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To cite this article: Jon Erik Finnvoll & Therese Dokken (14 May 2023): How school placement and parental social capital influence children's perceptions of inclusion in school. A survey of Norwegian children with physical disabilities, European Journal of Special Needs Education, DOI: [10.1080/08856257.2023.2207054](https://doi.org/10.1080/08856257.2023.2207054)

To link to this article: <https://doi.org/10.1080/08856257.2023.2207054>



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Published online: 14 May 2023.



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How school placement and parental social capital influence children's perceptions of inclusion in school. A survey of Norwegian children with physical disabilities

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ABSTRACT

The study analyses variations in school well-being, social inclusion, and academic self-concept in a population of Norwegian children born with a physical disability ($N = 311$). Overall, the children reported positive experiences regarding their social and emotional inclusion in school but tended to have a more negative experience of their academic self-concept. About half of the sample received special education in segregated settings, either within ordinary schools or in special schools. These children were characterised by a negative academic self-concept, and struggled with gaining acceptance from their peers. Children of mothers with high scores on social capital felt more included in terms of well-being and social inclusion. Controlling for severity of condition and other socio-demographic factors, the degree of placement in ordinary school settings was by far the most important determinant. These negative influences must be acknowledged and weighed against the benefits in discussions on the continuation of segregation practices.


KEYWORDS

perception of inclusion index (PIQ); school placement; disability; socio-economic background

Introduction

Children with physical disabilities are less socially active, have fewer social interactions, and are less likely to participate in organised leisure activities (Piškur et al. 2015, 2016; Michelsen et al. 2014; Finnvoold 2021). Further, they are at risk of not being socially accepted in school (Maïano et al. 2019), and are more likely to be less satisfied with the time they spend in school (McCoy and Banks 2012). As a group, they are also more likely to drop out of school without finishing secondary education (Finnvoold 2021).

The purpose of our investigation is to assess the influence of 'placement' and parental social capital on variations in children's perceived inclusion. Placement refers to the official desire to place every learner in mainstream schools, irrespective of the type of disability or functional ability (Ainscow, Slee, and Best 2019). In a series of multivariate analyses, we probe the extent to which children's own perceptions of inclusion are influenced by their degree of placement in ordinary classroom education and parental social capital.

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Although there is evidence that children with disabilities are not included in education compared to their peers, there is no consensus on what inclusive education really mean (Messiou 2017; Miegheem et al. 2020; Nilholm and Göransson 2017). The topic has been approached from different empirical perspectives, including teachers, parents, other children, and the children with disabilities themselves. In this study, we approach inclusion in school from the perspective of the child. According to a review published in 2018, no research has explicitly examined how children with disabilities perceive social inclusion (Koller, Pouesard, and Rummens Koller, Le Pouesard, and Anneke Rummens 2018). However, German and Austrian researchers have developed an instrument called 'The perception of inclusion questionnaire' (PIQ) to address this subject. In studying the effects of inclusion on students, our main interest is socio-emotional functioning in school. We measure this along three different dimensions: emotional inclusion/school well-being, social inclusion, and academic self-concept. The PIQ was developed to address this issue. The instrument is widely used and has been applied in different educational settings, such as in inclusive versus special classes (Knickenberg et al. 2020), different school grade levels (DeVries, Knickenberg, and Trygger 2021), and students with and without special educational needs (Guillemot and Hessles 2021). It has also been applied in different countries, including Austria (Schwab, Zurbriggen, and Venetz Susanne, Zurbriggen, and Venetz 2020), France (Guillemot and Hessles 2021), Germany (Zurbriggen et al. 2017; DeVries, Voß, and Gebhardt 2018; Knickenberg et al. 2020), Sweden (DeVries, Knickenberg, and Trygger 2021), and Switzerland (Knickenberg et al. 2020).

A common approach to investigating inclusion in a school context is to lump children with disabilities into one category, conceptualised as children with 'special educational needs' (SEN). However, children with disabilities vary widely. A strength of our approach is that we target a specific group of diagnostic conditions that share common characteristics. Further, the use of survey methodology enables us to construct a measure of the severity of the physical disability, while register information captures professionals' assessment of the level of need for attendance.

