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DOI:

[10.1016/j.edurev.2022.100456](https://doi.org/10.1016/j.edurev.2022.100456)

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Document Version

Publisher's PDF, also known as Version of record

Citation for published version (Harvard):

Tarantino, G, Makopoulou, K & Neville, RD 2022, 'Inclusion of children with special educational needs and disabilities in physical education: A systematic review and meta-analysis of teachers' attitudes', *Educational Research Review*, vol. 36, 100456. <https://doi.org/10.1016/j.edurev.2022.100456>

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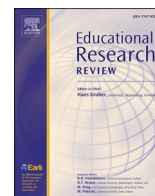
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Educational Research Review

journal homepage: www.elsevier.com/locate/edurev

Review

Inclusion of children with special educational needs and disabilities in physical education: A systematic review and meta-analysis of teachers' attitudes

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ARTICLE INFO

Keywords:

Physical education
Inclusion
Teachers' attitudes
Children with disabilities
Special educational needs

ABSTRACT

Research shows that teachers' attitudes toward physical education are associated with positive pupil outcomes. However, there is limited robust synthesis of evidence regarding teachers' attitudes toward working with vulnerable learners in physical education, particularly those with special educational needs and disabilities (SEND). This mixed methods systematic review and meta-analysis synthesizes the research evidence on teachers' attitudes towards the inclusion of children SEND children in physical education. Results indicated that teachers have largely favorable attitudes toward the inclusion of children with SEND in physical education, and that experience working with children with SEND was positively associated with such favorable attitudes. Further quantitative and qualitative synthesis also revealed that several different factors affect teachers' attitudes – namely, knowledge and preparation, years of teaching experience, direct experience working with SEND children, type and degree of SEND, and collaboration and teaching support.

1. Introduction

There is widespread consensus that physical activity is beneficial for child development, including socialization and health (Janssen & LeBlanc, 2010), and international organizations now strongly advocate for engagement in regular physical activity as universally beneficial for all children regardless of ability status (World Health Organization, 2020). Despite the increased research emphasis on physical activity and its health- and development-related benefits for people and youth with disabilities (Hassan, Landorf, Shields, & Munteanu, 2019; Kapsal et al., 2019), young children and adolescents with special educational needs and disabilities (SEND) remain disproportionately negatively affected by health conditions relating to physical inactivity and sedentary time (Collins & Staples, 2017; Pan, Liu, Chung, & Hsu, 2015; Rimmer & Rowland, 2008). Of particular note within the existing research base is the extent to which SEND children remain excluded from structured physical education classes within schools (Maher, Williams, Olds, & Lane, 2007) or do not fully engage in PE activities (Sit et al., 2017), despite studies showing that SEND children often enjoy being physically active (Coates & Vickerman, 2010; Leo & Mourton, 2020; Rekaa, Hanisch, & Ytterhus, 2019). This evidence is particularly problematic since high-quality physical education has been highlighted as an important strategic area for both the promotion and

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<https://doi.org/10.1016/j.edurev.2022.100456>

Received 26 July 2021; Received in revised form 12 April 2022; Accepted 28 April 2022

Available online 5 May 2022

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facilitation of physically active lifestyles in childhood and adolescence (Murphy & Carbone, 2008).

Since the early 2000s, multiple studies have focused on synthesizing the research evidence on teachers' attitudes toward the inclusion of children with SEND in physical education (Block & Obrusnikova, 2007; Hutzler, Meier, Reuker, & Zitomer, 2019; Qi & Ha, 2012; Rekaa et al., 2019; Tant & Watelain, 2016; Wilhelmsen & Sørensen, 2017). As constructs that represent a person's (un)favorableness towards an object, action, or event (Doukeridou et al., 2011), attitudes have been widely regarded by researchers as 'presage' factors (O'Brien, Kudláček, & Howe, 2009, p. 47) that signal the behavioral intentions of teachers vis-à-vis the inclusion of SEND children in physical education. As such, research on inclusive physical education has been linked primarily to Ajzen's (1991) theory of planned behavior, within which an attitude is defined as the psychological correlate of a person's intention to perform a certain behavior. The original theory identified three components that converge to determine such an intention: (i) attitudes, which refer to the personal evaluation of the behavior in question; (ii) subjective norms, which refers to perceptions of social pressures bearing on the behavior in question; and (iii) perceived behavioral control, which refers to the factors that facilitate or inhibit the behavior in question (Ajzen, 1991). In short, the theory of planned behavior provided fertile ground with which to develop research on inclusion in physical education because teachers' attitudes were deemed to be the principal link between social pressures for greater inclusion and classroom-level behavioral change in schools.

Existing reviews of the evidence on inclusion in physical education reveal mixed outcomes (Wilhelmsen & Sørensen, 2017). For example, early reviews (Block & Obrusnikova, 2007) reaffirmed the 'disappointing, yet not surprising, finding' (ibid., p. 116) that teachers often have unfavorable attitudes towards the inclusion of SEND children. Later reviews signal something of a step-change from overtly unfavorable attitudes towards feelings of apprehension about working with SEND children (O'Brien, Kudláček, & Howe, 2009), concerns about the adequacy of professional preparation and opportunities for collaboration (Tant & Watelain, 2016), and a general recognition that multiple factors and stakeholders can affect teachers' attitudes towards inclusion in physical education (Qi & Ha, 2012; Wilhelmsen & Sørensen, 2017). In the most-recently-published systematic review, Rekaa et al. (2019) concluded that, despite discrepancies between studies over time – and, crucially, despite some discrepancies between 'inclusive norms [yet to be] realized as inclusive practices' (p. 52) – at a macro level, 'change is taking place' (ibid., p. 53).

2. Aims

Despite the publication of these key studies, the research base still lacks robust synthesis. In particular, despite many strengths, previous attempts to systematically review the literature have largely focused on synthesizing qualitative research evidence in a discursive manner (Rekaa et al., 2019). And, where quantitative research has been addressed, it has mostly been reviewed in the form of a 'descriptive synthesis' (Wilhelmsen & Sørensen, 2017, p. 329) as opposed to being robustly meta-analyzed. Despite many published studies spanning numerous decades, the field is therefore still limited regarding what can be said about the strength of the evidence for (or indeed the relative weighting of factors affecting) teachers' attitudes towards inclusion. Against this backdrop, this paper presents the first mixed method systematic review and meta-analysis of the research evidence on teachers' attitudes towards the inclusion of SEND children in physical education. Two key objectives frame the following analysis: firstly, to assess and thereafter quantitatively estimate the extent to which teachers held mostly favorable or unfavorable attitudes towards the inclusion of SEND children in physical education; and, secondly, to identify the range of personal, professional, social, and practical factors that can potentially affect attitudinal formation.

