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# Quality of Inclusion and Related Predictors: Teachers' Reports of Educational Provisions Offered to Students with Down Syndrome

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## ABSTRACT

The aims of this study were to gain insight into the quality of inclusion in mainstream classrooms involving students with Down syndrome and to reveal underlying predictors. A total of 39 8-year-olds with Down syndrome and their teachers participated. Via a survey, the teachers were asked to rate key indicators of inclusion. Their average rating corresponded to a moderate quality of inclusion, suggesting that the students with Down syndrome participated as active and accepted class members who learned with their peers. At the same time, the academic instruction of the students tended to take place outside the mainstream classroom. Regression analysis showed that teacher collaboration and the children's expressive language abilities explained a reliable portion of the variation in the quality of inclusion. The implications for understanding and facilitating inclusion in practice are discussed.

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## KEYWORDS

Down syndrome; inclusion;  
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This paper reports on a study of inclusive education involving students with Down syndrome in Norwegian primary schools. Inclusion is a basic ideal within the human rights framework; it refers to a multifaceted process that targets both the right to take full part in school life and the right to achieve the greatest educational progress (Farrell, 2004; United Nations [UN], 1991; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2009; Vislie, 2003). Although the ideal of inclusion is strongly endorsed and widely adopted, the application of the ideology to practice appears to be a major challenge (Ferguson, 2008; O'Rourke, 2015). In Norwegian school policy, which is regarded as highly inclusive (Organisation for Economic Co-operation and Development [OECD], 2011), inclusion mainly refers to the schools' responsibility to respond to the full range of students' needs within a mainstream classroom (Ministry of Education and Research, 2013; Vislie, 2003). However, in everyday school life, a multitude of dilemmas may arise and teachers may be uncertain about what constitutes the most inclusive practice in a particular context, such as when faced with the complexities of educating children with diverse needs.

Students with intellectual disabilities are among those who most frequently receive education outside the mainstream classroom (Flem & Keller, 2000; Nes, Strømstad, & Skogen, 2004; Tøssebro, Engan, & Ytterhus, 2006) and, according to Wendelborg and Tøssebro (2008), this practice demonstrates that inclusive education goals are far from being realised in Norway. However, inclusion is a complex and broader concept that encompasses more than classroom attendance alone, and the physical placement of children reveals little about the extent to which students with intellectual disabilities, such as Down syndrome, participate and engage in inclusive learning communities. The current study aims to provide empirically-based insights into the quality of classroom inclusion

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from the perspective of teachers who provide special education to a national age cohort with Down syndrome and to achieve a better understanding of some of the factors assumed to be crucial to the quality of inclusion.

One factor that is frequently referred to as essential to inclusion is collaboration between the special education teacher or the resource teacher providing support for students with learning difficulties and the main classroom teacher (Flem & Keller, 2000; Friend & Cook, 2013; Gable & Manning, 1997; Grubert, 2011; Ripley, 1997). Down syndrome is a major cause of intellectual disabilities, which implies a reduced ability to learn at the same rate and in the same manner as typically developing peers (Lott & Dierssen, 2010; Wishart, 2002). Therefore, teacher collaboration is included in the current study as a potential predictor of the quality of inclusion in classrooms where students with Down syndrome attend. Furthermore, we included the children's expressive language skills as a potential predictor of inclusion because expressive abilities allow students to influence and actively participate in classroom activities and peer interactions.

### **Features of Inclusion**

There is general agreement that inclusive education is based on democratic principles that emphasize influence and participation for all (Carlsson & Nilholm, 2004; Farrell, 2004). This emphasis contrasts with the former idea of "integration," which implies that children with special needs should fit the classroom norm (Emanuelsson, 1995; Haug & Backmann, 2006). Instead, inclusion aims to create a collective community in which the broad range of variation among students is accommodated within the regular classroom (UNESCO, 1994). In a theoretical account of what characterizes inclusive schools, Farrell (2004) argues that conditions related to both organizational and psychological aspects of inclusion must be present for a school to be fully inclusive. According to Farrell, the following four conditions should apply to all children regardless of their abilities: (1) *Presence*: attendance in mainstream classrooms in local schools, (2) *Acceptance*: the welcoming of all students as full and active members of their community, (3) *Participation*: the active contribution of all students in the school's activities, and (4) *Achievement*: students' learning and attainment of positive outcomes in their work and behaviour. Farrell argues that these conditions can act as a benchmark against which to judge the quality of inclusive practices within schools. The terms also correspond well with how inclusive practices are represented in Norwegian government documents, according to Haug and Backmann (2006). This conceptualisation of "inclusion" has comprehensive implications for practice with regard to educational planning, implementation, and children's learning outcomes. Haug and Backmann argue that in studies of inclusion, multiple features of the concept (i.e., presence, acceptance, participation, and achievement) should be investigated both as a whole and separately, although they may be difficult to distinguish because of overlaps. In aggregated form, the four conditions are said to represent full inclusion (Farrell, 2004). However, separately, these conditions may illuminate the complexity and dilemmas of inclusion by revealing potential conflicts among the features (Hornby, 2011; Zigmond, 2003).

