Keywords: attitudes; inclusive practices; meta-analysis; students with special education needs**Introduction**

Inclusion is a means to educate students with special educational needs (SEN) alongside their non-disabled peers to ensure rigorous academic content standards (Bicehouse & Faieta, 2017).

Although many studies have been completed to consider the effectiveness of inclusive practices in education, there is still a lack of understanding by educators about the best practices in inclusion. However, it should be noted that inclusive practices are much more than all students being served in the same classroom, but inclusivity is about ensuring that all students are given the chance to learn and be challenged (Novak, 2018). When teachers are knowledgeable and confident about their content and teaching practices, students thrive academically, socially, and emotionally (Singh, 2016).

Literature Review

Inclusive practices involve educating students with SEN in general education classrooms with their non-disabled peers (Sharma & Nuttal, 2016). Inclusion is broadly defined as "a philosophy bringing diverse students, families, educators, and community members together to create schools and other social institutions based on acceptance, belonging, and community" (Bloom, Perlmutter & Burrell, 1999, as cited in Salend, 2011:6). Mestry (2017) states that high academic achievement for all students is possible if teachers' goals are focused on growth for all students. Therefore, an increase in student achievement among students with SEN is possible with effective implementation of individualised instructional practices, along with collaboration between general and special education teachers (Van Steen & Wilson, 2020). In addition to using effective inclusive practices, teachers' perceptions, attitudes, and beliefs toward inclusion have affirmed to be one of the most direct and powerful determinants of inclusive learning environments (Yuknis, 2015). In this context, having adequate training, adequate support and positive attitudes are expected from educators to implement inclusion successfully (Donohue & Bornman, 2014). It should be noted that positive attitudes yield favourable results (Singh, 2016). Moreover, when teachers have positive attitudes, they are more likely to include students with SEN in their learning environments (Sharma & Nuttal, 2016; Yuknis, 2015). In this regard, Saloviita (2022) reports that teachers' attitudes are linked to the overall acceptance of students with SEN in inclusive classrooms; the more positive the teachers' attitudes towards teaching students with SEN, the less concerned they are about teaching these students in their classrooms.

On the other hand, teachers' background and demographics affect their attitudes towards inclusion. Some of the demographic factors which impacted the teachers' attitudes were age, gender, years of teaching experience, and interactions with individuals with disabilities (Forlin, Loreman, Sharma & Earle, 2009). In this vein, Schwab, Sharma and Loreman's (2018) research shows that when teachers receive appropriate training regarding inclusive practices, they have more positive approaches towards implementing inclusive practices in their classrooms. Sarkar's (2015) found that teachers' lack of knowledge and training to teach students with SEN in inclusive classrooms affect their attitudes negatively. As to the effect of experience, exposure to students

with SEN in the classroom has been identified as an important variable influencing teachers' attitudes toward inclusion (Avramidis & Kalyva, 2007). In this regard, Avramidis and Norwich (2002) indicate that teachers with active experience with inclusion not only reported more favourable results in the classroom, but also reported increased feelings of mastery and confidence in their ability to teach children of all ability levels. Mamabolo, Sepadi, Mabasa-Manganyi, Kgopa, Ndlovu and Themane (2021) who examined teachers' attitudes towards inclusive practices in South Africa reveal in their study that experienced teachers were generally positively well-disposed to include learners in their classrooms and they were willing to use diverse teaching strategies. However, although having positive attitudes towards inclusion, most teachers were not familiar with the resources they needed to help students with SEN in their classrooms.

Theoretical Framework

The theories used to guide this study were the Social Cognitive Theory (SCT) and the Theory of Planned Behavior (TPB). The SCT, coined by Albert Bandura in 1986, emphasises observational learning and the role of social experience in the development of personality. Bandura (1986) argues in his SCT that an individual's behaviour was the result of a combination of personal, behavioural, and environmental factors. In other words, SCT relates to a sense of control over one's environment and behaviour. It considers the way in which individuals acquire, maintain and perform behaviour (Bandura, 1986). Therefore, understanding the relationship between teachers' sense of control over the environment and behaviour and their commitment to their duties is also important for the purpose of this research. Teachers with a strong locus of control are more likely to cope with difficult situations or tasks (Bandura, 1986). This means that they are more likely to try harder to change behaviour despite challenges and obstacles that can undermine motivation.