3. Method

This mixed methods systematic review was conducted following the Preferred Reporting Items for Systematic Review and Meta-Analysis guidelines (Liberati et al., 2009). Both qualitative and quantitative studies were included in the review, and the process for selecting, searching, and synthesis is described in the following subsections.

3.1. Inclusion and exclusion criteria

The target population was in-service primary and secondary school physical education teachers. Studies were included if they were published: (1) in peer reviewed journals; (2) in English; and (3) between the 1st January 1975¹ and the December 31, 2018. Studies were excluded from consideration if: the target population were either pre-service physical education teachers or support teachers (e.g., Learning Support Assistants); or the setting was early years childcare, preschool, kindergarten, or at a university.

3.2. Databases and search strategy

A search of eight electronic databases was conducted between September 2018 and March 2019 to identify the relevant studies in the systematic review. The final search was conducted in March 2019, the databases, and precise key terms for which are available in Appendix 1. The studies yielded by the search strategy were imported into RAYYAN (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016). After removing duplicates, two authors independently screened the title and the abstract of each study against the inclusion/exclusion criteria. Differences in the authors' lists of included studies were resolved via consensus. In the final step of the search strategy, the reference lists of the included studies were checked to ensure saturation.

3.3. Risk of bias

Study quality was independently evaluated by two authors. Qualitative studies were assessed using the Critical Appraisal Skills Programme Qualitative Checklist (CASP, 2019). Quantitative studies were assessed using a checklist for studies using a questionnaire (Boynnton & Greenhalgh, 2004). The criteria for both checklists were either coded as yes (✓) if they were explicitly presented and described, no (×) if they were absent, or unclear (?) if they were not defined. Differences in the risk of bias assessment were resolved via consensus. The outcomes of the risk of bias assessments are summarized in Tables 1 and 2.

3.4. Data Extraction, synthesis, and analysis

Quantitative data were synthesized in two ways. First, data that were collected using the same validated measures were meta-analyzed to estimate the extent to which teachers hold favorable, neutral, or unfavorable attitudes towards the inclusion of SEND children in physical education. See section 3.5 for a description of how the meta-analyses were conducted. The remaining data from quantitative studies were extracted and translated into standardized effect sizes (e.g., Cohen's *d* for evaluating mean differences between groups) by the authors to facilitate a robust narrative synthesis and interpretation.

Qualitative data were synthesized into themes using the following process: two authors independently (i) read the qualitative studies; (ii) identified the themes that were initially generated within each study by the original authors; (iii) categorized these within-study themes into higher-order themes based on whether or not they had been reported across multiple studies; (iv) resolved

Table 1
Risk of Bias Assessment for the Qualitative Studies.

Authors, Year	Valid results	Qualitative methodology	Research design	Recruitment strategy	Data collected	Relationship researcher & participant	Ethical issues	Data analysis	Clear findings	Quality of study design
Ammah and Hodge (2006)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Casebolt and Hodge (2010)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Combs et al. (2010)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Elliott 2008	✓	✓	?	✓	✓	×	×	✓	✓	M
Hardin (2005)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Hersman and Hodge (2010)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Hodge et al. (2004)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Hodge et al. (2009)	✓	✓	✓	✓	✓	×	×	✓	✓	H
LaMaster et al. (1998)	?	✓	✓	✓	✓	×	×	✓	✓	M
Lienert et al., 2012	✓	✓	✓	✓	✓	×	×	✓	✓	H
Morley et al. (2005)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Qi et al. (2017)	✓	✓	✓	✓	✓	×	✓	✓	✓	H
Sato and Hodge (2009)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Sato et al. (2007)	✓	✓	✓	✓	✓	×	×	✓	✓	H
Tanure Alves et al. (2017)	✓	✓	✓	✓	✓	×	✓	✓	✓	H
Townsend (2017)	✓	✓	✓	✓	✓	×	✓	?	✓	H
Vickerman and Coates (2009)	✓	✓	✓	✓	✓	×	✓	✓	✓	H
Zitomer (2016)	✓	✓	✓	✓	✓	×	×	✓	✓	H

H = High, M = Moderate, L = Low. ✓ = Explicitly present, × = Absent, ? = Unclear.

Table 2
Risk of Bias Assessment for the Quantitative Studies.

Authors, Year	Validated questionnaire	Example question	Adequate sample	Adequate demographic data	Distribution & administration	Adequate response rate	Appropriate analysis	Relevant data	Link between data & conclusion	Quality of study design
Arab and Lytle (2002)	✓	✓	x	x	✓	✓	✓	✓	✓	H
Beamer and Yun (2014)	✓	✓	✓	✓	✓	x	✓	✓	✓	H
Block and Rizzo (1995)	✓	✓	x	✓	✓	✓	✓	✓	✓	H
Dordic, Tubić, & Protić- Gava, 2014	✓	✓	x	x	x	?	x	✓	✓	M
Doulkeridou, Evaggelinou, and Kudláček (2010)	✓	✓	✓	✓	x	?	✓	✓	x	M
Doulkeridou et al. (2011)	✓	✓	✓	✓	✓	?	✓	✓	✓	H
Fournidou, Kudláček, & Evagellinou, 2011	✓	✓	✓	✓	✓	?	✓	✓	✓	H
Heikinaro-Johansson & Sherrill, 1994	✓	x	✓	✓	x	✓	x	✓	✓	M
Hersman and Hodge (2010)	✓	x	x	✓	✓	x	✓	✓	✓	M
Hodge et al. (2009)	✓	x	x	✓	✓	x	✓	✓	✓	M
Hutzler and Barak (2017)	x	✓	✓	✓	✓	x	✓	x	✓	M
Jarvis Chaput and French (1990)	x	x	x	x	✓	?	✓	x	✓	L
Jeong & Block 2011	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
Jerlinder et al. (2010)	x	✓	✓	✓	✓	x	✓	x	✓	M
Li, Chen, and Tsoi (2012)	✓	✓	x	x	✓	✓	✓	✓	✓	H
Maeda et al. (1997)	✓	x	x	x	✓	✓	✓	✓	✓	M
Mauerberg-deCastro et al., 2013	x	x	x	✓	x	?	✓	✓	✓	M
Meegan & MacPhail, 2006	x	✓	?	x	✓	x	✓	✓	✓	M
Obrusnikova (2008)	✓	x	✓	✓	✓	✓	✓	✓	✓	H
Ogu et al. (2017)	✓	✓	x	x	x	?	✓	✓	✓	M
Özer et al., 2013	✓	x	✓	x	x	✓	✓	✓	✓	M
Papadopoulou, Kokaridas, Papanikolaou, and Patsiaouras (2004)	✓	✓	x	✓	✓	?	✓	✓	✓	H
Rizzo (1985)	x	x	✓	✓	✓	✓	✓	x	✓	M
Rizzo and Wright (1987)	✓	✓	✓	x	✓	✓	✓	✓	✓	H
Rizzo and Vispoel (1991)	✓	✓	x	✓	✓	✓	✓	✓	✓	H
Rizzo (1984)	✓	✓	✓	x	✓	✓	✓	✓	✓	H
Sideridis & Chandler 1996	x	✓	x	x	x	?	x	✓	✓	L
Wang, Qi, & Wang, 2015	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
	✓									