### **Predictors of the Quality of Inclusion**

Educational reforms depend on the school's collective capacity, which is often referred to as a professional learning community (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). In professional learning communities, teachers take collective responsibility for the students' learning through collaborative activity (King & Newmann, 2001; Stoll et al., 2006). This is of particular importance in relation to the implementation of a political ideal such as inclusion for all students, which affects the entire school community and all subject areas. Collaboration among teachers reflects their capability and willingness to provide high-quality inclusive education, and such collaboration is particularly relevant in schools that students with Down syndrome attend because of the complex learning difficulties and specific needs associated with the syndrome (Buckley & Bird, 2000). Regular

classroom teachers may not have the necessary expertise to adapt education to students with intellectual disabilities, and although some teachers may have acquired knowledge through experience, many report that they do not have the time to deliver appropriately differentiated curricula and well-prepared lessons on their own (Buckley & Bird, 2000; Lorenz, 1999). At the same time, regular teachers who see the inclusion of pupils with special educational needs as part of their role are more likely to create inclusive classroom practices (Rix, Hall, Nind, Sheehy, & Wearmouth, 2009). Thus, professional collaboration characterized by a joint effort from both the regular teacher and the special education teacher is assumed to play a crucial role in inclusive schools (Hagtvet, 2009; Johnsen, 2011; Pijl & Meijer, 1997). In the current study, teacher collaboration refers to frequent meetings or planning time during which the teachers involved meet and engage in discussions about how to facilitate inclusion. An essential part of this collaboration involves coordinating the individual education plan (IEP) for the child with special needs and the curriculum for the remainder of the class, which allows all of the students in a class to work on similar but individually adapted tasks (cf. Dolva, Gustavsson, Borell, & Hemmingsson, 2011; Lorenz, 1999).

Given that the responsibility for facilitating inclusive pedagogy lies at the system level (cf. “the organizational pathology” [Tetler, 2009]), previous research on barriers to and facilitators of the inclusion process has addressed numerous educational environmental factors, resulting in a rather one-sided research focus. In addition to the key factor of teacher collaboration, research has addressed factors such as available staff resources and knowledge of inclusive practices (Dolva, 2009), staff attitudes and perceptions (Avramidis & Norwich, 2002; Chiner & Cardona, 2013), inclusive school cultures (Ainscow, Booth, & Dyson, 2006), instructional practices (Flem, Moen, & Gudmundsdottir, 2004), administrative support (Santoli, Sachs, Romey, & McClurg, 2008), and teacher-assistant cooperation (Fox, Farrell, & Davis, 2004). Within this research front, a focus on particular groups of people or individual child characteristics is often considered irrelevant because the ideology does not differentiate by category; thus, the distinction between disabled and non-disabled students, for example, is regarded as unnecessary, as is the distinction between groups with different individual needs (Avramidis & Norwich, 2002; Kvalsund & Bele, 2010; Reynolds & Wang, 1983; Skrtic, 1995). It has further been argued that all students should be accommodated in an adaptive education system that merges general and special education to meet the unique learning needs of all children, regardless of their abilities or disabilities (e.g., Reynolds & Wang, 1983). Some believe that such an approach is capable of ending “treat them differently practices” (Ysseldyke, Algozzine, & Thurlow, 2000, p. 67). Others emphasize the need for differentiated treatment or “positive discrimination” to allow all children an equal opportunity to reach their potential and to access their right to make progress (Hagtvet, 2009; Klingner, Vaughn, Schumm, Cohen, & Forgan, 1998; Ministry of Education and Research, 2011; UN, 1991). By including this individual perspective and focusing on each child’s developmental opportunities, the individual child’s characteristics become essential to planning how to facilitate inclusive learning communities that provide opportunities for attendance, acceptance, participation, and achievement.