The TPB, proposed by Ajzen in 1985, specifies the nature of the relationship between beliefs and attitudes. This theory assumes that a predictor of behaviour is an individual's intention towards the behaviour, which is defined by their attitudes. When teachers perceive behaviour to have positive results, their intentions to perform the behaviour are greater (Ajzen, 1985). The TPB implies that teachers' intentions toward teaching in inclusive classrooms are influenced by their attitudes toward inclusion and students with SEN.

Although many qualitative studies exist on inclusion literature, experimental studies are more

limited. Therefore, meta-analysis studies conducted on inclusive education are also limited. A need for more meta-analyses on inclusive education is also mentioned in the literature (i.e., Saloviita, 2022; Van Steen & Wilson, 2020). Since attitudes have an integral role in the success of inclusion programmes (Yuknis, 2015), we need to conduct a meta-analysis of attitudes towards inclusive practices by re-interpreting the cumulative findings of experimental studies conducted on attitudes towards inclusive practices. Thus, with this study we aimed to synthesise research conducted to reveal the effects of inclusive practices on attitudes via meta-analysis. For this aim, experimental/quasi experimental studies conducted in 2000 and 2021 were scanned from databases according to the inclusion criteria. In order to present a general evaluation in line with the results of experimental studies involving inclusive practices, the following questions were included:

- 1) What is the overall effect size of the studies carried out in 2000 and 2021?
- 2) What is the effect size of inclusive practices on attitudes in terms of group level and school grade?

Methodology

In this meta-analysis research, the effect of inclusion practices on attitudes was examined. Meta-analysis is a method describing the process of combining and re-evaluating the results of independent studies conducted on a particular subject (Littel, Corcoran & Pillai, 2008).

In the data collection process, the targeted studies on the effect of inclusive practices on attitudes carried out in 2000 and 2021 were sought in the databases of Sage Journals Online, Web of Science, Ebscohost-Eric, the Higher Education Council National Thesis and Dissertation Center (YOK), and ProQuest Dissertation & Thesis Global. To reach the relevant studies, the key words "inclusive practices", "inclusive/mainstreaming education", "attitudes towards inclusion", "students with SEN and their education" were used.

The inclusion criteria of this study included: (1) Studies carried out during 2000 and 2021 published in Turkish or English with the full text as unpublished dissertations and theses or in international peer-reviewed journals; (2) Empirical studies containing statistical values such as arithmetic mean, sample size, and standard deviation to calculate a standardised effect size.

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Flow Diagram (Moher, Liberati, Tetzlaff, Altman & PRISMA Group, 2009) (cf. Figure 1), contains detailed information of the studies reached in the data collection process.