H = High, M = Moderate, L = Low. ✓ = Explicitly present, x = Absent, ? = Unclear.

discrepancies in the two lists of higher-order cross-study themes through consensus. Data from studies that reported these higher-order themes were subsequently narratively synthesized.

3.5. Meta-analysis of cross-sectional studies

Following Hopkins’s (2018) suggestion to standardize data before use in a meta-analysis, data extracted from studies using validated attitudinal questionnaires were rescaled to a minimum and maximum possible value of 0 and 100, respectively. Once rescaled, data from individual studies were centered on a mean of zero. This facilitated an estimate (against the null) of the extent to which studies showed favorable or unfavorable attitudes towards the inclusion of children with SEND. This centering also had the added benefit of facilitating the production of a forest plot against which we could assess study attitudes against a neutral value of 0.

The Hartung-Knapp-Sidik-Jonkman method for estimating continuous random effects was used to meta-analyze these data (Inthout, Ioannidis, & Borm, 2014). The extent of between-study variability was calculated as a standard deviation (*Tau*). Uncertainty in the meta-analyzed effect is presented as a 95% confidence interval (CI). The meta-analyzed mean was evaluated using the following scale of magnitudes: <10, trivial; 10–30, small; 30–50, moderate; 50–70, large; >70, very large (Hopkins, Marshall, Batterham, & Hanin, 2009). This scale was halved for evaluating the between-study standard deviation, or *Tau* (Hopkins, 2015). Data were meta-analyzed in R Studio using the metagen package (Harrer, Cuijpers, Furukawa, & Ebert, 2019).

4. Results

The search strategy yielded 1,385 studies, of which 448 were excluded because they did not meet the inclusion criteria. Of the 937

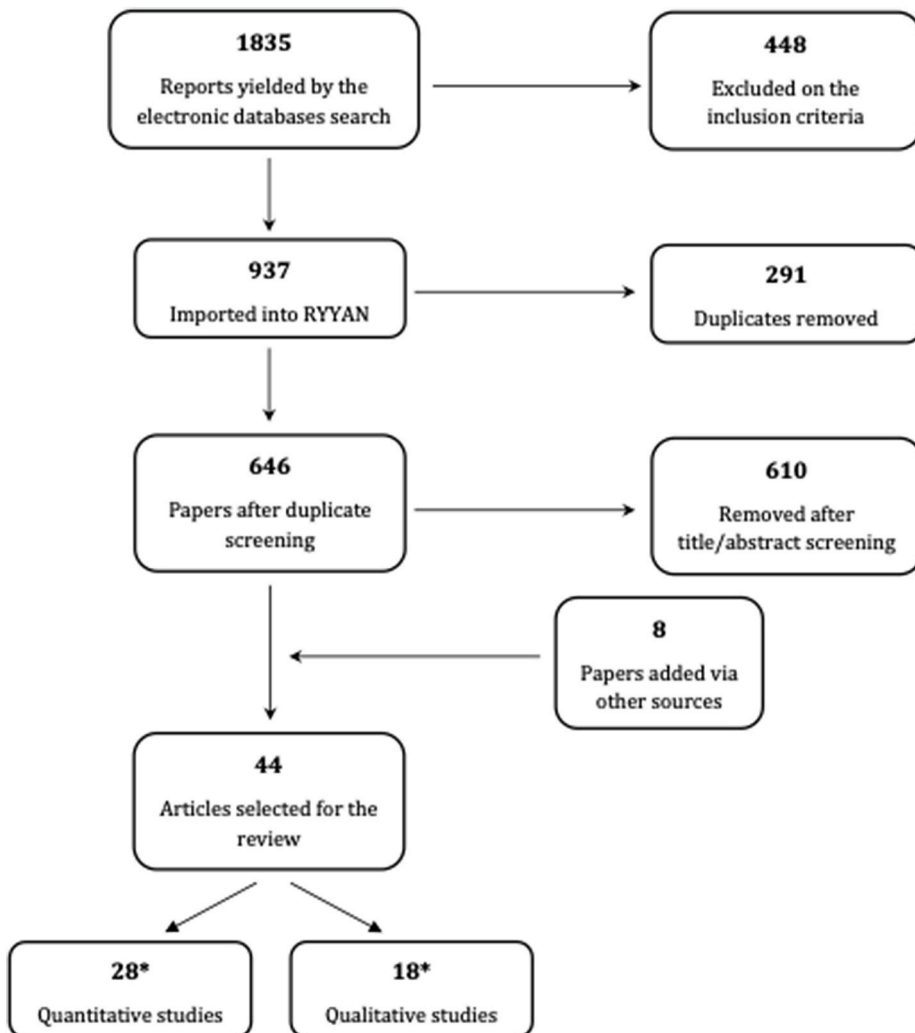


Fig. 1. Flow diagram of the studies included in the systematic review.

remaining articles, 291 duplicates were removed. After title and abstract screening, a further 610 articles were excluded, and a total of 36 articles were deemed eligible for the systematic review. One author (GT) screened the references of previously published systematic reviews and found eight additional articles that were eligible for inclusion. Therefore, the total number of articles included in this study was 44 (Fig. 1). In total, 28 studies reported quantitative data gathered using either a questionnaire or a survey. Eighteen studies reported qualitative data obtained via either interviews or open-ended questioning. A further two mixed-methods studies were included both in the qualitative and quantitative syntheses.

