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Published online: 03 Feb 2021.

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Inclusive education in the European Union: A fuzzy-set qualitative comparative analysis of education policy for autism

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ABSTRACT

Children with special education needs (SEN), such as children with autism, benefit from being included in education along with typical peers. However, development and implementation of inclusive education (IE) is considered difficult. This paper identifies conditions that facilitate IE development for children with autism in the European Union and benchmarks to track IE policy development. Education policy data from 30 legislative regions in the European Union were analyzed through a qualitative comparative analysis using eight conditions: a definition of SEN, the right to education for children with SEN, support for teaching staff, support services for children with SEN, individualized learning outcomes, parental involvement, and mixed mainstream classes. The right to education for children with SEN is implemented in all regions under study. Seven of the examined conditions were associated with IE: an established definition of SEN, support for teaching staff, support services for children with SEN, individualized learning outcomes, parental involvement, IE policies, and mixed mainstream classrooms. Mixed classrooms and support services for children with SEN were identified as necessary for IE. IE policies and support for teaching staff were present in all scenarios that facilitated IE. While the analysis was initially focused on autism, the policies consisted predominantly of general SEN policies, allowing the results to be interpreted in a wider context, beyond autism. Ultimately, mixed mainstream classrooms and support services for children with special needs were found essential for consistent IE development. Support for teaching staff and IE policies facilitate IE and should be further explored and implemented.

Introduction

The prevalence of special education needs (SEN) in children in the European Union (EU) varies between 1–20%, depending on the classification system (Banks & McCoy, 2011). The Council of Europe has associated segregation of children with SEN with lapsed learning opportunities that are worsened by isolation and lack of inclusion in mainstream education (Council of Europe, 2017). Moving from segregation-based education systems to inclusive education (IE) systems is therefore an important goal for the autism community in the EU. However, the United Nations (UN) also acknowledged that there are children that simply cannot participate in mainstream classes, regardless of the support services. Attending mainstream education with SEN support would still not meet the

child's educational or social needs, or would inhibit the child's welfare in any other way (UNESCO, 1994). For these children, segregated facilities are retained in order to ensure access to education.

IE has widely emerged with the goal of enhancing education for children with SEN by adjusting classroom practices to individual needs (Van Mieghem, Verschueren, Petry, & Struyf, 2018). Including children with SEN in mainstream classrooms is found to benefit their academic and social skills, as well as their well-being (Hehir et al., 2016; Lai, Anagnostou, Wiznitzer, Allison, & Baron-Cohen, 2020; Van Mieghem et al., 2018). That being said, implementing IE is considered difficult, since education systems typically develop in very specific contexts, both in policy and practice, thus making each unique in how it functions (D'alessio & Watkins, 2009). Systems of IE are also typically embedded in a combination of mainstream and special education frameworks (D'alessio & Watkins, 2009). Therefore, frameworks are created to help guide and streamline the implementation, such as the Disability Rights in Education Model (DREM) (Peters, Johnstone, & Ferguson, 2005). The DREM is a guidance tool that provides a multilevel framework for evaluating aspects of IE at local, national, and international levels and outlines vital points to focus on to further the development of IE (Peters et al., 2005). It also stresses that the different points in the framework have to interact for IE to be achieved, both in-level (e.g. different factors at the national level) and cross-level (e.g. national and international). However, recent reviews suggest that providing guidance on specific SEN may be more feasible than the generalized guidance that the DREM offers (Van Mieghem et al., 2018).

One in 160 children, approximately 1% of people worldwide, are on the autism spectrum, and many have significant health and education needs (Lai, Lombardo, & Baron-Cohen, 2014; World Health Organisation, 2019). Recently, autism, SEN, and education policies in 20 EU Member States—covering 76,87% of the EU population (Eurostat, 2018)—have been mapped by the European Consortium for Autism Researchers in Education (EDUCAUS) using a path dependency framework. The aim of EDUCAUS was to systematically compare policy across all EU Member States against the vision of an education system that supports children with autism to fulfill their potential (Roleska et al., 2018; van Kessel, Dijkstra et al., 2020; van Kessel, Hrzic et al., 2020; van Kessel, Roman-Urrestarazu et al., 2019; van Kessel, Steinhoff et al., 2020; van Kessel, Walsh et al., 2019). Each policy analysis focused on a specific theme, including parental involvement (van Kessel, Roman-Urrestarazu et al., 2019), teacher education (van Kessel, Steinhoff et al., 2020; van Kessel, Walsh et al., 2019), and teacher responsibilities (van Kessel, Steinhoff et al., 2020). Each review found IE to be present in national policies of most Member States, though many of the investigated countries also retain segregation-based frameworks. It therefore remains unclear what factors are truly influential and effective in developing inclusive education for children with autism on a policy level.