School placement

The term *inclusion* is commonly used to define general educational settings with a mixture of students with and without special educational needs. Other terms used for the same phenomenon are *mainstreaming* or *cross-categorical instruction*. In our study, the term *school placement* refers to the degree to which children with disabilities are placed in ordinary classes within the local community in which the family resides. Placement also includes children in special schools, an option that still exists in some of the larger city regions in Norway. Despite being a common objective, there is nevertheless a gap between inclusive education in terms of placement in mainstream schools as a societal goal and actual practice throughout Europe and the United States (Ramberg and Watkins 2020; Buchner et al. 2020; Wehmeyer, Shogren, and Kurth 2020).

Whereas positive effects follow from social interaction with peers in ordinary classroom settings (Fisher and Meyer 2002), placement outside of ordinary classroom education may increase the risk of stigmatisation and social isolation, with negative consequences for self-confidence and self-concept. Segregated education can also be conceived of as social exclusion in everyday life, provoking feelings of difference and being an 'outsider' and

emotions that affect the individual's psycho-emotional well-being, self-concept, self-esteem, and self-confidence, thus making them disabled in an indirect way (Reeve 2014). Peer group integration and positive peer-group experiences have also been found to be associated with high levels of self-esteem (Gorrese and Ruggieri 2013). From this perspective, it follows that children in segregated settings are likely to report more negative self-concepts.

However, several studies suggest that students in inclusive classes show lower self-concepts compared to their peers in special schools (Bear, Minke, and Manning 2002; Szumski and Karwowski 2015). These findings may stem from students' comparison of themselves with their classmates or schoolmates, resulting in a lowering or heightening of their own academic self-concept, depending on placement in a relatively high-achieving atmosphere (inclusive classrooms) or a low-achieving atmosphere (special schools), also known as the 'big-fish-little-pond effect' (Marsh 1987).

A recent review on the effects of placement on socioemotional development and well-being (among other outcomes) concluded that inclusive education neither increases nor decreases the psychosocial adjustment of children with special needs in OECD countries (Dalgaard et al. 2022). Another literature review on students with extensive support needs found that access to general education classrooms with same-age peers was associated with better social and academic outcomes (Mansouri et al. 2022).

Parental social capital

The most common reference in discussions and applications of social capital is the work of (Putnam 2000), who described how Americans' sense of community has faded due to societal changes that put constraints on the time used to join community groups and other local socialising activities. The central idea is that relationships between people can serve as assets and promote outcomes. According to Bankston III, relationships can be assets in three main ways. The first is shared norms and values, such as trust or work ethic. The second is the network approach, which emphasises how relationships among people generate favourable outcomes. The third focuses on variations in individual's commitment to and engagement in groups and organisations (Bankston 2022).

Coleman (p 98), representing the network approach, argued that social capital is not some physical asset or personality trait that individuals can draw upon but resources that arise from relations 'between actors and among actors' (Coleman 1988). He used the term 'intergenerational closure' to describe a situation when parents are related to other parents whose children are also friends, and found a higher level of dropout for families that often moved, which he attributed to the parents' loss of social networks and relations following the moves. Coleman also found low dropout rates among children attending religious schools compared to children attending public and other private schools. The findings suggest that parents with the same religious affiliation attending the same local religious institutions are more likely to have intergenerational closure. These patterns of interactions produce and maintain normative orientations towards school among both parents and their children, leading to desired outcomes, such as completion of secondary school.

The third category of social capital, membership in networks and organisations, can be based on belonging to a common social category, or living in the same neighbourhood. Being a member of a group of people with something in common does not, as is the case with intergenerational closure, mean that participants know each other. In contemporary society, social media provides people with an alternative way to connect with individuals who share their interests. Parents regularly use social media to communicate with their children's schools, other parents, and, in many cases, groups that are organised around specific diagnostic conditions. A recent study concluded that participating in online health support groups was associated with positive health outcomes and characterised as an empowering process (Fullwood et al. 2019).

Characteristics that affect placement and social capital

A number of characteristics related to children and their families affect both placement and parental social capital. In this study, we try to control for several factors, one of which is the severity of the condition. In their review and meta-analysis on the effects of inclusion on socioemotional development, Dalgaard et al. (2022) identified impairment level as an important confounding factor. They pointed out that the effect of inclusive versus segregated education may vary depending on the characteristics of the special education population.