4.1. Quantitative studies

Twenty-six of the 28 studies reported quantitative data from a cross-sectional design (Table A1). Two studies reported the outcomes of a controlled trial of interventions affecting teachers' attitudes. As such, the baseline assessments served as cross-sectional data. Twelve studies were conducted in the USA, three in Greece, and one each in Nigeria, Serbia, Cyprus, Finland, Israel, Canada, Korea, Sweden, Hong Kong, Brazil, Ireland, Turkey, and China. Twenty-five articles used a validated questionnaire. Three studies used a bespoke survey.

As for the population of interest, nine studies investigated both primary and secondary school teachers, five studies investigated primary school teachers only, seven studies surveyed secondary school physical education teachers, and seven studies did not report any descriptive data that enabled us to assess the type of school or school level being investigated. Fourteen studies used a sample greater than or equal to 100, thirteen used a sample smaller than 100, and one study did not report the sample size (and it was subsequently excluded from the meta-analysis). Two articles with a sample size of five and 29 participants respectively used both a validated questionnaire and face-to-face focused interviews to collect data regarding teachers' attitudes.

4.1.1. Meta-analyses

Of the 25 studies that used a validated questionnaire, 15 were eligible for inclusion in the meta-analysis to assess the extent to which physical education teachers hold favorable, unfavorable, or neutral attitudes towards the inclusion of SEND children. Fig. 2 provides the descriptive statistics and weighted standardized mean differences from zero for each of the individual studies (left). These weighted mean differences and their respective 95% CIs are also plotted on a forest plot (right) alongside the pooled meta-analytic mean (diamond). The forest plot shows that the meta-analytic mean was positive (mean = 8.47) and that the data were compatible with a trivial-to-small effect size (95%CI = 2.92 to 14.01). Heterogeneity in the data was small, but still substantial, as demonstrated by the between-study standard deviation (Tau = 9.68).

Six studies were included in a meta-analysis to explore gender differences in teachers' attitudes. The forest plot (Fig. A1) shows that there was substantial heterogeneity in the data. Males had more favorable attitudes in one study, whereas females had more favorable attitudes in three. Perhaps unsurprisingly, therefore, the meta-analytic mean difference in attitudes between the genders was non-significant. Three studies were included in a meta-analysis to assess the association between teachers' attitudes and experience working with SEND children. The forest plot (Fig. A2) shows that there was a small positive association and also that there was limited heterogeneity in the association between experience and teacher attitudes.

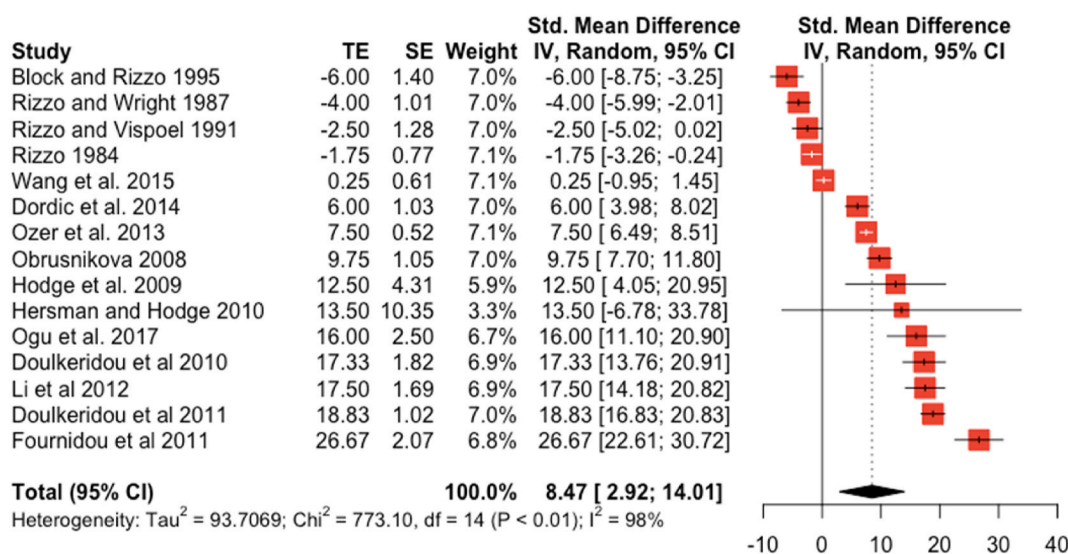


Fig. 2. Meta-analysis of the weighted standardized mean differences across studies. The vertical line represents the overall mean (zero). CI, confidence interval.

4.1.2. Narrative synthesis of quantitative studies

Six studies provided data showing that teachers' attitudes towards the inclusion of SEND children in physical education differed based on the type of SEND. The standardized effect sizes from these studies are summarized in Table A2. In terms of physical disabilities, Hutzler and Barak (2017) reported that teachers had more favorable attitudes toward working with independently mobile children – i.e., did not require assistive devices. Block and Rizzo (1995) reported a moderate-sized difference in teachers' attitudes based on the degree of severity of SEND. Teachers were less favorable towards working with children with profound disabilities. Rizzo and Vispoel (1991) found a difference in teachers' attitudes based on whether they were dealing with learning disabilities or more severe intellectual disabilities and behavioral disorders. Later research by Obrusnikova (2008) also reported that teachers had less favorable attitudes towards working with children with emotional and behavioral disorders than with other types of SEND (i.e., physical, intellectual, sensory, and learning disabilities).

Two studies (Ogu, Umunnah, Nwosu, & Gloria, 2017; Rizzo & Wright, 1987) provided mixed results about teachers' attitudes towards inclusion of children with learning or physical disabilities. Rizzo and Wright (1987) found that teachers had more favorable attitudes towards working with children with learning disabilities, whereas a follow-up study by Ogu et al. (2017) found no significant difference. A final two studies (Arab & Lytle, 2002; Meegan & MacPhail, 2006) reported data that suggested differences in teachers' attitudes according to four different types of SEND. However, there was insufficient data provided in these papers to calculate their corresponding standardized effects.