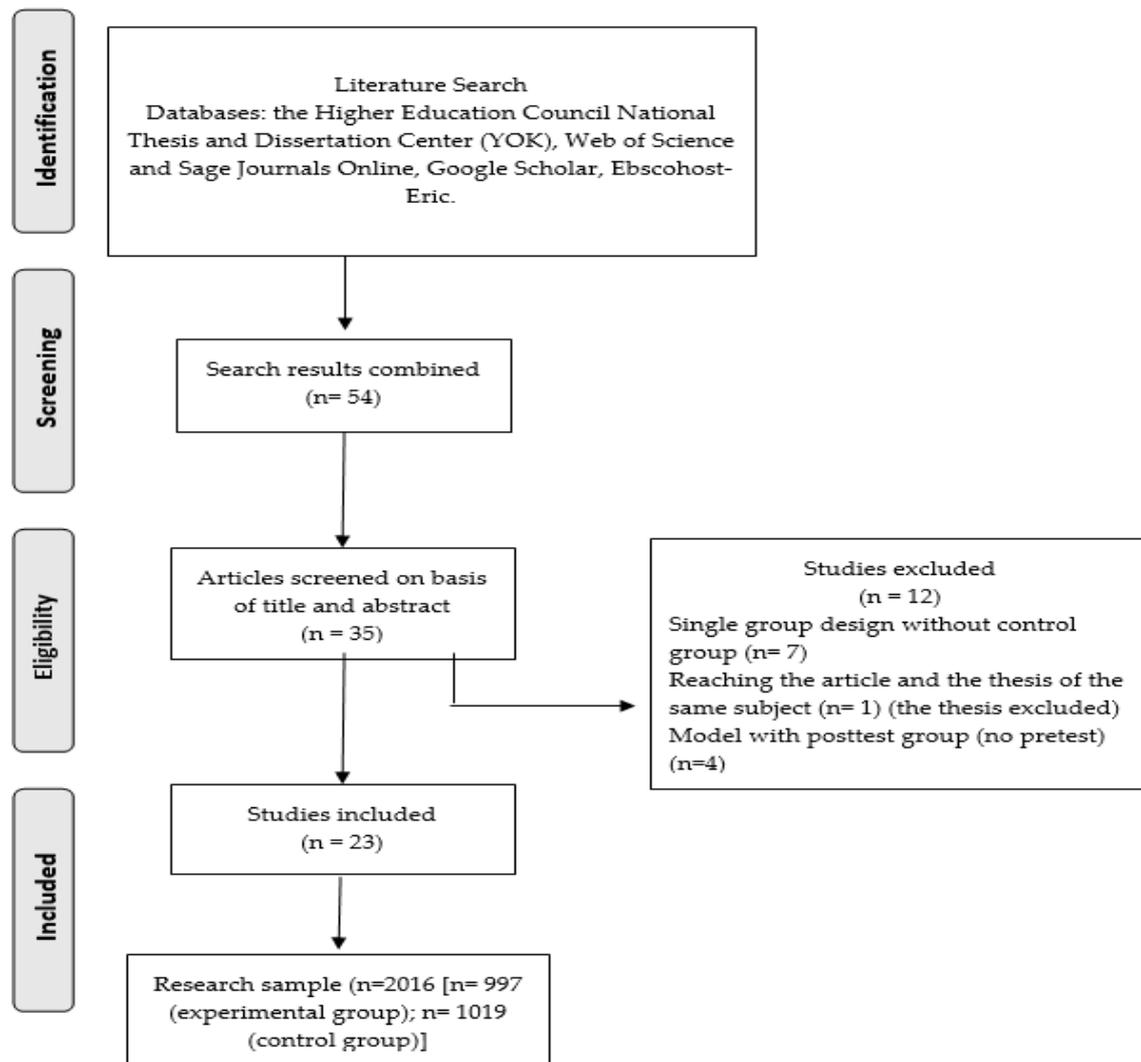


Figure 1 The diagram representing the selection of studies (Moher et al., 2009)

As shown in Figure 1, within the scope of searching the databases, a total of 54 studies were found. In the eligibility phase, the studies retrieved were scanned on the basis of titles and abstracts and 19 of them were excluded as they were found to have irrelevant topics. Later, 12 of the remaining 35 studies were eliminated as well, due to including single-group design or being duplications. In the inclusion phase, the number of studies used in the meta-analysis was 23 (10 journals, one conference paper, four master's theses and eight Doctor of Philosophy dissertations). Additionally, the sample size in the study included 2,016 participants from the experimental ($n = 997$) and control ($n = 1,019$) groups.

In the coding process of the meta-analysis, a coding form, which consisted of two parts, namely study identity and descriptive statistical data, was used. In the study identity part such information as study titles, author information, study year, and study type were regarded as the data of the studies. The second part contained such information as

mean and standard deviation values and population size. To enhance the reliability of the research, the coding process was examined separately by two independent coders. Miles and Huberman's (1994) formula for inter-rater reliability was used to determine the consistency degree of the two raters and 100% consistency was found.