One central child-related factor likely to explain variation in the inclusion process is language abilities. A prerequisite for high-quality inclusion is that children are allowed to exercise agency and participate in a democratic community (UNESCO, 1994); opportunities to do so likely vary with each child’s expressive language skills (Abbeduto, Warren, & Connors, 2007). Language difficulties, particularly the expressive language skills deficits found among many children with Down syndrome (Næss, 2012; Næss, Lyster, Hulme, & Melby-Lervåg, 2011; Roberts, Price, & Malkin, 2007), may challenge agency and participation. Delays in expressive vocabulary and grammar development may, for example, affect a child’s opportunity to clearly communicate intentions and desires, to participate in and influence classroom discussions and group work and to initiate play with peers – all vital areas for inclusion. With age, language skills become increasingly important as the activity interests of peers evolve into more verbal forms of interactions around the age of seven, such as an observed increase in fantasy play (Corsaro, 2011; Goldstein & Gallagher, 1992), and constrained expressive language skills may result in reduced opportunities to engage in interactions that again

hold potential for further language development (Cebula & Wishart, 2008). This circularity is a challenge when investigating causal links. Laws, Byrne, and Buckley (2000) found that school placement affected language in a comparison study of children with Down syndrome between the ages of 7 and 15. A group of 22 children attending mainstream schools achieved significantly higher mean scores on language measures compared with a group of 22 children in segregated arrangements. These findings do not eliminate the possibility of reverse causality – that children with advanced expressive language skills are more likely to receive education within mainstream classrooms than children with less advanced language skills.

The results from a study by Laws, Taylor, Bennie, and Buckley (1996) suggested that the language skills of 16 children with Down syndrome (aged between 8 and 11 years old) were not related to their popularity among peers in mainstream classrooms. However, inclusion is broader than peer acceptance (cf. Farrell, 2004), and although the students in the study by Laws et al. (1996) were rated as having average popularity, that finding does not necessarily imply that they engaged in inclusive classroom practices because attendance, participation, and outcomes were not assessed. Similarly, de Graaf, van Hove, and Haveman (2013) found higher academic achievement among children with Down syndrome attending regular schools compared to special schools. Still, little is known about participation in inclusive learning communities within schools. To date, research in the field of intellectual disabilities has addressed only parts of the complex concept of inclusion (i.e., classroom attendance or peer acceptance). Furthermore, studies examining predictors of inclusion have predominantly been concerned with environmental factors and their impact on the inclusion process.

### **Purpose of the Study**

Based on the conceptualization in the literature of the ideal of inclusion, the current study was designed to provide a status report regarding inclusive practices in classrooms where students with Down syndrome are taught. Indicators of inclusion were developed based on Farrell's (2004, p. 4) theoretical account, which highlights presence, participation, acceptance, and achievement/outcome as central aspects when investigating inclusion in schools. This conceptual approach was chosen because it provides a concrete entrance to a complex phenomenon that allowed us to obtain both an overview of the quality of inclusion in aggregated terms, while at the same time determine some crucial sub-aspects related to inclusion. Further, factors at multiple levels that potentially relate to the quality of inclusion were investigated to expand our knowledge about how to facilitate inclusive practices. Two main research questions guided the study:

- (1) How do teachers rate the overall quality of classroom inclusion?
- (2) During which subjects and activities are students with Down syndrome present in the mainstream classroom?
- (3) How do teachers perceive these students' outcomes from being in the mainstream classroom during academic subjects and social activities?
- (4) To what extent do teacher collaboration and students' expressive language skills explain the quality of inclusion?

## **Methods**

### **Participants**

This study is part of a larger longitudinal research project following the development of different aspects of cognition and social functioning in children with Down syndrome ( $n = 43$ ) from ages 6 to 8 years (see Næss, 2012). The parents of a Norwegian age cohort of children born with Down syndrome were invited to participate. All the Norwegian habilitation service offices forwarded

an information letter and a consent form to registered parents of children with Down syndrome from the age cohort. The information letter and consent form was approved by the Regional Committees for Medical and Health Research Ethics in advance. The parents who were interested in letting their child participate returned the consent form with contact information to the manager of the research project. In the current study, 39 children participated, including 20 girls and 19 boys (at age 8, the mean chronological age = 100 months, SD = 4.07 months; the mean non-verbal mental ability raw score (Block Design) = 16.05, SD = 6.75). In addition to chronological age, the inclusion criteria were that the children did not have co-morbid diagnoses of autism, and that Norwegian was their first language.