The remaining results that were extracted from the quantitative studies are displayed in Table A3. Noteworthy is the extent to which engaging in professional learning activities, such as undertaking inclusion-specific courses, was associated with teachers' attitudes toward inclusion. Three of four studies reported large effect sizes (Hodge et al., 2009; Jerlinder, Danermark, & Gill, 2010; Maeda, Murata, & Hodge, 1997), suggesting that high-quality professional development experiences could have a positive impact on teachers' attitudes.

4.2. Qualitative studies

Eighteen studies were included in the qualitative synthesis. Eleven studies were conducted in the US, two in the UK and Japan, and one in Hong Kong, Brazil, and Canada respectively. Each study used interviewing as the primary research method: including open-ended questions, focused interviews, and semi-structured interviews. In two studies (Ammah & Hodge, 2006; Hodge, Ammah, Casebolt, Lamaster, & O'Sullivan, 2004), data were also collected using non-participant observation. Seven studies investigated teachers' 'beliefs' about inclusion. Four studies investigated teachers' 'attitudes' and 'perceptions' about inclusion. Two studies investigated teachers' 'viewpoints', and one study investigated teachers' explicit 'concerns' about including SEND children in their classes. As for the populations of interest, five studies focused on primary school teachers, eight studies focused on secondary school physical education teachers, and four studies did not report data about the type of school within which the teachers worked. Only one study investigated both primary and secondary school teachers (Townsend, 2017).

A list of the themes that emerged from the qualitative synthesis is presented alongside their corresponding studies in Table A4. Eight higher-order cross-study themes were identified, the evidence for which is discussed in each of the following subsections. It is noteworthy that four of these eight themes were also reported in the sections above, in the quantitative synthesis. Therefore, we have used a Venn Diagram (Fig. A3) to illustrate the factors associated with teachers' attitudes towards the inclusion of SEND children in physical education for which we have quantitative and qualitative evidence (i.e., the *union* of the Venn Diagram), and for which we have corroborating mixed-methods evidence (i.e., the *intersection*). The following qualitative synthesis begins with a discussion of the four factors located at the intersection, which might otherwise be regarded as those factors for which we have the strongest empirical evidence – i.e., empirical evidence that was reported across multiple qualitative studies of primary and secondary school teachers.

4.2.1. Theme 1. knowledge and preparation

A prominent theme for both primary and secondary school teachers in the qualitative synthesis was the background knowledge and the additional preparations that teachers perceived as being necessary to work with children with SEND. Lack of knowledge about different types of disabilities and impairments was also reported by teachers as a particular concern. (Tanure Alves et al., 2017). Teachers in 15 studies reported a lack of knowledge, which they perceived as being due to shortfalls in pre-service training. The general sense from physical education teachers being interviewed across studies was that they did not have adequate preparation for inclusive physical education during their initial teacher training (Ammah & Hodge, 2006; Vickerman & Coates, 2009). Whilst this lack of preparation was a source of concern and frustration, studies also showed that teachers were willing to be proactive and seek out new knowledge to support their practice (Sato, Hodge, Murata, & Maeda, 2007; Townsend, 2017).

Where academic preparation was perceived as inadequate, physical education teachers reported that they needed to learn formally (e.g., attend CPD workshops or conferences about inclusion) or informally (e.g., independently research pedagogical strategies). Obtaining more knowledge about how to plan for and support pupils with different types of disabilities was important (Hodge et al., 2004; LaMaster, Gall, Kinchin, & Siedentop, 1998). Evidence suggests that PE teachers value opportunities to learn about inclusive pedagogical strategies and to obtain concrete examples of activities for use in their own classroom (Hersman & Hodge, 2010; Qi, Wang, & Ha, 2017; Sato & Hodge, 2009) – what some studies referred to as 'coping strategies' or 'solutions' (Lienert, Sherrill, & Myers, 2001) to the challenge of inclusion.

4.2.2. Theme 2. teachers' previous experience

A second theme that emerged was the importance of teachers' experience working directly with SEND children. This theme was

clearly evident amongst secondary school teachers (five studies). This theme was also evident in a study that combined the perspectives of both primary *and* secondary school teachers, as well as in four studies that did not report the details of the study setting. Such experience, teachers reported, was an essential aspect of developing their working knowledge of inclusive practice, and, subsequently, building confidence (Hardin, 2005). It was acknowledged that more years of experience teaching SEND led to more favorable attitudes (Casebolt & Hodge, 2010; Hersman & Hodge, 2010; Hodge et al., 2009; Morley, Bailey, Tan, & Cooke, 2005). There was also evidence of a connection between teachers' attitudes and the degree to which teachers found working with SEND children satisfying or rewarding. The evidence suggests that experience overcoming (perceived or actual) barriers to working directly with SEND children (and subsequently seeing them progress) can be a strong attitudinal reinforcer for teachers. In other words, teachers' experiences of working *effectively* with SEND children in physical education built confidence and thereafter positively affected attitudinal judgments (Sato et al., 2007; Sato & Hodge, 2009).

4.2.3. Theme 3. type and degree of disability

The qualitative data corroborates the findings presented in section 4.1.2 about the association between the degree of disability and teachers' attitudes – however, for secondary school teachers only. Studies in the qualitative synthesis also suggested that secondary school teachers were more favorable toward working with mild and moderate as opposed to severe disabilities (Casebolt & Hodge, 2010; Hersman & Hodge, 2010; Hodge et al., 2004; Morley et al., 2005; Sato et al., 2007; Sato & Hodge, 2009). Teachers reported finding it especially difficult to work with children with Emotional and Behavioral Disorders, such as Attention Deficit and Hyperactivity Disorder or Autism Spectrum Disorder. They reported feeling more competent working with 'less disruptive' disabilities (Casebolt & Hodge, 2010; Hersman & Hodge, 2010; Hodge et al., 2004), such as Learning Disabilities or Physical Disabilities (Morley et al., 2005). There was a general sense across studies that teaching students with mild disabilities was easier because it required fewer adaptations to lesson planning and individual in-class activities. Children with mild disabilities were also perceived by teachers as requiring less one-to-one time than students with severe disabilities (Casebolt & Hodge, 2010; Morley et al., 2005; Sato & Hodge, 2009).