Data Analysis

The calculations of the effect sizes, publication bias and heterogeneity tests were run in the Comprehensive Meta-Analysis (CMA 3.0) software program (Borenstein & Rothstein, 1999). In the interpretation of the effect sizes of the studies analysed within the scope of this study, Cohen's (1992) guidelines (0.2 - < 0.5 small; 0.5 - < 0.8 medium; 0.8 large effect size) were used.

The heterogeneity test (Q-statistic) is a statistical test that shows the chi-square (χ^2) distribution with $k-1$ freedom value (Gavaghan, Moore & McQuay, 2000). In addition, i^2 value is an indicator of heterogeneity as the complement of Q-

statistics (Petticrew & Roberts, 2006). A value between 0% and 40% shows low heterogeneity while a value of 50% showing average and 75% showing high heterogeneities (Higgins & Thompson, 2002).

Effect size, which is the most important unit in a meta-analysis, reflects the correlation of the variables (Borenstein, Hedges, Higgins & Rothstein, 2013). In our study, Hedges' g formula for calculating effect size values was used to reveal the standardised mean difference of the groups (Hedges & Olkin, 1985). Analyses were performed according to the random effects model (REM) which aims to predict the mean of the effect sizes distribution (Borenstein et al., 2013). It is supposed that while each of the studies in the analysis has a real effect size according to the fixed effects model (FEM), in the REM, each study represents a more balanced distribution (Borenstein et al., 2013). According to Field and Gillett (2010), REM calculations for effect sizes in social sciences should be made as a standard rule without determining the heterogeneous distribution.

Therefore, REM was taken into account in the interpretation of effect sizes.

The Reliability of the Study

To provide the reliability of the study, various analyses were made. Preventing publication bias is suggested to assure reliability in meta-analytical studies. To this end, the fail-safe number test calculation was performed and the number of missing studies was found to be 1,296. This high value indicates no bias (Cheung & Slavin, 2016).

Another way to ensure reliability in meta-analytical studies is to calculate Orwin's fail-safe number which depends on the calculation of the number of missing studies (Orwin, 1983). This calculation was found to be 85.

A funnel-plot is one of the most frequently suggested methods to detect publication bias in meta-analyses (Duval & Tweedie, 2000). In a funnel plot, an overturned symmetrical funnel shape is expected in the absence of bias (Sterne & Harbord, 2004) (cf. Figure 2).