The teachers who were responsible for the children's daily education when the children were eight years old, as reported by the schools, participated in the study. An overview of the 39 teachers' education is shown in Table 1; most teachers (32 out of 39) were either special education teachers or general education teachers. Only a few teachers were preschool teachers or had a bachelor's degree in education. Three had no pedagogical background in education. With this variation in educational backgrounds, we will hereafter refer to the teachers who were responsible for the children's daily education as resource teachers. This practice, in which teachers without education in the field of special needs serve in the role of special education teachers, has also been noted in other Norwegian school research studies (Gillespie, 2016).

### Data Collection Methods and Procedures

The empirical data collection procedure used two different methods: an electronic survey administered to the resource teachers and expressive language testing of the children. The language tests and the survey were piloted prior to the study. The final survey contained both quantitative ratings and qualitative elements in the form of comment fields in which the resource teachers could provide additional comments and elaborations. Such comments served as complementary data. The survey addressed different aspects of the quality of inclusion and teacher collaboration. When the children were eight years old, the survey was sent by email to the resource teachers and was automatically registered. Most of the teachers answered quickly, but a reminder was sent twice to minimise the attrition effect. In all, 4 teachers from the original sample of 43 did not respond to the survey. The language skills data included in this paper were collected by clinically testing the children at two time points: time point one (T1), when the children were six years old and had just entered school, and time point two (T2), when the children were eight years old. At both time points, the children were assessed individually in a separate room in their school. All answers were registered manually and audio-taped. The children were given a visual illustration of the tasks to be completed in order to provide predictability and an overview for the child. Breaks were scheduled in accordance with the individual child's needs.

### Measures

Table 2 provides a summary of the measures that were used in this study.

**Table 1.** Overview of the teachers' education.

Special education (bachelor's or master's degree)	General teacher education	Preschool teacher education	Bachelor of education	Physiotherapy	Child care and youth worker	Teacher assistant	Total
20	12	2	2	1	1	1	39

**Table 2.** Overview of measures.

Variable	Instruments
Classroom presence	Survey of resource teachers (designed for this study)
Outcome of presence	Survey of resource teachers (designed for this study)
Quality of inclusion	Survey of resource teachers (designed for this study)
Teacher collaboration	Survey of resource teachers (designed for this study)
Expressive language	Picture Naming (WPPSI –III/EVT) (Wechsler, 2002)* Grammatic Closure (ITPA) (Kirk, McCarthy, & Kirk, 1967)* Past Tense (Ragnarsdóttir, Simonsen, & Plunkett, 1999)

### **Quality of Inclusion**

Multiple items from the teacher survey were used to measure inclusion. A summary score based on 10 indicators of classroom inclusion was computed. The indicators were related to presence, participation, acceptance, and outcomes (cf. Farrell, 2004). Nine questions (Questions 2–10) had four ordinal graded response options: “a very limited extent,” “a limited extent,” “a moderate extent,” and “a large extent.” High scores reflect a high quality of inclusion, whereas low scores reflect a low quality of inclusion. For Question 1, the resource teachers were asked to mark a total of eight subjects according to whether their student with Down syndrome typically received instruction on these subjects in the mainstream classroom. The following subjects were included: mathematics, English, Norwegian, religion, social science, science, and practical aesthetic subjects. Participation in 0–2 subjects was coded as “to a very limited extent,” 3–4 as “to a limited extent,” 5–6 as “to a moderate extent,” and 7–8 as “to a large extent.” The 10 questions were as follows:

- (1) To what extent is the student present in different subjects?
- (2) To what extent is the student involved in joint classroom activities?
- (3) To what extent does the student engage with the peer group during break time?
- (4) To what extent are peers used as a resource in learning activities involving the student?
- (5) To what extent has the student’s learning needs influenced mainstream classroom practices?
- (6) To what extent is the student expected to follow general class rules?
- (7) To what extent is the student given responsibilities that are equivalent to those of the other students in the class (e.g., retrieving books from his/her shelf, serving as the monitor/teacher’s helper)?
- (8) To what extent does the student have friends among his/her peers at school?
- (9) To what extent do you agree that the student benefits from being present in the mainstream classroom during academic subjects?
- (10) To what extent do you agree that the student benefits from being present in the mainstream classroom during social activities?