Middle-class parents are more likely than working-class parents to take joint action in relation to school and more likely to use their social ties in relation to their children (Horvat, Weininger, and Lareau 2003). The social capital of the middle class is relatively well developed, and may well be used by parents to get in touch with other parents to strengthen the social connections between their children. In our analysis, we use mothers' educational background as an indicator of socio-economic status (SES). Furthermore, children's academic self-concepts are likely to be influenced by parents' own academic achievements. Previous research has documented a correlation between parental education and outcomes, partly mediated by educational expectations in the offspring (Pinquart and Ebeling 2020).

Further, some studies have identified gender differences in perceptions of social inclusion at school (e.g. DeVries, Knickenberg, and Trygger 2021; Guillemot and Hessles 2021) as well as differences across different ages (Schwab, Sharma, and Loreman 2018). Immigrant status is also likely to be associated with lower levels of social capital, and research suggests that immigrant children are overrepresented in special education (Cooc and Kiru 2018).

Data and methods

Population

The population included in the study was identified through an official register with recipients of compensatory cash benefits. There are two types of cash benefits: the *basic benefit*, which is intended to compensate for additional expenses related to the disability or chronic disease, and the *attendance allowance*, which compensates families for expenses related to home care and nursing of the child. To be entitled to a benefit, the child must suffer from a chronic condition, even after an adequate treatment programme is established.

Definition of physical disability

Based on the availability of diagnoses in the register of compensatory cash benefits, 'physical disability' in this study includes cerebral palsy (about 80% of total sample, ICD-10 code G80) and spina bifida (10%, ICD-10 code Q5), and the residual (10%) includes neurological conditions with implications for physical disability (ICD-10 codes Q71–73, Q78.0, G12, G70–73).

Sample and response rate

A total of 1079 parents with a child between 6 and 15 years of age (as of 1 January 2019) were identified in the benefit register. In most cases, the children lived either with both parents or with their mother. A postal questionnaire was sent to the mother's address. Organised and prepared by Statistics Norway, the questionnaire was collected from December 2019 to March 2020. We received a total of 496 answers, resulting in a response rate of 49%. The present analysis is based on a sub-sample, in which the children in 5th to 10th grade ($N = 311$) were asked to complete a sequence of questions, including the PIQ. Due to item non-response on both the child's and mothers' parts of the questionnaire, the multivariate analyses were performed on a sample with a lower response rate. The item non-response was mainly due to the children not completing their part of the questionnaire. The level of non-response was systematically linked to children's age and the level of severity of the condition. Children of a young age or with a more severe condition were less likely to complete the questionnaire.

An overview of the background characteristics of the sample is presented in [Table 1](#).

Consistency and descriptive statistics for the Norwegian PIQ

We used three different measures of children's perceptions of inclusion in school: 1) emotional inclusion, or school well-being, 2) social inclusion, and 3) academic self-concept. Each outcome variable was constructed as an additive index that included four items describing the child's perception of emotional inclusion, social inclusion, or academic self-concept ([Table 2](#)). The values of items with negative wording were reversed when included in the index. Each index variable ranged from 4 to 16. Scale statistics indicate acceptable internal consistency (alpha) for all three scales. [Table 2](#) also displays a moderate or low correlation between the three scales. The correlation between the scales was highest for emotional and social inclusion.

[Table 3](#) presents the mean value for each item, with a maximum possible score of 4 and a minimum score of 1. The children tended to give a positive evaluation of their situation in school, with values above 3 for almost all items regarding emotional and social inclusion, while they had a more 'neutral' or slightly positive view of their academic self-concept. Most of the items had positive wording, a factor that probably contributed to the general positive views presented by the children. The items with negative wordings had lower values – in the case of academic self-concept, a value of 2.02—when item values were reversed, implying that the children were more inclined to give a negative evaluation.

Table 1. Sample characteristics, in percentages.

Gender (<i>N</i> = 311)	
Boy	58
Girl	42
Grade in primary school (<i>N</i> = 311)	
5 th grade	5
6 th grade	17
7 th grade	15
8 th grade	16
9 th grade	19
10 th grade	18
Ability to walk (<i>N</i> = 310)	
Can walk normally	23
Walk normally, but not long distances	17
Can walk, but restricted mobility	20
Usually use a wheelchair, but drive independently	21
Dependent on a wheelchair that has to be driven by others	19
Level of compensatory benefit (<i>N</i> = 307)	
Level 1	20
Level 2	35
Level 3	29
Level 4	17
Mothers' country of birth (<i>N</i> = 311)	
Norway, EU, USA, Canada, Australia, New Zealand	89
Asia, Africa, south America	11
Mothers' educational attainment (<i>N</i> = 301)	
Primary school	17
Secondary school	38
University/tertiary education	45
Bridging social capital ¹ (<i>N</i> = 287)	
7–23	22
24–28	55
29–35	23
Mothers' involvement in social media (<i>N</i> = 310)	
Not member in social media group organised by the class	26
Member	74
Membership in NGO related to disability (<i>N</i> = 309)	
Not member	33
Member	66
Inclusion in regular classroom education (<i>N</i> = 310)	
In a regular class all of the time	43
In a regular class at least half the time	24
In a regular class less than half the time	20
Attends a special school	14

¹See appendix 1.