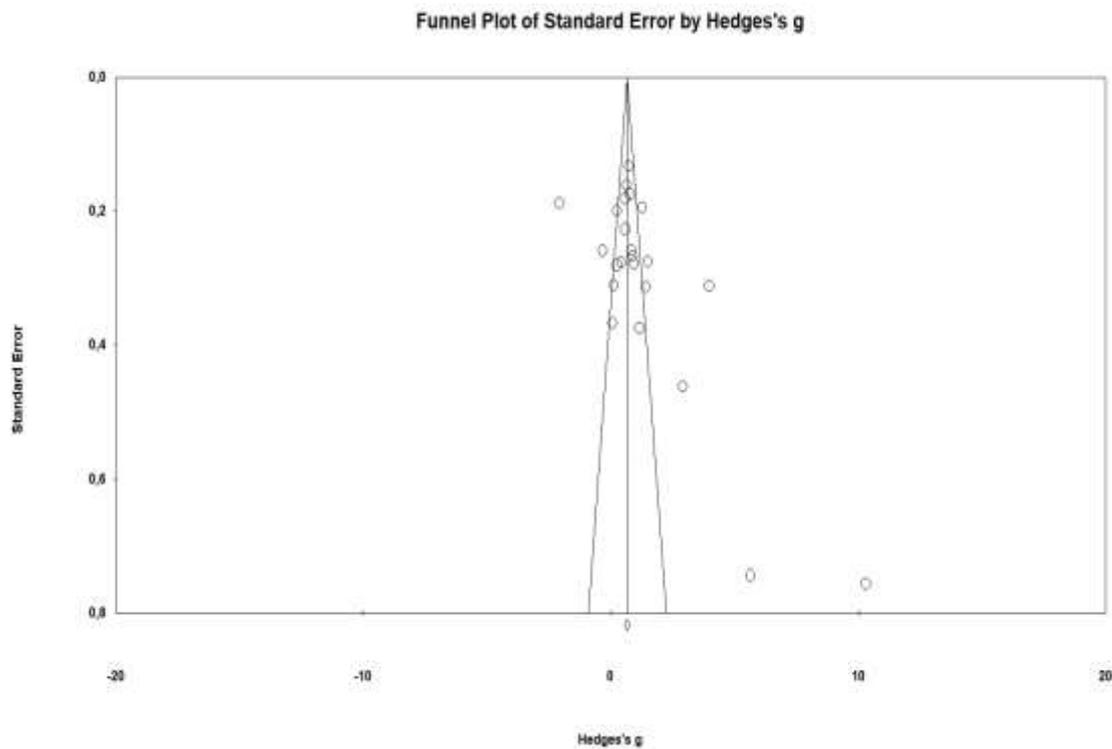


Figure 2 Funnel plot with effect sizes

Hoffman (2019) suggests that funnel plots with simple visual interpretation should be abandoned due to their interpretation being subjective and an informal method. Therefore, such formal statistical tests as the rank correlation test by Begg and Mazumdar and the linear regression test described by Egger have been suggested to verify whether publication bias existed (Lau, Ioannidis, Terrin, Schmid & Olkin, 2006). The Egger test

(Egger, Smith, Schneider & Minder, 1997) results revealed a 95% confidence interval between the 4.704 lower limit and the 15.635 upper limit, intercept = 10.169, $t = 3.869$ and $p = .0089 > 0.5$. This result confirms the symmetry of the funnel plot as “ p value of 0.5 or less indicates the statistical significance of asymmetry” in the Egger test (Rothstein, Sutton & Borenstein, 2005:102). Kendall's tau b coefficient was

calculated using the Begg and Mazumdar (1994) test. According to the result of the value obtained ($\tau b = .35$; $p = >.05$) it can be said that there is no publication bias.

Results

Table 1 indicates the descriptive data of the studies in the meta-analysis.

Table 1 Descriptive data of the studies

Study variables		Frequency	Percentage
Publication year ($k = 23$)	2000–2005	1	4.35
	2006–2011	4	17.39
	2012–2017	13	56.52
	2018–2021	5	21.74
Study type ($k = 23$)	PhDs	8	34.78
	Master’s theses	4	17.39
	Journals	10	43.47
	Conference paper	1	4.34
Group k-level ($k = 23$)	Students	12	52.17
	Teachers	11	47.82
Education levels ($k = 12$ studies conducted on students)	Preschool	1	4.34
	Primary school	3	13.04
	Secondary school	2	8.69
	University (pre-service teachers)	6	26.08

According to the data in Table 1, an increase in the publication of experimental studies carried out on inclusive education is seen between 2012

and 2017. Conversely, 4.35 % of experimental studies ($f = 1$) were conducted between 2000 and 2005; 17.39% ($f = 4$) between 2006 and 2011; and 21.74% ($f = 5$) between 2018 and 2021. Of these studies, 34.78% ($f = 8$) were PhD dissertations, 17.39% ($f = 4$) were master’s theses, 43.47% ($f = 10$) were journals and 4.34% ($f = 1$) were conference papers. Of them, 52.17% ($f = 12$) were carried out on students, 47.82% ($f = 11$) were on teachers. According to school grade, 13.04% ($f = 3$) were conducted on the primary school students while 8.69% ($f = 2$) were on secondary school students. In addition, the most studies were carried out on pre-service teachers (26.08%; $f = 6$).

Findings on the Effect of Inclusive Practices on Attitudes

The confidence interval distribution and mean effect size of the 23 studies are presented in Table 2. In the calculation according to the fixed effect model, the effect size (Hedges’ g) was .466 and the standard error was .050. The upper limit for 95% of the confidence interval was .563 and the lower limit was .369. In addition, the z -test value was found statistically significant at the .01 level ($z = 9.413$; $p = .000$). According to the homogenous test results, the Q statistical value was found to be 706.591. Since this value exceeds the critical value ($\chi^2(.95) = 33.92$) in the chi-square (χ^2) table, it was determined that the distribution of the effect sizes was heterogeneous. Moreover, the i^2 value was found to be 96.886%. With respect to the Higgins and Thompson (2002) classification, this result specifies a high level of heterogeneity.