### **Classroom Presence**

The data on classroom presence were derived from the survey, which instructed the resource teachers to mark a total of 14 different school settings (activities and subjects) according to whether the student with Down syndrome participated in them within the mainstream classroom.

### **Outcome of Presence**

The outcome measures were also derived from the survey. The resource teachers were asked to what extent they agreed that their students with Down syndrome benefited from being present in the mainstream classroom during academic subjects and social activities. The questions had four ordinally graded response options: “to a very limited extent,” “to a limited extent,” “to a moderate extent,” and “to a large extent.”

### **Teacher Collaboration**

Two items from the resource teacher survey constituted the measure of teacher collaboration (as conceptualized under the sub-heading Predictors of the Quality of Inclusion). For the first item, each teacher was asked to rate the frequency of meetings with the regular classroom teacher regarding the child's attendance and inclusion in the class community. The rating had four graded response options at an ordinal level: "never," "rarely," "often," and "daily." The scores were dummy coded, with "never" and "rarely" yielding the dummy score of zero and "often" and "daily" yielding a score of one. In the second item, each resource teacher was asked to rate the extent to which the student's IEP was coordinated with the curriculum for the class (e.g., with common topics). The rating had four graded response options at an ordinal level: "very limited extent," "limited extent," "moderate extent," and "large extent." As above, the two lowest ratings were given a dummy score of zero, and the two highest ratings were given a score of one.

Based on the dummy coding, a categorical score was computed to construct the variable. A score of one on both items was coded as one, indicating close teacher collaboration, whereas a score of zero on one of the items was coded as zero, indicating fragmented teacher collaboration.

### **Expressive Language Skills**

Expressive language was assessed by computing a summary score of the results from *Picture Naming* (Wechsler, 2002), *Grammatical Closure* (Kirk, McCarthy, & Kirk, 1967), and *Past Tense* (Ragnarsdóttir, Simonsen, & Plunkett, 1999). These tests are commonly used in studies of children with intellectual disabilities and are considered reliable (Næss, 2012). *Picture Naming* is a test of expressive vocabulary breadth. The children are shown a sequence of pictures, and their task is to name the object or activity pictured. The children earn one point for every correct answer. In accordance with standard procedures, articulation mistakes are ignored. The test consists of 38 items with specified starting points and discontinuation rules. For the *Grammatical Closure* test, the examiner reads a model sentence followed by the beginning of a new sentence. The children are then asked to complete the sentence. Different forms of verbs, adjectives, and nouns, in addition to prepositions and possessive pronouns, are included; for example, "Here is a bed" (pointing to a picture of one bed) would be followed by "Here are two ..." (pointing to a picture of two beds). The test consists of 33 items, with discontinuation rules. The children earn one point for every correct answer, without being penalised for articulation errors. For the *Past Tense* test, the examiner presents pictures to the children together with a model sentence that the children are asked to complete. The children obtain one point for every correct answer, without penalties for articulation errors. The test consists of 11 items. All children began with Item 1 and continued until the discontinuation point was reached.