Table 2. Dependent variables. Scale statistics and correlation between scales.

Index variable	Mean	Alpha	Correlation matrix		
			1	2	3
Emotional Inclusion/School wellbeing	12.70	0.86	1.00		
Social Inclusion	13.24	0.84	0.55	1.00	
Academic Self-Concept	10.70	0.85	0.40	0.50	1.00

Explanatory variables

To capture the effect of school placement on children's perceptions of inclusion in school, we included survey responses to the children's degree of inclusion in ordinary classroom education. The answer to this question was provided by the parents and was either that

Table 3. Perceptions of inclusion climate in schools. Descriptive statistics, questionnaire items. Percent. (Reversed values).

	Not at all true	Some-what not true	Some-what true	Certainly true	Mean	N
Emotional Inclusion/School wellbeing						
I like going to school	4	6	36	54	3.38	271
<i>I have no desire to go to school</i>	42	28	23	9	1.99 (3.00)	274
I like it in school	3	5	29	63	3.51	272
School is fun	5	13	46	37	3.14	272
Social Inclusion						
I have a lot of friends in my class	6	8	31	54	3.34	274
I get along very well with my classmates	2	6	29	63	3.54	266
<i>I feel alone in my class</i>	48	20	24	9	1.92 (3.08)	267
I have very good relationships with my classmates	3	4	24	69	3.58	266
Academic Self-Concept						
I am a fast learner	11	24	45	20	2.72	266
I am able to solve very difficult exercises	20	31	35	14	2.43	264
I do well in my schoolwork	7	9	47	37	3.14	269
<i>Many things in school are difficult for me</i>	7	16	48	28	2.97 (2.02)	269

the child was in a regular class all the time, at least half the time, less than half the time, or attending a special school.

To capture the effects of social capital, we included three measures of social capital from the survey. The first was whether the family had a membership in a disability-related non-governmental organisation (NGO). The second was whether the mother was a member of a social media group related to their children's school. The third measure was an index of the mother's bridging social capital. Building on a scale developed by Williams (2006), we adapted seven questions about general bridging relationships to fit the context of having a child with a disability. Further details on the questionnaire items used and the construction of the index are presented in Appendix 1. The index does not attempt to measure variations in engagement in networks or membership in organisations directly but rather personality traits that increase their inclination to interact with members in formal and informal networks.

Statistics Norway constructed a file with the individual background characteristics of the child, as well as the family background, and other relevant variables. We included five individual characteristics in the models. First, we included gender and the child's school grade level (ranging from 5th to 10th grade). Further, we included the birthplace of the parents to capture immigrant backgrounds. This variable distinguished between none, one, or both parents born in a country in Africa, Asia, or South America. We included two measures of the severity of the disability. The first was a mobility variable. This was a survey item answered by the parents. The variable ranged from 1 (can walk normally) to 5 (dependent on a wheelchair driven by others). The second measure was a variable that captured the child's needs for care and supervision. The benefits register included information about the amount of monthly attendance allowance the family received in 2019 (four different levels). We used the variation in the amount received as an indicator of the severity of the disability, irrespective of physical mobility. Although these variables

are not the focus of our analysis, they may explain some of the variation in perceptions of inclusion and are important control variables.

Results

The descriptive statistics showed that the children of mothers with low scores on social capital tended to report more negative experiences with social inclusion, considering each item separately (Table 4). For children whose mothers were not members of a social media group, 44% answered 'agree' or 'totally agree' to the question 'I feel alone in my class', whereas the corresponding figure was 29% among children whose mothers were members.

For the placement variable, the differences were more striking. Children who spent more than half of their time outside ordinary classrooms were at risk of not being included. A total of 69% used the alternatives 'agree' or 'totally agree' in response to the question 'I feel alone in my class', compared to 22% for children who spent all of their

Table 4. Perceptions of inclusion climate in schools. Social Inclusion. Descriptive statistics, questionnaire items. Percentage with a negative perception (answer 'disagree' or 'totally disagree'¹).