Table 2 The confidence interval distribution and mean effect sizes of the studies

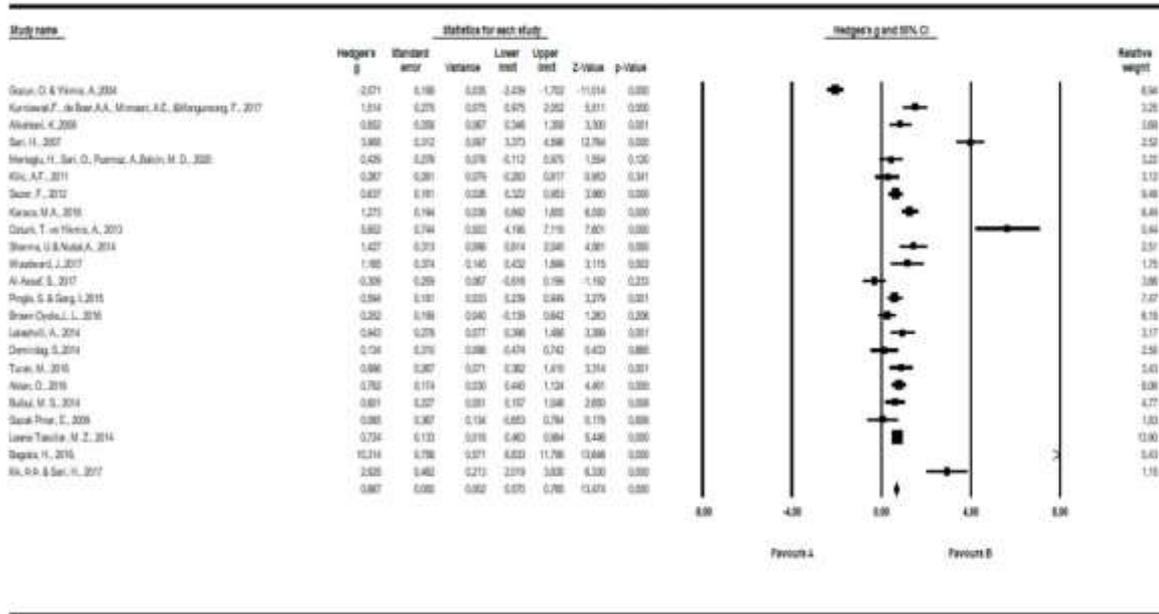
Model type	k	Hedges’ g	SE	95% CI		Q	df	z	i^2	p
				Lower limit	Upper limit					
FEM	23	.466	.050	.369	.563	706.591	22	9.413	96.886	.000
REM	23	1.239	.288	.674	1.803			4.302		.000

The REM calculation, presented in Table 2, reveals that the effect size (Hedges’ g) was 1.239, which is a large effect size with respect to Cohen’s (1992) classification, and the SE was .288. The lower limit for 95% of the confidence interval was

.674 while the upper limit was 1.803. In addition, the z -test value was found to be statistically significant at the .01 level ($z = 4.302$; $p = .000$).

A forest plot of 23 studies is presented in Figure 3.

Meta Analysis



Meta Analysis

Figure 3 Forest plot of the studies

The diamond symbol in Figure 3 indicates the overall effect size, the lines next to the squares show the upper and lower effect size limits within the 95% CI, and the black squares show the effect size.

Moderator Analyses

Group level and school grades were used as moderators in our study. The moderator analyses are presented in Table 3.