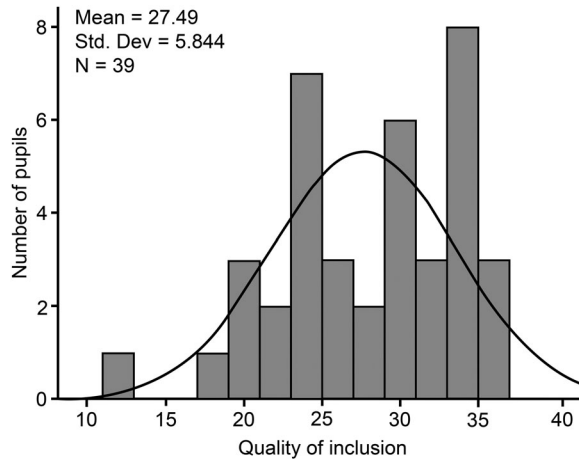
## **Results**

### **Classroom Inclusion**

The resource teachers' ratings of the quality of inclusion, as addressed in the first overarching research question, are shown in [Figure 1](#). The figure shows that the "quality of inclusion" variable approximates normal distribution. The group mean of 27.49 is above the midpoint of the scale, given that the maximum score is 40 (10 items×4 ratings). This suggests that on average, the teachers chose the "moderate" response option when asked to rate the indicators of participation, acceptance, and outcomes for classroom inclusion using the scale ranging from very limited, limited, moderate, and to a large extent. Concerning presence, a moderate rating equals regular attendance in the mainstream classroom for 5–6 out of 8 subjects. It is important to note, however, that average ratings may conceal variation in ratings both within a single respondent and across respondents.

[Figure 2](#) presents an overview of the number of students with Down syndrome who were present for the different subjects and for various types of activities, as addressed in the first sub-question related to classroom inclusion. As the Figure shows, the students most frequently attended the

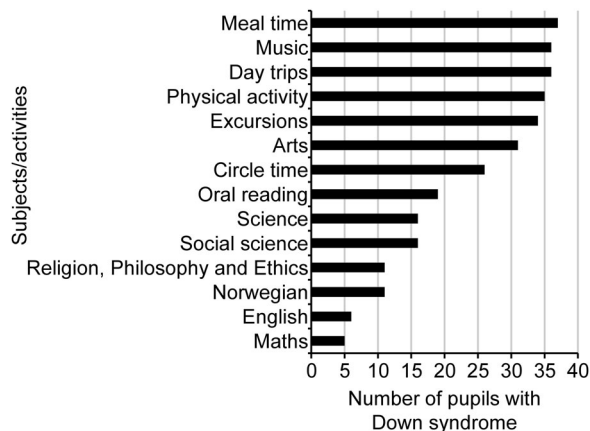




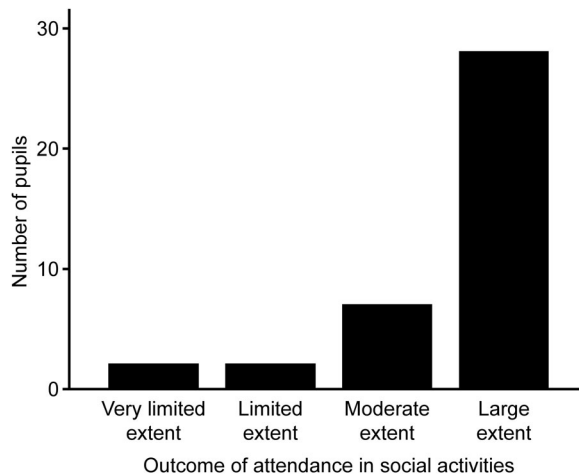
**Figure 1.** Quality of inclusion, as rated by the resource teachers.

mainstream classroom during mealtime, music lessons, and social, physical, and practical activities. Two children did not eat with their classmates, according to their resource teachers. Only a small number of students ( $n \leq 6$ ) were present during mathematics and language lessons. These findings are consistent with the answers to the second sub-question regarding how the teachers perceived the outcomes of these students' presence during social activities versus academic subject lessons. The teachers' answers suggested that they were more likely to think that their students profited from attending social activities compared with academic subjects, as Figures 3 and 4 illustrate.

Figure 3 shows that the vast majority of the resource teachers ( $n = 28$ ) reported that their students profited "to a large extent" from being in the classroom during social activities. Regarding academic subjects, the teachers' reports varied significantly, with an even distribution among the four parameters of inclusion, as Figure 4 shows. Thus, Figures 3 and 4 substantiate and extend the tendency shown in Figure 2: few students were present during academic instruction. Furthermore, although nine teachers reported positive outcomes for presence during academic subjects (Figure 4, "to a large extent"), only five students usually attended the mainstream classroom during mathematics lessons, and only six attended during English lessons (Figure 2). This finding may suggest that the resource teachers did not necessarily have all academic subjects in mind when reporting the