This work aims to synthesize the policy data of EDUCAUS and contribute to modeling pathways that are associated with the development of IE in EU Member States from the perspective of children with autism and identifying benchmarks that can be used to track the development of IE on a policy level. Subsequently, key drivers that can aid the development of a policy of inclusion for children with autism in EU Member States in different contexts can be pinpointed as well. This is necessary to direct future policy and research endeavors for education policy pertaining to inclusive education for children with autism. One challenge of comparative studies on inclusion is to capture the complexity of the terminology, show different possible pathways and interpretations, and discuss their respective consequences for practice (D'alessio & Watkins, 2009).

A Qualitative Comparative Analysis (QCA) is a suitable option to map these possible pathways and interpret their meanings in light of existing literature for several reasons. Firstly, IE is defined as an outcome that is contingent on the combinations of different factors (Franck & Joshi, 2017; Hehir et al., 2016; Van Mieghem et al., 2018), which is a requirement for the usage of QCA (Schneider & Wagemann, 2012). Secondly, QCA formalizes and systematizes case comparison. This addresses the common concern of scientificity (i.e. based on principles of science) surrounding case studies that the case study material is compared in a loose and unformalized way (Rihoux & Lobe, 2009). QCA refers to a case-based methodology in which (1) conditions and outcomes are previously identified, (2) an examination on which of these conditions are considered necessary and/or sufficient for an outcome

to occur is performed, and (3) a systematic comparison is made to determine which combinations of conditions are associated with an outcome (Bandelow et al., 2019; Ragin, 1987; Rihoux & Ragin, 2009).

Methods

Theoretical background

QCA is a mixed-method approach developed by Ragin (1987) and has been used to analyze comparative case studies that include a medium number of cases (usually between 10 and 50) (Schneider & Wagemann, 2012). It uses set theory and Boolean minimization to identify patterns in the data (Ragin, 1987; Rihoux & Ragin, 2009). QCA thus takes an alternative approach to causal analysis compared to probabilistic methods (such as regression models) (Kane, Lewis, Williams, & Kahwati, 2014). QCA instead considers what variables (henceforth conditions), individually or in combination, are required to produce an outcome (Kane et al., 2014; Verweij & Gerrits, 2013). Its approach to causation recognizes that the conditions that produce an outcome do not work in isolation but are complementary, and acknowledges the possibility of more than one combination of conditions to produce an outcome (Warren, Wistow, & Bambra, 2013). For a visual representation of the QCA method, see Figure 1.

QCA typically uses case studies in which cause and effect are determined and explained. The conditions are classified as *necessary* or *sufficient* (Schneider & Wagemann, 2012). Necessary conditions are essential for producing an outcome, though they may require other conditions to be present. Sufficient conditions, on the other hand, can individually produce an outcome, though different sufficient conditions may exist (Schneider & Wagemann, 2012).

Within QCA, there are two common approaches: a crisp-set approach (indicating conditions and outcomes with only binary coding) and a fuzzy-set approach (indicating a mix of conditions and outcomes that can be dichotomous or have multiple crossover points) (Rihoux & Ragin, 2009). This study makes use of fuzzy-set QCA, as the conditions and outcomes for this study are a mix of dichotomous conditions and conditions with multiple levels of membership (see below).

For its output (so-called solutions), QCA uses Boolean minimization to provide combinations of conditions that are associated with the outcome (Schneider & Wagemann, 2012). This study used two types of solutions: complex solutions that minimize a solution based only on available data and intermediate solutions that use theoretical knowledge to evaluate what conditions would be feasible to include in practice (Rihoux & Ragin, 2009).

QCA requires five steps. First, a dataset is chosen that includes data on all relevant conditions and the outcome. Second, the dataset is calibrated, which means that cases are coded according to the degrees of membership present in a condition or outcome. Third, an analysis of necessity is performed to identify conditions that are required for the outcome to occur. Fourth, an analysis of sufficiency is performed by constructing a truth table and minimizing it through Boolean algebra to identify the combinations of conditions that are associated with the outcome. Finally, the combinations of conditions are assessed according to their consistency and coverage. Those that are sufficiently consistent are then compared to established theoretical knowledge to understand why the combination is associated with the outcome.