Table 3 The overall effect sizes in line with moderator analyses

Moderators	Groups	Effect size and 95% CI					Test of null		Heterogeneity		
		<i>k</i>	Hedge's <i>g</i>	<i>SE</i>	Lower	Upper	<i>z</i>	<i>p</i>	<i>Q</i>	<i>df</i>	<i>p</i>
Group level	Students	12	.679	.386	.078	1.436	1.758	0.025			
	Teachers	11	1.880	.408	1.080	2.681	4.606	0.000			
	Total between overall	23	1.272	.601	.095	2.450	2.118	0.000	4.570	1	0.003*
School grades	Pre-school	1	-	-	-	-	-	-	-	-	-
	Primary education	6	1.374	.477	.440	2.308	2.951	0.000			
	Secondary education	2	.376	.829	-1.249	2.000	.454	0.003			
	Higher education	6	.084	.520	-1.102	.935	.083	0.093			
	Total between overall	15	1.338	.772	-0.174	2.851	1.735	0.083	17.718	2	0.001*

Note. * $p < 0.05$.

As indicated in Table 3, according to group level, the total effect size was 1.272. According to Cohen's (1992) classification, it is a large effect size. Conversely, the effect size of the teacher group (Hedges' $g = 1.880$) was higher than the effect size of the student group (Hedges' $g = .679$). According to the results of the intergroup heterogeneity test, the Q -value was 4.570. Since this value did not exceed the critical value of 1 degree of freedom in the χ^2 table ($\chi^2(.95) = 3.841$), the effect size distribution was considered heterogeneous. A statistically significant difference was also observed in favour of the teacher group ($z = 2.118$; $p = .003$).

In relation to the school grades, although the studies were grouped as pre-school, primary, secondary and higher education, due to including one study, the group "pre-school education" was excluded from the analysis. In this vein, Valentine, Pigott and Rothstein (2010) state in their study that the minimum number of studies for a meta-analysis is two. The analysis results of the school grades revealed that while the primary education group with a 1.374 value had the highest overall effect size, the higher education group (pre-service teachers) with a .084 value had the lowest effect size. The total effect size of the groups was 1.338. With respect to Cohen's (1992) classification, this value is a large effect size. The calculation of the intergroup heterogeneity test was performed and the Q -value was found to be 17.718. As the Q -statistical value was higher than the critical value of 2 degrees of freedom in the χ^2 table ($\chi^2(.95) = 5.99$), a heterogeneous distribution of the effect size was accepted. Furthermore, there was a significant difference among the inter groups favouring the primary education group ($z = 1.735$; $p = .001$).

Discussion

The limited number of experimental studies on inclusive education leads to limited meta-analysis studies on this subject. In order to shed light on this gap in the literature, our study includes synthesising recent research through meta-analysis to specify the effect of inclusive practices on attitudes. In this context, 23 studies meeting the inclusion criteria among the experimental studies carried out to reveal the effect of inclusion practices on attitudes in 2000 and 2021 were analysed using the Comprehensive Meta-Analysis program (CMA 3.0). In the meta-analytic procedure, evaluation of the data was made in line with REM. The effect size value (Hedges' g) was found to be 1.239 that is large and significant with respect to Cohen's (1992) classification. In other words, the effect of inclusive practices on attitudes is large and significant. This result is consistent with the effect coefficients of the studies used in the analysis within the scope of this research and showing a positive effect for the experimental

group (i.e., Aktan, 2018; Al-Assaf, 2017; Alkahtani, 2009; Bagotia, 2018; Brown Oyola, 2016; Bülbül, 2014; Demirdag, 2014; Gözün & Yıkış, 2004; İlik & Sarı, 2017; Karaca, 2018, Kılıç, 2011; Kurniawati, De Boer, Minnaert & Mangunsong, 2017; Leana-Taşçılar, 2014; Lelashvili, 2014; Mertoglu, Taymaz Sarı, Pasmaz & Balçın, 2020; Öztürk & Yıkış, 2013; Pingle & Garg, 2015; Sari, 2007; Sazak-Pınar, 2009; Sezer, 2012; Sharma & Nuttal, 2016; Turan, 2018; Woodward, 2017). In addition, the results of the study were also consistent with those excluded from the analysis in terms of positive impact (i.e., Elhoweris & Alsheikh, 2006; Lüke & Grosche, 2018).