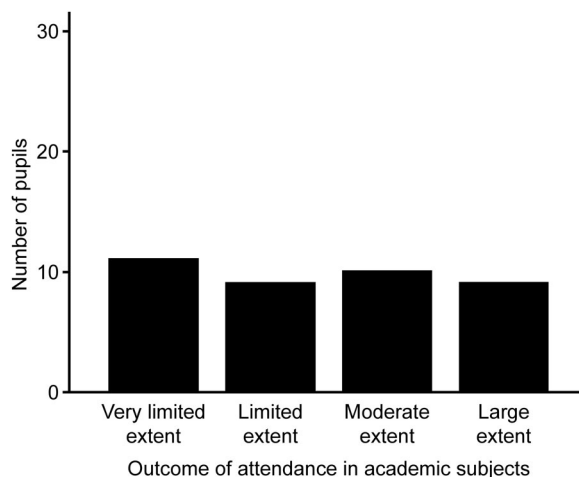


**Figure 2.** An overview of the subjects and activities for which the students with Down syndrome were present in the mainstream classroom (N=39).



**Figure 3.** Outcome of presence during social activities.

outcomes for classroom presence. Another explanation may be that despite the potential outcomes, some of the children with Down syndrome were withdrawn from the mainstream classroom during certain subjects for other reasons or that the resource teacher and the general class teacher did not agree on what would be the best practice for the child and/or his or her classmates. A final remark concerning the correspondence between the findings of classroom presence and outcomes is that the presented data do not provide causal explanations; hence, presence may generate outcomes, and/or outcomes may generate presence. However, as noted in the Methods section, some resource teachers provided additional comments in the survey that explained the rationale behind segregated arrangements. Of the 39 teachers, 16 provided one or more comments in this particular field; 10 of these comments were related to the increasing gap between their student's IEP and the class curriculum, which resulted in difficulties with combining the teaching programme for many lessons. Six teachers described failed attempts to conduct parallel activities with adapted tasks because their student displayed weak concentration and motivation during whole-class sessions. Two teachers noted their student's sensitivity towards noise and disturbance and their risk of violent reactions and escapes.



**Figure 4.** Outcome of presence during academic subjects.

Three teachers explained that individual preparation in the resource room was necessary for the students to be able to subsequently participate and learn in the mainstream classroom. Eight teachers also commented that their student learned more during individual or small group instruction because it provided opportunities for more customised and varied assignments (e.g., practical tasks) with close monitoring and frequent breaks.

### Predictors of Inclusion

The second research question pertains to the extent to which the children's language skills and teacher collaboration explain the variation in the quality of inclusion. Table 3 presents the reliability, mean, and standard deviation scores for the expressive language measures. As noted in the Table, all of the expressive language variables exhibited satisfying levels of reliability, and the children performed better at 8 years of age than at age 6 on all measures.

Table 4 presents the results concerning teacher collaboration. As this Table shows, the reports of the resource teachers pertaining to their collaboration with classroom teachers are quite evenly distributed: approximately half of the teachers have frequent meetings to discuss how to facilitate each child's attendance and inclusion in the class community as well as proper coordination of each child's IEP and the class curriculum. The other half of the teachers either meet infrequently, operate with uncoordinated plans, or both.

The correlation matrix for the variables of "quality of inclusion," "teacher collaboration," and "expressive language" at the two time points are shown in Table 5. The Table shows that all of the correlation coefficients for inclusion and expressive language skills were statistically significant with a moderate and close to strong relationship between the variables. The same was true for the correlation between inclusion and teacher collaboration.

A simultaneous regression analysis was conducted to assess the variance in quality of inclusion with "quality of inclusion" as the dependent variable and "expressive language" and "teacher collaboration" as the independent variables. The regression model is shown in Figure 5. As the Figure illustrates, the model that included both language skills and teacher collaboration accounted for 29% of the total variance of inclusion for children at age 8. Both "expressive language" and "teacher collaboration" contribute significantly to the variance observed in the "quality of inclusion." To further investigate the longitudinal predictive relationship between "expressive language" and "quality of inclusion" we calculated the square root of the correlations between "expressive language" at Time 1 and "quality of inclusion" at Time 2 to identify the predictive power of expressive language skills. The calculation revealed that expressive language skills at six years of age explained a reliable part of 11% of the variation in the quality of inclusion ( $\beta = .332, p = .039$ ).

This result suggests that entering school with more advanced expressive language skills increases the likelihood of experiencing high-quality classroom inclusion in third grade.

**Table 3.** Reliabilities, means, and standard deviations for the language measures used at Time 1 (T1) and Time 2 (T2).