Data collection

This study synthesizes the findings of the policy analyses by EDUCAUS, which comprises descriptive data on individual policies of the 20 investigated EU Member States (Roleska et al., 2018; van Kessel, Dijkstra et al., 2020; van Kessel, Hrzic et al., 2020; van Kessel, Roman-Urrestarazu et al., 2019; van Kessel, Steinhoff et al., 2020; van Kessel, Walsh et al., 2019). Information in each case was collected by means of a scoping review (Arksey & O'Malley, 2005; Levac, Colquhoun, & O'Brien, 2010) of the respective national policy repository and analyzed through a path-dependence analysis (Mahoney,
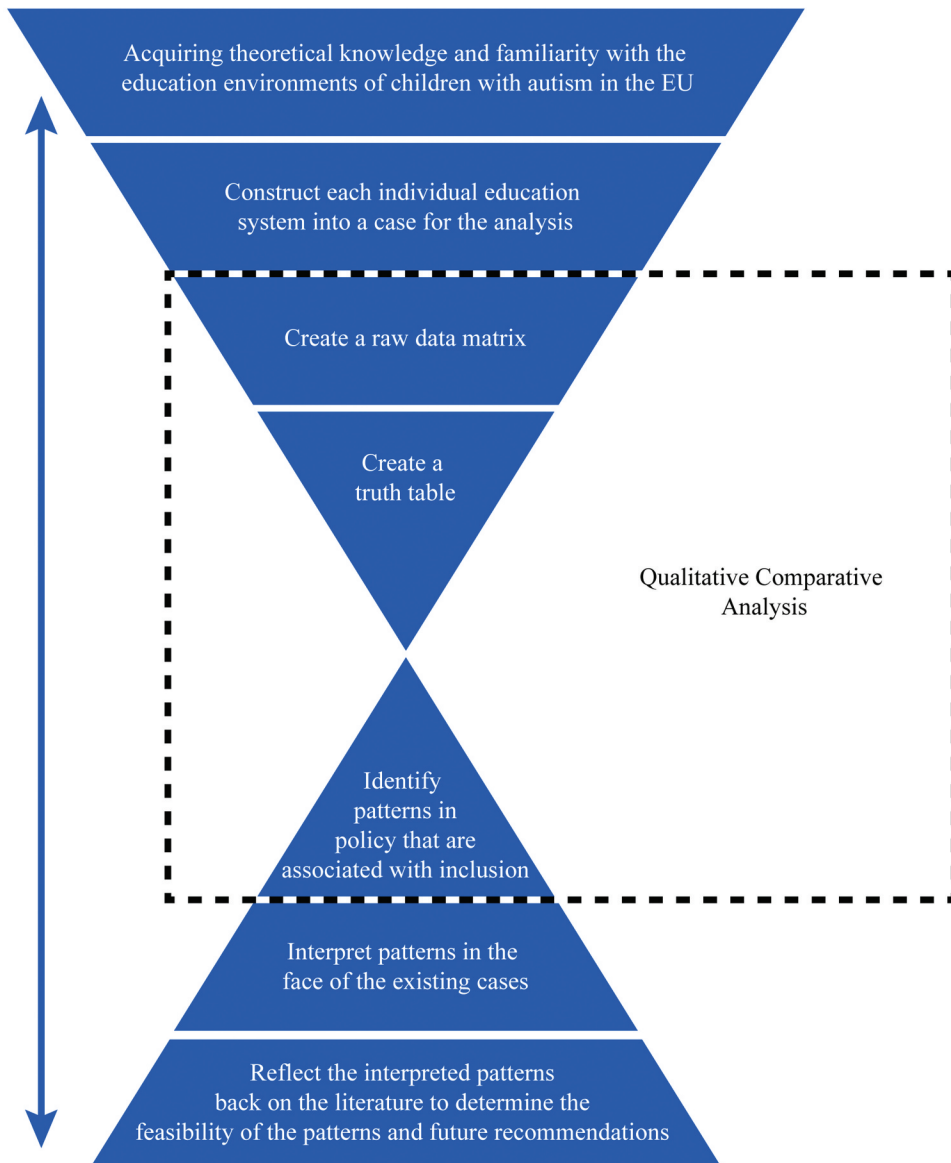
Figure 1. A representation of what a qualitative comparative analysis. Source: Adaptation of the illustration by Verweij (2015).