	I have a lot of friends in my class	I get along very well with my classmates	<i>I feel alone in my class</i>	I have got very good relationships with my classmates
Mothers' educational attainment				
Primary school	17	7	41	8
Secondary school	14	11	32	7
Tertiary education, bachelor level	13	3	30	6
Tertiary education, master's level	12	13	22	6
(N)	(268)	(261)	(262)	(261)
Bridging social capital				
7–23	27	16	44	12
24–28	11	5	30	5
29–35	8	4	25	7
(N)	(274)	(266)	(267)	(266)
Mothers' involvement in social media				
Not member in social media group organised by the class	19	14	44	13
Member	13	5	29	5
(N)	(273)	(265)	(266)	(265)
Membership in NGO related to disability				
Not member	20	8	39	6
Member	12	7	29	7
(N)	(272)	(264)	(265)	(264)
Inclusion in regular classroom education				
In a regular class all of the time	6	4	22	2
In a regular class at least half the time	12	8	36	12
In a regular class less than half the time	41	23	69	14
Attends a special school	24	0	15	10
(N)	(274)	(266)	(267)	(266)

¹For questions with reversed values: answer 'agree' or 'totally agree'.

time in ordinary classrooms. The results were less consistent for children who attended special schools, who, on some items, reported relatively more positive outcomes.

Comparable tables (not shown) were also constructed for emotional inclusion and academic self-concept, displaying patterns similar to social inclusion. However, the children of mothers with tertiary education were more likely to have a positive academic self-concept, and children attending special schools had a more consistent negative academic self-concept compared to children who spent all of their time in ordinary classrooms.

Multivariate statistical analysis

To explore whether these findings persisted when controlling for background characteristics, we used multiple linear regression models (Table 5). For each outcome variable, we ran three different models. The first model included individual characteristics only. In the second model, we added school placement, and in the third model, we also included social capital indicators. A comparison of the r-square values across the models revealed that both the placement and social capital variables added explanatory power to the models.

School placement

The results from the multivariate analyses support the findings from the descriptive statistics: children who attended a regular school were likely to feel less included if they spent some of their time outside a regular class. From the full models, we observed that children who spent at least half of their time in school in a regular class on average scored 1.57 lower on the emotional inclusion index, 1.08 lower on the social inclusion index, and 1.98 lower on the academic self-concept index compared to children who spent all their time in a regular class. Children who spent less than half their time in a regular class reported even lower values for social inclusion and academic self-concept. Children who attended special schools were less likely to feel socially included and had lower academic self-concepts compared to children who attended regular schools and spent all their time in a regular class. Given that each index ranged from 4 to 16, a decrease of 4.37 on the academic self-concept index for children attending special schools was relatively large.

Social capital

The descriptive statistics showed that children whose mothers had low scores on social capital reported more negative experiences with social inclusion. The results of the multivariate analyses were mixed. After controlling for background characteristics and school placement, we found that mothers' higher education mattered for academic self-concept, whereas the other social capital variables were not significant. Social and emotional inclusion did not vary with the mothers' education or membership in a social media group. However, mothers' bridging social capital was positively correlated with their children's perceptions of emotional and social inclusion. A one-unit increase in mothers' bridging social capital index (ranging from 7 to 35) increased the scores on the indices measuring emotional inclusion and social inclusion by 0.08 and 0.07, respectively. Further, children whose mother was a member of a disability-related NGO had an average of 1.49 higher scores on the emotional inclusion index.



Table 5. Results of linear regressions.