Moderator analyses were conducted to determine whether inclusive practices had an effect on attitudes in terms of group level and school grades. As a result, changes in the attitudes were observed in the results of both analyses. According to group level, there was a significant difference favouring the teachers group. Teachers' attitudes were found high (Hedge's $g = 1.880$) with respect to Cohen's (1992) classification. Similar to this result, in the meta-analysis study conducted by Van Steen and Wilson (2020), teachers were found to hold a positive attitude towards students with SEN in mainstream schools. Similarly, in another meta-analysis study carried out by Unianu (2012), it was found that many studies emphasised teachers' positive attitudes towards inclusive practices. In a similar fashion, some studies identified teachers' positive attitudes as a key component of successfully implementing inclusion (i.e., Avramidis & Kalyva, 2007; Yussof & Marzaini, 2021). The increase of teachers' positive attitudes towards inclusive practices may be due to increased inclusive legislation, raising awareness of inclusive practices in teacher education programmes (Symeonidou, 2017), and more opportunities for educators to work with students with SEN in mainstream schools (Van Steen & Wilson, 2020). Therefore, in-service training for inclusion is mentioned in many studies as the most important component of teachers' personal success (i.e., Avramidis & Kalyva, 2007; Elhoweris & Alsheikh, 2006; Kurniawati et al., 2017).

With regard to school grades, while the primary education group with a 1.374 value had the highest overall effect size, the higher education group (pre-service teachers) with a .084 value had the lowest one. The overall effect size of the school grade group was large (Hedge's $g = 1.338$) with respect to Cohen's (1992) classification. In agreement with this result, in a study by Gümüş and Tan (2015), it was revealed that positive attitudes towards students with SEN was higher at primary education level than other school levels. Similarly, in a meta-analysis study conducted by Chae, Park and Shin (2019), the effect sizes of

kindergarten, elementary, and secondary school levels regarding awareness and attitudes of children without disabilities towards disability were all found to be large. By the same token, in a systematic review study in which 37 qualitative and quantitative studies conducted on pre-school, primary and secondary school students were included by Dell'Anna, Pellegrini and Ianes (2021), it was revealed that students showed good attitudes towards their peers with SEN, especially when they were female or had prior contacts with disability. In this meta-analysis research pre-service teachers' attitudes were found the lowest in the group. Similarly, Szumski, Smogorzewska and Grygiel (2020) imply that younger students often have more positive attitudes than older ones. In other words, the higher the school level, the higher the level of negative attitudes with increasing age. This may stem from social and cultural influences on pre-service teachers. In this context, some predictors such as educational background, gender, age and other socio-demographic characteristics may have an impact on developing pre-service teachers' attitudes towards inclusive practices (Avramidis & Norwich, 2002; Yuknis, 2015).

Conclusion and Implications

This research included a synthesis of 23 studies carried out on the effect of inclusive practices on attitudes. An important conclusion drawn from this study is that inclusive practices have a positive effect on attitudes of both teachers and students. Considering the research literature, it can be appropriate to suggest that attitudes towards inclusion have been strongly influenced by teachers' beliefs about the power of their teaching.

From this research, it is possible to mention some implications for future research. Firstly, it emerged that there were not many experimental studies on inclusive applications. It could be suggested that more empirical research is conducted to test the effectiveness of inclusive practices in learning environments. Secondly, carrying out some cross-cultural studies might be suggested to reveal qualities and efficiency of inclusive practices within various national contexts. Thirdly, more variables might be added to the analysis in order to reveal moderating effects. And lastly, the conditions causing an increase in positive attitudes towards inclusive practices in the new millennium age may be compared with conditions in previous years. As it is evident from the research that positive attitudes towards students with SEN in the inclusive settings improve inclusive practices and better student output, in-service training should also support teachers to develop positive attitudes.

Authors' Contributions

ŞE conducted all statistical analyses and created tables; NSYG searched the literature and provided

data for Figure 1; MÇ searched the literature and attended to the technical aspects. All authors contributed to the writing of the article. All authors reviewed the final manuscript.

Notes

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