2000). The primary aim of the EDUCAUS project was to map autism policy with regards to education in general in the EU. They stated in their analyses that, in case autism-specific policy was missing, general SEN policy was identified. Table 1 shows that 17 out of 30 legislative regions (56.67%) do not address autism specifically in their policy environment. From the remaining 13 regions, six (20%) developed one or more autism strategies that set priorities for future policy development and seven (23.33%) implemented policies that set out specific provisions for children with autism. Regardless, both approaches were enrichments on top of general SEN policy. As such, their dataset describes a robust repository of policies that affect the right and access to education for children with autism.

Our selection of conditions is based on the items included in the DREM and previous research on factors that influenced the development and implementation of IE practices from different perspectives. Since ambiguous terminology can form a barrier of implementation (Dell'Anna, Pellegrini, &

Table 1. The extent of autism policy present in European Union Member States.

Autism Policy	Autism Strategy	General SEN Policy
Cyprus	Belgium-Flanders	Austria
England[1]	France	Belgium-German community
Germany	Lithuania	Belgium-Wallonia
Luxembourg	Scotland[1]	Czech Republic
Malta	Spain	Denmark
Northern Ireland[1]	Wales[1]	Estonia
Slovenia		Finland
		Germany-Bavaria
		Germany-Lower Saxony
		Germany-North Rhein Westphalia
		Germany-Saxony
		Hungary
		Latvia
		Netherlands
		Poland
		Slovakia
		Sweden

[1]Exited the European Union after the data collection and analysis of this country was completed.

Ianes, 2019) and SEN includes various definitions (Banks & McCoy, 2011; Lindsay, 2007; Pijl, Frostad, & Flem, 2008; Van Dijk, Verheul, & Klompe, 2003), having an established definition of SEN is taken as the first condition. The DREM points out that, at a national level, teacher training, child-centered pedagogy, collaborations, sensitization, community involvement, and representation are key for developing IE (Peters et al., 2005). It also establishes that basic human rights, such as the rights to health and education, need to be met at the international level. Since the implementation of the right to education occurs at the national level in the EU (Treaty on the Functioning of the European Union, 2007), it is included as the second condition. Teacher training, collaborations, and sensitization are grouped as a third condition as they all relate to the teacher infrastructure, which is a key element in IE (Van Mieghem et al., 2018). The right to health is partially covered by general support services for SEN (Carroll et al., 2017), so their availability is taken as the fourth condition. Policy stands at the center of the national level in the DREM as a factor that enables IE by providing basic conditions needed for IE to be effective. As such, we the presence of IE policy is included as fifth condition. The DREM also explains that community involvement is crucial in the effectiveness of IE. This is restated by Van Mieghem et al. (2018) and Hehir et al. (2016), who indicate that the attitude the community (specifically parents) has, is very influential to whether IE practices are developed, implemented, and effective. In particular, it is emphasized that parents need to be included as key partners in their children's education to help ensure the best outcomes (Hehir et al., 2016). Therefore, parental involvement is included as the sixth condition. Literacy, satisfaction, and accommodation/adaptation are integral factors in the local level of the DREM. They indicate that children should be connected with the contents of school curricula, that they should be motivated to learn, and that appropriate accommodations and adaptations to the learning environment are required (e.g. instructional adaptations to facilitate diverse learning styles). Individualized learning outcomes are a measure in which children can develop according to their own strengths, which is a key factor in IE practices (Van Mieghem et al., 2018). As such, the presence of individualized learning outcomes is added as seventh condition. Finally, mixed classes in which children with and without SEN are added together form the basis of an IE environment (Hehir et al., 2016; Van Mieghem et al., 2018). As such, the presence of mixed mainstream classes is the final condition.

We coded the eight conditions as follows: (1) establishment of a definition of SEN (yes or no), (2) the right to education for children with SEN (yes or no), (3) support for teaching staff (none – 0, limited, elaborate – 2), (4) general support services for children with SEN (yes or no), (5) IE policies (yes or no), (6) parental involvement (no – 0, passive, active – 2), (7) individualized learning outcomes

(yes or no), and (8) mixed mainstream classes (yes or no). The outcome was access to education (exclusion – 0, segregation, integration, inclusion – 3) (Hehir et al., 2016). The calibration criteria of conditions and outcome is shown in Table 2, along with information on the characteristics of each condition and what elements had to be present in a policy in order to be allocated a respective value.