4.2.4. Theme 4. class size

Eight studies, of which five samples were collected across secondary school teachers, and one from primary school teachers (samples were not reported in two studies), reported that larger class sizes negatively influenced teachers' beliefs about the feasibility of including SEND children (Ammah & Hodge, 2006; Hodge et al., 2004, 2009; Lienert et al., 2001; Qi et al., 2017; Sato et al., 2007; Sato & Hodge, 2009; Tanure Alves et al., 2017). Teachers were concerned about both the safety of lessons for SEND children, and also the quality of teaching being delivered to support individual SEND learners. Teachers were inclined to feel more confident and competent teaching SEND children in smaller groups, where more individual attention could be given and where safety concerns could be closely and directly monitored (Lienert et al., 2001; Qi et al., 2017; Tanure Alves et al., 2017).

4.2.5. Theme 5. Teacher collaboration and teaching assistance

Ten studies, of which 6 samples were from secondary school teachers and one sample from both primary *and* secondary school teachers (samples not reported in three studies) reported that the degree of support teachers perceived they had influenced (either positively or negatively) their attitudes. In general, the more support the teachers received, the more favorable their attitudes and perceived efficacy (Hodge et al., 2004; Sato & Hodge, 2009). Supporting behaviors between teachers were also widely reported. Teachers were keen to share information and knowledge about effective inclusive practice with their colleagues (Hersman & Hodge, 2010; Lienert et al., 2001; Qi et al., 2017). Many studies show that collaboration helped teachers to 'achieve' greater inclusion of SEND children (Qi et al., 2017; Sato et al., 2007).

Collegiality only goes so far, however. The following additional supports were also perceived by teachers as necessary: requiring in-class teaching assistants, buy-in from peers without disabilities during class time, and collaboration with and reinforcing behaviors by parents outside of schools. Practically speaking, the lack of availability of teaching assistants and administrative support was raised as one of the major concerns. Clearly, there was a perception that having SEND children in one's class requires 'more work' (Ammah & Hodge, 2006; Hersman & Hodge, 2010; Hodge et al., 2009; Morley et al., 2005; Qi et al., 2017; Sato et al., 2007). Particularly noteworthy was the finding that teachers perceived physical education as receiving less support in the form of teacher assistance than other school subjects (Morley et al., 2005), even though it was widely acknowledged that having assistance during physical education lessons was a major facilitator of inclusion (Morley et al., 2005; Tanure Alves et al., 2017; Townsend, 2017).

4.2.6. Theme 6. Peer and parental support

Students without SEND were seen as a crucial factor impacting teachers' attitudes about the degree of inclusion feasible within a given class. This theme was reported across samples of primary *and* secondary school teachers. The acceptance of and expression of prosocial behaviors toward SEND children were seen as direct enablers of inclusion (Ammah & Hodge, 2006). In fact, helping behaviors from children without SEND were perceived as a useful teaching strategy in themselves (Hodge et al., 2004; LaMaster et al., 1998; Zitomer, 2016). The opposite was also the case, however. Unfavorable attitudes amongst classmates – especially during competitive activities – raised concerns among teachers and affected the degree to which inclusion could be achieved within a given class session (Lienert et al., 2001; Qi et al., 2017).

Outside of the classroom, it was also clear from qualitative studies that support from parents was an important factor affecting inclusion. Teachers reported that collaborating with SEND children's parents was a fundamental aspect of inclusion (Qi et al., 2017; Sato et al., 2007). However, this was not always achievable. For example, qualitative studies show that parents often have very

different views about inclusive practices (Hodge et al., 2009). Some parents simply do not want their child to be in class with children without SEND (Qi et al., 2017). Such a view, quite clearly, can directly affect a teacher's attitude about their role as a facilitator of inclusion, and about their responsibility to actively promote and even prompt the inclusion of a given child in physical education whilst at school.

4.2.7. Theme 7. Use of inclusive pedagogy

The importance of planning for and using an inclusive pedagogy was also a recurring theme within qualitative studies, primarily from primary school teachers (three from primary school teachers and one from secondary school teachers). Combs, Elliott, and Whipple (2010), for example, found that teachers with favorable attitudes were also teachers who developed written plans for their classes – including considerations about how to differentiate one's teaching strategy to proactively enable inclusion. Thinking about modifications that would be required in a lesson plan – and making sure that one had the necessary equipment to support these modifications – were reported by teachers as strategies that were necessary for including SEND children. Despite the commitment to and known benefits of pursuing an inclusive pedagogy, teachers also reported challenges making this a reality in the classroom. For example, teachers reported experiencing difficulties managing their time properly when pursuing a more inclusive pedagogy – i.e., managing the optimal balance of their time between working with SEND children and working with the rest of the class (Ammah & Hodge, 2006; LaMaster et al., 1998).

4.2.8. Theme 8. safety and environmental considerations

A final theme that emerged across the qualitative literature was the need for teachers, both from primary and secondary schools, to consider safety and broader environmental factors affecting SEND children's engagement in physical education. For example, teachers found that it was easier to be inclusive during indoor activities. This is because they had more control over the range of possible environmental factors (e.g., easier to keep an eye on the group; access through the changing rooms for wheelchairs) affecting SEND children. Regardless of environmental conditions, however, teachers reported concerns about the increased likelihood of injury for SEND children (Hodge et al., 2004; Qi et al., 2017; Sato & Hodge, 2009). This was due not only to the nature of the activity (Hodge et al., 2004; Sato & Hodge, 2009), but also to unexpected behaviors of students with SEND, which were perceived by teachers as unduly risky, or not worth the risk (Qi et al., 2017). Crucially, team-based activities were perceived as being much more problematic for SEND children (Vickerman & Coates, 2009). Data reported in Hodge et al. (Hodge et al., 2004), for example, showed clearly that teachers were particularly fearful for SEND children during competitive team-based activities, particularly as the tempo and the stakes of the game increased. Such competitive contexts – namely, games and activities where ability levels are clearly apparent and/or where there are clear winners and losers – raise the question about the appropriateness of certain activities for SEND children. In such contexts, Sato and Hodge (2009) acknowledge that there are often clear physical risks to SEND children. However, far from simply being a matter of physical risk, the qualitative evidence also suggests that psychological, or psychosocial, risks can arise when activities are inappropriately designed. Sato and Hodge (2009) interviewed teachers who were concerned about the 'psychological safety' (ibid., p. 166) of SEND children and the risk of students feeling a sense of inferiority or alienation from the norms of their peer group. In the worst-case scenario even reported having a fear of SEND children experiencing verbal and physical abuse from their peers if the entire class was not constantly supervised (LaMaster et al., 1998).