	Emotional inclusion/School well-being					Social inclusion			Academic self-concept		
	Model 1.1	Model 1.2	Model 1.3	Model 2.1	Model 2.2	Model 2.3	Model 3.1	Model 3.2	Model 3.3		
<i>Gender – relative to female</i>											
Male	-0.20	-0.19	0.04	0.83*	0.99**	1.06***	-0.56	-0.29	-0.04		
<i>Grade – relative to 5th grade</i>											
6th grade	0.61	0.67	0.93	0.69	0.77	0.65	0.21	0.15	0.30		
7th grade	1.69**	1.81**	1.64*	1.61**	1.75**	1.47**	0.74	0.98	1.24*		
8th grade	0.89	0.84	0.74	1.13	0.96	0.58	0.85	0.57	0.57		
9th grade	0.42	0.48	0.39	1.04	1.16*	0.90	1.12	1.08	1.21*		
10th grade	0.94	0.95	1.42*	1.24*	1.12*	1.09*	0.78	0.43	0.68		
<i>Parents' birthplace in A/A/SA – relative to none</i>											
One parent	-0.57	-0.48	-0.06	-0.17	-0.26	0.29	-0.16	0.14	0.32		
Both parents	-0.79	-0.81	-0.84	-1.40***	-1.56***	-1.33***	-0.08	-0.04	0.50		
<i>Level of compensatory benefit – relative to level 1</i>											
Level 2	-0.50	-0.32	0.26	-0.33	0.02	0.29	-0.57	-0.01	0.30		
Level 3	0.16	0.51	0.61	-0.16	0.70	0.50	0.58	1.68**	1.53**		
Level 4	0.36	0.98	1.98*	0.13	1.36	1.31	-0.05	2.24**	2.43**		
<i>Functional ability – relative to 'can walk normally'</i>											
Level 2	0.23	0.33	0.74	-0.56	-0.46	-0.35	-0.33	-0.06	0.40		
Level 3	-0.95	-0.83	0.13	-1.65**	-1.54**	-0.57	-2.38***	-2.11***	-1.09		
Level 4	-0.53	-0.53	0.24	-0.72	-0.98	-0.51	-0.49	-0.71	-0.10		
Level 5	-0.01	0.15	0.58	-1.81*	-0.82	-0.08	-2.41*	-1.65	-0.78		
<i>School placement – relative to regular class all the time</i>											
In regular class at least half time	-0.95*	-0.95*	-1.57***	-0.82*	-0.82*	-1.08**	-0.33	-1.78***	-1.98***		
In regular class less than half time	-1.06	-1.06	-1.15*	-3.83***	-3.83***	-3.98***	-2.38***	-4.18***	-4.32***		
Attending special school	-0.94	-0.94	-1.30	-0.99	-0.99	-1.55*	-0.49	-4.13***	-4.37***		
<i>Mother's highest educational attainment – relative to primary</i>											
Secondary			-0.54			-0.66			0.57		
Tertiary, bachelor			-0.44			-0.29			1.05*		
Tertiary, master and above			-0.25			0.96			2.40***		
<i>Social capital indicators</i>											
Mother's bridging social capital (index)			0.08*			0.07*			0.03		
Membership in social media group			0.11			0.20			0.21		
Membership in NGO			1.49***			0.39			0.64		
Constant	12.91***	13.02***	9.36***	13.33***	13.49***	11.40***	10.86***	11.12***	7.96***		
R ²	0.07	0.10	0.19	0.16	0.34	0.43	0.13	0.35	0.43		
N	264	264	243	254	254	237	256	256	238		

Background characteristics

Although perceived school well-being and academic self-concept did not vary across genders or immigrant backgrounds, boys and children of parents born in Europe, North America, or Australia were significantly more likely to score higher on the social inclusion index compared to girls and children whose parents were born in Africa, Asia, or South America. These findings are consistent across the model specifications.

Discussion

With regard to school well-being/emotional inclusion, most of the students with physical disabilities surveyed in this study had a positive overall view of their school experiences. If we consider more specific questionnaire items dealing with friends and social relations in school, the overall picture remains positive. We did not find that children with physical disabilities perceived themselves to be 'outsiders'. Outcomes related to how they perceived their academic competence revealed a more mixed picture. The students were almost as likely to give a negative as a positive evaluation of their performance.

The results clearly demonstrated that the more time children spent in segregated educational arrangements within ordinary schools, the less likely they were to feel included. For social inclusion and academic self-concept, placement was the most important factor. If attending a special school is considered to represent the highest degree of segregation, it is clear that the association between children's perception of inclusion and segregation is not a linear one: the level of inclusion reported by children attending special schools did only moderately differ from that of the reference group who spent all their time in regular classes. It seems plausible that children who spent their school days with other children with similar conditions would report more positive outcomes than children who spent less than half of their time in ordinary classes in regular schools. However, children who attended special schools had a negative academic self-concept. Given the previously documented associations between school placement and social participation outside the school context (Wendelborg and Tøssebro 2011; Finnvoll 2021), it is not unexpected to find that children placed in segregated educational arrangements felt less included among their peers and had a more negative academic self-concept. No frog-pond effect (Marsh 1987) was observed in our study.