Statistical analysis

The analysis was performed using R (R Core Team, 2018) and the "QCA" package (Dusa, 2019). Six out of seven calibrated conditions were tested for necessity. The right to education for children with SEN was excluded from this analysis, since it was always present. Conditions were only labeled as necessary when their consistency was greater than 0.90 (Garson, 2016). Subsequently, a truth table was constructed to identify sufficient causal pathways. This is an intermediate action in a QCA that depicts all potential configurations of conditions and the number of cases that show each causal configuration, along with a consistency score for that causal configuration. The standard frequency threshold of 1 and consistency threshold of 0.80 were used, indicating a moderately strong relationship with the outcome (Garson, 2016). The condition "individual learning outcomes" was excluded from the analysis of intermediate solutions, because individual learning outcomes can only function properly in a multi-disciplinary environment (Johnstone, 2018), which are contingent on the "support for teaching staff" condition.

Solution consistency and coverage were calculated based on the findings. Coverage indicates to what degree the causal condition explains the outcome. No cutoffs were used, as a lower coverage may identify a less common causal pathway. Intermediate and complex solutions of sufficient conditions from the truth-table analysis are illustrated presented in a table. The analysis and the results were replicated by an independent researcher.

To strengthen the findings of this work, a second, independent researcher also coded the dataset. After comparing the two datasets (shown in Supplementary File 1), we tested for inter-rater reliability and found a crude ratio of 72.22% (195 out of 270 observations). We also accounted for the possibility of reaching inter-rater agreement by chance by computing Cohen's Kappa (Cohen, 1960). The analysis was performed using R (R Core Team, 2018), particularly using the "irr" package (Gamer, Lemon, Fellows, & Singh, 2012). A value of 0.533 was found for Cohen's Kappa, which indicates a moderate agreement between observers (Landis & Koch, 1977). In order to ensure correctness of the analysis, the results were analyzed through the DREM and compared to findings in modern literature on IE.

Results

The analysis involved investigating factors that benefit the development of inclusion. The abbreviated truth table of the causal conditions is included in Supplementary File 2. Seven conditions (support for teaching staff, general support services for children with SEN, individualized learning outcomes, parental involvement, an established definition of inclusion, and mixed mainstream classes) were found to have a relationship with the development of IE. The only condition that was removed from the model was the right to education for children with SEN because this was unanimously implemented. As such, since this condition is unanimously present, it signals that it is irrelevant to the outcome. The presence of general support services for children with SEN (consistency 0.97; coverage 0.632) and mixed mainstream classes (consistency 0.997; coverage 0.65) were labeled as necessary conditions. An overview of the necessary conditions and the causal pathways is given in Table 3.

Based on available data, five causal pathways were identified as sufficient for the development of IE in the complex solution analysis of the truth table. Having no established definition on SEN with parents being involved and policy that focuses on IE in place was found to be the pathway with a high consistency (0.948) and the highest coverage of the complex solutions (0.374). An established definition of SEN, support for teaching staff, individualized learning outcomes, and IE policies was found to have high consistency with the outcome (1.00), though had little coverage (0.061). Having an established definition of SEN, support for teaching staff, and IE policies, but no parental involvement

Table 2. Conditions and outcomes, descriptors and sources, and data calibration.

Condition/Outcome	Calibration	Criteria	Abbreviation
Condition: Established definition of SEN	No (0), Yes (1)	Yes, if a definition of SEN is established through policy.	DefSEN
Condition: Right to education for children with SEN	No (0), Yes (1)	Yes, if the right to education for children with SEN is established through policy.	EduSEN
Condition: Support for teaching staff	None (0), Scarce (1), Elaborate (2)	Scarce support is indicated by *either* the presence of additional teacher training or supporting staff (e.g. teacher assistants); elaborate support is indicated by the presence of both those factors.	TeachSup
Condition: Support services for children with SEN	No (0), Yes (1)	Yes, if support services for children with SEN are established through policy.	SupServ
Condition: Inclusive education policies	No (0), Yes (1)	Yes, if policies specifically target the development of inclusive education.	IEP
Condition: Parental involvement	None (0), Passive (1), Active (2)	Passive parental involvement is characterized by only informing parents of the child's progress in schools, while active involvement is a reciprocal relationship between schools and parents in order to optimize the learning environment for the child.	Parent
Condition: Individualized learning outcomes	No (0), Yes (1)	Yes, if there is a system in place that allows children with SEN to have an educational trajectory that deviates from the trajectory that typical children follow.	ILO
Condition: Mixed mainstream classes	No (0), Yes (1)	Yes, if children with SEN are admitted to mainstream classes in any form.	MMC
Outcome: Level of access to education	Exclusion (0), Segregation (1), Integration (2), Inclusion (3)	Exclusion refers to the situation in which children with SEN are barred from education entirely; segregation involves children with SEN being education in separate facilities; integration means that children with SEN able to follow mainstream education do so in combination with out-of-class support; and inclusion is defined by the systematic introduction of children with SEN in mainstream classrooms where they also receive the necessary support in that classroom.	AccEdu

Table 3. Necessary and sufficient causes for developing inclusive education.