5. Discussion

5.1. Reflections on the evidence

The purpose of this mixed-methods systematic review and meta-analysis was to evaluate the available research evidence on teachers' attitudes toward the inclusion of children with SEND in physical education classes. The results indicated that teachers' attitudes were positive overall, with only a small degree of between-study heterogeneity. In contrast with some findings from previously published reviews in the domain of general education (Scruggs & Mastropieri, 1996; Avramidis & Norwich, 2002; de Boer, Pijl and Minnaert, 2010; cf. Russell, Scrinney and Smyth, 2022), this is both a significant and promising new finding. The finding is significant because teachers' attitudes are consistently reported in the research evidence as key proximal factors affecting the inclusion of students with SEND (Lautenbach and Heyder, 2019; Robinson, 2017; Wang, Qi, & Wang, 2015). The finding is promising because, in the most comprehensive meta-analysis available to date on attitudes towards inclusion – which includes data from over 10,000 general education teachers published in 1996 – Scruggs and Mastropieri (1996) reported that, in over 37 years of studies between 1958 and 1995, few positive changes had occurred.

On the face of it, data from the quantitative meta-analysis suggest that, in the field of physical education at least, attitudes towards inclusion are positive and have potentially even shifted over time (though, a longitudinal analysis would be required to address this latter point more directly). Data from our qualitative synthesis revealed that perceived shortcomings in the institutional support mechanism that can lead to the development of inclusive attitudes among teachers in physical education still clearly exist. Most prominent among these shortcomings were teachers, both primary and secondary, reporting having inadequate preparation to practice inclusive physical education. This is unsurprising. There is a large body of international consensus and empirical evidence signalling that initial teacher education still does not have enough of an impact on teachers' preparedness for delivering inclusive education (European Commission, 2018; European Agency for Development in Special Needs Education, 2012; Organization for Economic Co-Operation and Development, 2009). We would caution that this is not primarily a quantitative issue of having sufficient knowledge about inclusion (cf. Cochran-Smith & Dudley-Marling, 2012). It is not simply about 'infusing' initial teacher education with more

knowledge about inclusion (see e.g., DePauw & Goc Karp, 1994; Kowalski, 1995; Tripp, Rizzo, & Webbert, 2007). Rather, according to Florian and colleagues (Fournidou, Kudláček, & Evagellinou, 2011; Florian & Camedda, 2020), the problem of inclusion continues to persist because trainee teachers still have limited opportunities to *both* understand the guiding principles of effective inclusive pedagogies whilst also reflecting upon their own personal beliefs and values which (if even only unconsciously) shape how they organize the learning environment (Oyler, 2006; Rouse & Florian, 2012).

Beyond the initial teacher training phase of career development, our results also suggest that participation in in-service training (also referred to as continuing professional development, or CPD) can be linked to the formation and development of attitudes. The results of this study also draw attention to the importance of informal – i.e., ‘on the job’ or ‘on site’ – learning. For example, our results showed that teachers highly valued collegial interactions about inclusion, which is a potentially valuable mechanism for contextualizing inclusion within the broader educational setting and curriculum framework that teachers must apply (or even adhere to) in their specific school (Florian & Camedda, 2020). We say ‘potential’ because there is growing international research on teacher professional learning cautioning that such informal learning is not a panacea (see e.g., Makopoulou, 2018). For example, collegial interactions about inclusive practice are grounded in misunderstandings about what constitutes good inclusive practice – or is over-reliant on sharing anecdotal evidence, without reflection – they can provide the ‘right’ context for the ‘wrong’ type of information to be disseminated. Reviews by both Waitoller and Artiles (2013) and more recently by Van Mieghem, Verschuere, Petry, and Struyf (2020) have both reflected on the opportunities that still exist for such workplace learning to support inclusion. However, both caution that the reality of workplace learning continues to be mired by inadequate theorization and/or remains insufficiently underpinned by a strong empirical evidence base. We agree with this and would add (in the vein of O’Connor et al., 2016) that additional attention needs to be given to whether and how theories of and empirical evidence about inclusion can be used (both formally in CPD settings and informally by communities of practice of teachers in schools) to directly scrutinise the stereotypical attitudes that risk long term reproduction of exclusionary pedagogical practices.

Scrutinising the evidence from this review, it could be argued that a subtle discourse of ‘exclusion’ still subtends teachers’ attitudes and is also still latent in their self-reported experiences of including SEND pupils in PE lessons. This is evident in this review (and other studies, such as Center & Ward, 1987; Scruggs and Mastropieri, 1996; Avramidis & Norwich, 2002; de Boer, Pijl and Minnaert, 2010) in the extent to which the type and the degree of disability were associated with differences in teacher attitudes. Naturally enough, if teachers report feeling inadequately prepared for inclusion in a general sense, then it stands to reason these perceptions and their attitudinal consequences would be exacerbated in the context of more challenging or unpredictable behaviours. However, teachers also consistently raise concerns about the additional time that is required to effectively include students with SEND – if this is not fully exclusionary, then it is at the very least a persisting ‘burden of inclusion’ mentality. Such a mentality can often be interpreted to mean “... time spent away from other, ‘normal’ learners”, and worse yet “... time not well spent”, or “... a waste of my time”. In this context, many teachers will earnestly report wanting or needing to learn more about specific disabilities. However well-intentioned, such yearning for more knowledge about different disabilities has been argued by some educationalists as simply drawing attention away from the true central tenet of and starting point for learning about inclusion – i.e., every child is different.