Overall, higher scores on mothers' social capital had a moderate positive influence on children's emotional and social inclusion. Social capital and its association with membership in social media groups played a role in the inclusion of children with disabilities. In the multivariate model, social capital measures did not have a significant influence on academic self-concept. Children's academic self-concept is, according to previous research, associated with parents' own expectations on behalf of their child, but it is also related to socio-economic circumstances (Rimkute et al. 2012). The relatively marked association between mother's educational attainment and academic self-concept in Table 4 (Model 3.3) suggests that when parental educational background is controlled for, the social capital measures are no longer significant.

A number of studies have documented the existence of intergenerational social mobility in Norwegian society (Finnvoll 2021; Wiborg and Hansen 2008; Wiborg and Hansen 2018). The association between parental educational attainment and children's academic self-concept indicates that mechanisms creating

social inequalities in educational attainment are at play from an early phase in children's lives, affecting children with disabilities.

Limitations

Several limitations of the study merit our attention. Being a cross-sectional design, the results do not provide solid evidence for causal effects or the direction of effects. The sample was based on one group of diagnostic conditions, and the results may not be applicable to other diagnostic conditions. Further, we do not know whether the findings are particular for our sample, or if they are general to children the same age, as we do not have a comparison group. Our sample is from a register that presupposes access to compensatory cash benefits. Although the severity of the condition is the only relevant factor in the application process, the family's 'bureaucratic competence' may nevertheless affect their chances of applying and receiving benefits. Furthermore, the more vulnerable groups of families will most likely be overrepresented among non-responders. This may introduce bias and possibly underestimate the observed associations of factors such as parental educational background and social capital. The high level of item non-response among children with the most severe conditions may also limit the representativity of the sample.

Conclusion

The results of this study demonstrate a marked negative influence of segregation policies, particularly for students attending regular schools, but spending less than half the time in ordinary classroom education. Will a policy to further increase the number of children with disabilities who are placed within ordinary classrooms have positive effects on their perceptions of being included? Not necessarily. The success of integrating students with disabilities into ordinary classes will, in part, depend on the efforts made by educators to provide adequate assistance. We do not know the kinds of sorting mechanisms that are at work when children are placed in segregated school situations. Previous studies from other countries suggest that parents have limited choice, or have to accept the options given to them (Satherley and Norwich 2021, Mann, Cuskelly, and Moni 2018). A recent study from Australia suggests that families experience a parallel system of education with segregated alternatives as a major barrier to inclusion in itself (Cologon 2022). The study, based on a sample of children with severe disabilities, challenges the belief that some children, given the severity of their conditions, will not benefit from placements in ordinary schools or in ordinary classrooms. Our results support the conclusion that the dual or parallel system of education is part of the problem, although placement in regular classroom settings alone will not necessarily be sufficient for the successful integration of students with disabilities.

Ethical considerations

The project has been approved by the Norwegian Data Protection Services (SIKT, ref. 442802) and the Council for Confidentiality and Research.

Acknowledgments

This research was funded by the Sophies Minde Foundation. We are grateful to Statistics Norway, which prepared most of the data for the analyses.

Disclosure statement

Neither author had any conflicts of interest.

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Appendix 1

Measures of bridging social capital:

Adapted from Williams (2006, p. 607), we used seven items and constructed an additive index with values from 7 to 35 (median value = 26). The original items are given in italics within brackets.

When you think about the time you spend on social media and the internet, how much do you agree or disagree with the statements below?

(Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree)

Having contact with other parents makes me interested in things that happen elsewhere than where I live. [*Interacting with people online/offline makes me interested in things that happen outside of my town.*]

Having contact with other parents makes me want to try new things with my children. [*Interacting with people online/offline makes me want to try new things.*]

Having contact with others makes me curious about what people with a different view of parenting think. [*Interacting with people online/offline makes me interested in what people unlike me are thinking.*]

Having contact with others reminds me that parents have many common challenges. [*Interacting with people online/offline reminds me that everyone in the world is connected.*]

I am willing to spend time supporting general activities to improve children's living conditions. [*I am willing to spend time to support general online/offline community activities.*]

Interacting with parents gives me new people to talk to. [*Interacting with people online/offline gives me new people to talk to.*]

I get in touch with other parents all the time. [*Interacting with people online/offline makes me feel like part of a larger community.*]