Conditions		Necessary Conditions		Sufficient Conditions — Complex Solution				
				1	2	3	4	5
Established definition of SEN				–	*	*		
Support for teaching staff					*	*	*	*
General support services for children with SEN		*						
Individualized learning outcomes					*		–	*
Parental involvement				*		–	–	*
Inclusive Education Policies				*	*	*	*	*
Mixed mainstream classes			*					
Condition	Consistency	0.97	0.997	0.948	1	1	1	1
	Coverage	0.632	0.65	0.374	0.061	0.087	0.148	0.128
Solution	Consistency	0.966		0.811				
	Coverage	0.652		0.691				

Every column of sufficient causes is one separate causal pathway. The conditions in each pathway should be combined with a logical AND.

resulted in high consistency (1.00), but also with little coverage (0.087). Support for teaching staff and IE policies combined with a lack of individual learning outcomes and parental involvement yielded a high consistency (1.00) but low coverage (0.148). Finally, support for teaching staff, individual learning outcomes, parental involvement, and IE policies yielded again a high consistency (1.00), but low coverage (0.128). The overall solution consistency (0.811) was high and coverage (0.691) was moderate, indicating that these combinations of conditions produce the outcome in a large proportion of cases and that a moderate proportion of outcomes in these cases are a result of these combinations of conditions. No intermediate solutions that exceeded the consistency threshold of 0.80 were found.

Discussion

This study affirms that EU countries unanimously implemented the right to education for children with SEN and shows that seven of the examined factors are associated with an environment of IE in the EU through the perspective of children with autism: an established definition of SEN, support for teaching staff, general availability of support services for children with SEN, individualized learning outcomes, parental involvement, IE policies, and mixed mainstream classrooms. This suggests that various inputs or components in an education system may be key in the development of IE.

There are several benefits to conducting a QCA. First, it identifies an array of patterns that are associated with an outcome measure, which can bring attention to previously unexplored possibilities or approaches to an outcome (Lucas & Szatrowski, 2014). Second, it allows the systematic comparison of case studies by calibrating the characteristics of each case study to a format is transparent and replicable (Pattyn, Molenveld, & Befani, 2019). Third, by differentiating between necessary and sufficient conditions, it can aid researchers and policymakers in developing programs that produce successful educational outcomes (Kane et al., 2014). Fourth, the fuzzy nature of this analysis is suitable for analyzing outcomes that can be quantified in degrees (in this study: exclusion, segregation, integration, inclusion) (Pattyn et al., 2019). Finally, whereas statistical methods can overlook the rich contextual complexity and causal complexity to achieving an outcome, QCA is suited to partially overcome this difficulty because of its "potential to account for causal complexity and allowing for generalization" (Pattyn et al., 2019).

On the other hand, this study has several limitations. First, the dataset of this study is comprised entirely of policy information and holds no information regarding practical settings. As such, practical implications of the policy recommendations later on should be reviewed before considering implementation. Second, cases should be similar in all aspects relevant to the outcome except for the analyzed conditions to be used by a QCA (Rihoux & Ragin, 2009). As such, policies had to be analyzed by generalized characteristics. This makes it so that unique elements that can make a policy effective in

a certain setting could have been overlooked. Third, the coding of data was performed by an individual researcher. Given that the coding was heavily based on the interpretation of qualitative data, the possibility of interpretative bias of ambiguous texts cannot be excluded, regardless of clear explanations being established for the individual conditions. To ameliorate this limitation, the coding was verified by a second, independent researcher and inter-relater agreement scores were calculated. Fourth, several conditions were coded in a binary fashion. Even though it provides a clear overview, it also brings with it the risk of overlooking nuances that be important in the interpretation of the outcome of the condition. Fifth, QCA is not a quantitative approach and cannot account for false positives. We ameliorated this by reflecting back on modern literature in the interpretation of the pathways. Sixthly, conclusions about causality should always be made with an abundance of caution, including when using QCA. It is not likely that our study was able to establish a causal relationship between the analyzed conditions and the outcome. Instead, we identified pathways within a dataset to give insight in future areas of development and should be interpreted carefully (Lucas & Szatrowski, 2014). Finally, the dataset of EDUCAUS consisted of a combination of a majority general SEN policy and a minority autism-specific policy. As such, the implications of this study should initially be interpreted from an autism-perspective. That being said, the large body of general SEN policy makes it so the results of this study can be used in a wider context, beyond autism.