5.2. Implications of the evidence

The evidence available for review and synthesis in this paper suggests that how teachers (and potentially even researchers) think about SEND children still largely reflects a ‘categorical’ understanding of inclusion (Hauerwas & Mahon, 2018; Messiou, 2017). For advocates of this way of thinking about inclusion, the use of such categories is helpful to identify needs and access additional supports for individual learners. Reflecting on this categorical understanding, it is little wonder that teachers have historically had unfavorable attitudes and continue to have reservations about the feasibility of inclusive practice. When inclusive pedagogy is grounded in a tacit assumption about the need to access additional (and potentially scarce) resources – which increases workload – it stands to reason that teachers would report being under-resourced to make inclusion a reality in their individual classroom.

Such a categorical approach has, for a long time, also been recognized (and widely criticized) as the ‘deficits’ approach. In the context of the learner, this deficits approach views work to accommodate SEND children’s needs as disrupting the normal flow of learning – a flow that is often high-energy and high-paced in a physical education lesson, and can even be high-stakes when competitive, games-based, models of practice are being employed to facilitate learning. In the context of the teacher, such a deficits approach can be a constant reminder of shortfalls in one’s knowledge about this or that category of learner and their complex individual needs, and ultimately shortfalls in one’s professional competence. Once again on the side of the learning, practising the deficits approach also ultimately risks heightened exposure to stigmatization in physical education for SEND children – even the most well-intentioned and well-prepared teachers can end up drawing direct attention to the physical limitations of SEND learners, rather than using the classroom to identify, showcase, and celebrate the many different ways in which achievement in physical education can be manifested (cf., Makopoulou, Penney, Neville, & Thomas, 2019). Inclusion, Blanco (2009) writes, is not simply about carrying out ‘individualized actions to respond to the needs of specific students’ (p. 14). Florian and Black-Hawkins (2011) contend, that effective inclusive practice should actually reduce rather than increase teachers’ perceived need to mark some learners as different.

5.3. Strengths and limitations

The meta-analysis of quantitative data was a particular strength of this study, particularly when compared to previous reviews that relied solely on narrative synthesis. The mixed-methods data reported in this review now gives a much clearer sense of the strength of the evidence on teachers’ attitudes towards inclusion, as well as a more comprehensive basis from which to discuss the magnitudes of

the associations between different factors affecting teachers' attitudes. This mixed-methods data is also now useful for practical purposes, such as resource allocation to develop new interventions to promote inclusion in physical education in schools. We would argue that such intervention should be based on factors for which we have *both* supporting quantitative and qualitative evidence – i.e., factors located at the intersection of the Venn Diagram in Fig. A3.

Continuity in the instrumentation used to assess teachers' attitudes across quantitative studies represents a limitation of this review. The lack of consistent instrumentation across all quantitative studies precluded a more comprehensive meta-analysis of the factors predicting teachers' attitudes in cases where we found unclear effects (e.g., gender, years of experience as a teacher). Simply stated, had instrumentation been consistent across studies, we would have been able to include more studies (and therefore more effect sizes) in our meta-analyses.

A related limitation that pertains to instrumentation is the persistent use of single construct measures. Despite being framed within the context of Ajzen's Theory of Planned Behavior, many studies included in this review investigated attitudes alone as a single component of this multifactorial theory (cf., Jeong & Block 2011; MacFarlane & Woolfson, 2013). Such a univariate approach to simply 'surveying' teachers' attitudes overlooks the degree of shared variance that is known to exist between aspects of such a multifactorial theory (or any multifactorial, for that matter). For example, we know little about the degree to which attitudes towards inclusion are moderated or mediated by other teacher-related and broader school factors, such as teacher's sense of self-efficacy and perceptions about the nature of their role (e.g., role boundaries, or perceptions about aspects of their role that teachers believe to be within their behavioural control), or prevailing norms about inclusion within a given school (e.g., such expectations of about what can and should be achieved by children with SEND).

Of course, pupil-level outcomes need to be prioritized (cf. Van Mieghem et al., 2020). The lack of data on the association between teachers' attitudes, classroom-level consequences, and pupil-level outcomes is also a limitation of the review. For example, there was very limited quantitative evidence on the association between teachers' attitudes – including interventions to address attitudinal change (see e.g., Jarvis Chaput & French, 1990; and; Mauerberg-deCastro et al., 2013) – and SEND children's level of engagement in, enjoyment of, and progression in actual physical education lessons. Nested experimental designs, where the effectiveness of teachers' exposure to professional learning (for inclusion) interventions can be demonstrated in the context of pupil-level changes in biopsychosocial outcomes need to be prioritized in future research. Cascade models – which are used in developmental psychopathology to test multi-level directional associations between individual (i.e., child) outcomes and broader social factors (i.e., parents, siblings, home, community, school) – also represent a fruitful avenue for pursuing this line of research non-experimentally.

6. Conclusion

This mixed-method systematic review and meta-analysis found that teachers have, on average, favorable attitudes towards the inclusion of SEND children in physical education lessons. Uncertainty in the quantitative estimate of teachers' attitudes showed that attitudes are still highly variable, and the qualitative synthesis indicates that teachers still feel inadequately prepared and supported for practising inclusion. The evidence reported in this review suggests that a combination of both formal and informal professional learning has the potential to underpin attitudinal and behavioral change. However, the content (i.e., pedagogy of inclusion) and quality of delivery (i.e., pedagogy of facilitation) of professional learning require further scrutiny and a more robust evidence base to make inclusion a much more central pillar of high-quality teacher education.

Notes

1. The year 1975 was chosen because it marks the year of the first public law (in the United States) regarding the rights of children with disabilities to access education alongside their peers as equals – namely, The Education for All Handicapped Children Act (United States Congress, 1975).

Funding

This study is part of a PhD project that has been funded by the Irish Research Council under their Government of Ireland Post-graduate Scholarship scheme (GOIPG/2018/2996).

Conflicts of interest/Competing interests

Giampiero Tarantino, Ross Neville and Kyriaki Makopoulou declare that they have no conflicts of interest that are relevant to the contents of this review.

Availability of data and material

The data that support the findings of this study are available from the corresponding author, [GT], upon reasonable request.

Authors statement

Giampiero Tarantino and Ross Neville: Conceptualization, Methodology, Data Extraction, Statistical Analyses. **Giampiero**

Tarantino, Ross Neville and Kyriaki Makopoulou: Writing-Reviewing-Editing. All the authors revised and approved the final version of the manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.edurev.2022.100456>.

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