After considering the strengths and weaknesses of the methodology, findings can be interpreted accordingly. The identification of general support services for children with SEN and mixed mainstream classrooms as necessary conditions are consistent with the core fundamentals of IE – which call for children with SEN to join mainstream classrooms and to have their needs addressed (albeit in-class) (Kurth & Gross, 2014; Van Mieghem et al., 2018). As such, consistent with the definition of necessary conditions (Schneider & Wagemann, 2012), the availability of general support services for children with SEN and mixed mainstream classrooms can be deemed crucial to the development of IE, but not enough on their own.

Even though the combination of necessary conditions with parental involvement, IE policies, and a lack of SEN definition fit in the DREM as a system of inclusion (Peters et al., 2005), it is more indicative of an integrative education environment in which children with SEN that can adapt to mainstream classrooms are admitted there and receive SEN support predominantly out of classrooms but can receive it in-class (Hehir et al., 2016). The place where the support services are delivered remains ambiguous because policies rarely explicitly state the place of delivery (Roleska et al., 2018; van Kessel, Dijkstra et al., 2020; van Kessel, Hrzic et al., 2020; van Kessel, Roman-Urrestarazu et al., 2019; van Kessel, Steinhoff et al., 2020; van Kessel, Walsh et al., 2019). Parental involvement, however, was previously found to be key in letting children with SEN experience effective and welcoming educational settings in which their needs are met (Hehir et al., 2016).

Establishing a definition of SEN, support for teaching staff, individualized learning outcomes, and IE policies combined with the necessary conditions point more toward the structural adaptation and interdisciplinarity that is required to develop IE and also complies with the DREM (Hehir et al., 2016; Kurth & Gross, 2014; Peters et al., 2005; Van Mieghem et al., 2018). While an established definition of SEN and IE policy provide clarity and consistency in the interpretation of these terms, the support for teaching staff is vital in taking pressure off teachers and allowing them to further develop their skillset in working with SEN. This, in turn, is complemented by the individualized learning outcomes in which children can develop according to their own strengths, which is integral to IE (Van Mieghem et al., 2018).

Adding the necessary conditions to an established definition of SEN, support for teaching staff, IE policies, and the absence of individual learning outcomes creates an environment in which teachers are being put in a position to succeed. More specifically, the availability of teacher support, involving support in classrooms (e.g. teaching assistants) and additional education for teachers on specific SEN condition – shown to be more effective than education on inclusion in general (Van Mieghem et al., 2018) – creates an environment in which teachers have the opportunity to tend to the needs of individual children more, due to (1) other responsibilities being transferred to assisting staff and (2) an

enhanced skillset on how to work with children with SEN. The set definition of SEN makes sure that there is little ambiguity in terminology, which can increase transferability of practices between teachers.

Combining the necessary conditions with support for teaching staff, IE policies, but without individual learning outcomes and parental involvement creates an environment in which everything is focused on the teachers, without input from community members. It enables teachers to be open in their approach to teaching and, by extension, creative in shaping their classroom materials, which is beneficial in addressing the needs of children with SEN (Hehir et al., 2016). However, the disconnection with the community may result in more difficulties with regards to implementation, since the community is a big factor in creating welcoming education environments for children (Hehir et al., 2016).

The final pathway that involves the combination of the necessary conditions with support for teaching staff, individualized learning outcomes, parental involvement, and IE policies is the closest representation of the DREM in this analysis. Its multifaceted approach of enhancing teacher training, community involvement (through parents), child-centered pedagogy (individual learning outcomes), and collaboration (teacher support) are all reflected in the DREM (Peters et al., 2005). Additionally, it corresponds with the notion that developing IE requires a systemic change compared to the systems of segregation and integration (Hehir et al., 2016).

An interesting finding of this study is that support for teaching staff was present in four out of five identified pathways. The only pathway in which it was absent, is the pathway that was more associated with an integrative environment. This is in line with the DREM, where teacher training and collaborations are outlined as key factors of IE (Peters et al., 2005), as well as recent literature that indicates that teachers who are more experienced and have received better training in working with children with SEN are better able to lessen any negative impact of the children with SEN on the behavior of their typical peers (Gottfried, 2014). They are also found to have a more positive attitudes toward IE upon enhancing their skillset and being better prepared to work with children with SEN (Van Mieghem et al., 2018). That being said, training teachers on SEN holistically was reported to be less effective than providing training on specific SEN (Van Mieghem et al., 2018). Nevertheless, support for teaching staff being identified as a sufficient condition indicates that, while it can contribute extensively to developing IE, it does so inconsistently, implying that other factors are necessary to be present (e.g. mixed mainstream classrooms and support services for children with SEN).

This line of reasoning is also applicable for the presence of IE policies in all five of the identified pathways. Policy should be a guiding tool for the relevant areas in developing IE. However, for policy to be effective, these other areas need to have both the capacity and willingness to develop toward IE. For instance, IE policy can prescribe that community members should be involved, but if community members do not see the importance of building IE, they will be less inclined to work toward it.

This study has implications for future research. We identified seven key policy areas that can be used as benchmarks in future studies to keep track of the development of IE. The identified conditions were based on state-of-the-art evidence surrounding IE combined with the internationally used DREM (Hehir et al., 2016; Peters et al., 2005; Van Mieghem et al., 2018).

This study also has two recommendations for IE policy development. Firstly, the results of this study indicate the need for enhanced teacher support networks. There are already some instances where collaborative networks are seen in the EU. In Luxembourg, a framework was created for institutions that worked with children with SEN that included the assistance of psychologists, special education teachers, primary school teachers, other educators and instructors, and nursery school teachers (van Kessel, Hrzic et al., 2020). Latvia implemented provisions that should be present in mainstream and special classrooms based on specific forms of SEN (van Kessel, Dijkstra et al., 2020), such as visual and hearing impairments, physical disabilities, speech disorders, learning disabilities, mental health problems, and severe mental disabilities—which are all common co-occurring conditions for autism (Lai et al., 2014).

Secondly, improving teacher training is also emphasized as a vital point for IE. Various approaches have been found in the EU as well. Finland, for example, adopted a teaching curriculum that includes courses on each potential step of the education system, making it so that every teacher has at least a basic understanding of SEN (van Kessel, Walsh et al., 2019). Sweden acknowledged the need to address at a system-wide level and at an individual level by distinguishing two types of special education teachers: SEN teachers that focus at the individual level, and special education needs coordinators, who specialize at addressing the education environment as a whole (van Kessel, Walsh et al., 2019). As such, it is imperative that a course on autism specifically is created for teachers to improve their understanding and ability to work with children with autism, especially since courses on specific conditions are found to be more effective than general courses on SEN, and teachers with more training on SEN were found to have better attitudes toward inclusive education (Van Mieghem et al., 2018).

In short, equipping mainstream schools with approaches to IE that do not impair (ideally enhance) educational quality for students without a diagnosis is vital. Especially given that autism is not binary but a continuous spectrum, many more children than the raw prevalence figures will benefit from an IE approach that works. However, the development of IE is a complex process in which an array of conditions is involved. In this study, provision of support services for children with SEN and mixed mainstream classrooms were identified as core elements of any system that wants to move from exclusion-segregation to integration-inclusion. Additional items were identified that are sufficient for the development of inclusion on their own, though inclusion does not always happen under those circumstances. The outcomes of this paper hold methodological implications, specifically the identification of key policy areas that can be used as benchmarks in future studies to keep track of the development of IE. It also holds policy implications, namely the identification of several topics that could benefit the development of IE.

Acknowledgments

Author contributions

All authors contributed equally in their respective ways. Robin van Kessel was in charge of writing, editing, and finalizing the manuscript. Rok Hrzic verified the coding and reviewed the manuscript in its different stages. All other authors reviewed the manuscript in its different stages and provided their input respectively.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

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Ethics approval and consent to participate

Due to all policy data that was at the core of this study being publicly available, the outcomes of this study have no ethical implications. Also, since the study was completely based off of public data, there was no situation in which it was necessary to request consent. Finally, neither sample sizes nor major demographic characteristics (aside from population size) were applicable to the study at hand. As such, these are not reported.

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