Measure	Alpha	M (SD) T1	M (SD) T2
Picture Naming	.90	9.00 (5.58)	13.62 (7.00)
Grammatic Closure	.72	1.36(1.91)	2.90 (3.41)
Past Tense	.68	0.38 (0.63)	0.64 (0.96)

All reliabilities are Cronbach's alpha statistics based on the original sample of 43 children; for all other results,  $N = 39$ . The means and standard deviations are based on raw scores on the different tests.

**Table 4.** Number of teachers with close versus fragmented teacher collaboration.

Fragmented teacher collaboration	Close teacher collaboration	Total
20 teachers	19 teachers	39

**Table 5.** Correlation matrix for the “Quality of inclusion,” “Teacher collaboration,” and “Expressive language” variables.

	Quality of inclusion	Teacher collaboration	Expressive language at T2	Expressive language at T1
Quality of inclusion	1			
Teacher collaboration	.442**	1		
Expressive language at T2	.428**	.294	1	
Expressive language at T1	.332*	.183	.728**	1

\*significant at the .05 level.

\*\*significant at the .01 level.

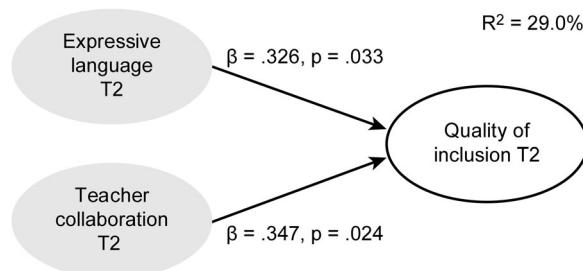
## Discussion

To summarise the findings, the resource teachers’ ratings indicated an overall quality of classroom inclusion above the midpoint of the scale. The vast majority of the students in the age cohort with Down syndrome usually attended social and practical activities in the mainstream classroom, while academic subject lessons tended to be organised outside of the mainstream classroom. Consistent with this finding, the resource teachers perceived that the students benefited more from attending the mainstream classroom during social activities than during academic instruction. Both the environmental factor of “teacher collaboration” and the child-related factor of “expressive language” skills explained variance in “quality of inclusion.”

### Quality of Inclusion, Organisational Arrangements, and Child Outcomes

The resource teachers generally reported that the indicators of inclusion were fulfilled to a moderate extent. “Moderate” was not the mid-point; rather, it was above mid-range on the four-point scale. Therefore this result may be said to reflect a positive trend toward the students with Down syndrome participating in joint classroom activities: they worked together with their peers, were given corresponding responsibilities, were expected to follow the class rules, were influential in their environment, and benefited from their presence in the mainstream classroom – although not to a great extent. The lack of classroom attendance during particular academic subjects is probably one of the reasons we did not find top-quality inclusion, as attendance is among the indicators of inclusion.

An arrangement in which students with disabilities spend part of their school day with their classmates and other parts of their day in separate settings has been criticised for being a “covert segregation within mainstream schools,” whereby the schools maintain their tradition of teaching children with and without disabilities separately (Wendelborg & Tøssebro, 2008, p. 317). For the schools involved in the current study, organisational segregation primarily occurred in subject areas that previous research studies found to be particularly challenging for children with Down syndrome: mathematics (Nye, Fluck, & Buckley, 2001) and languages (Næss, 2012; Roberts et al., 2007). Within these areas, adequately adjusted education often occurs at the elementary level; furthermore, the segregated arrangements suggest that the gap in academic levels and interests between the



**Figure 5.** Concurrent predictors of inclusion.

students with Down syndrome and their classmates causes difficulties with learning in the mainstream classroom starting when the children are as young as 8 years old. In contrast, in social activities, the children may have experienced advantages resulting from their social strengths (Gilmore, Campbell, & Cuskelly, 2003). Alternatively, differences between the children (with and without Down syndrome) are less crucial in activities that are less oriented towards academic performance and achievements.

The reported trends in organisational arrangements are consistent with the resource teachers' ratings of outcomes, as they generally agreed that mainstream classroom attendance during meal times, music lessons, physical activities, and trips benefited the students with Down syndrome. These activities evidently provided an inclusive setting in which the students with Down syndrome experienced success and learned together with their classmates. Again, these results may be related to the relative strengths in social skills that are attributed to children with Down syndrome (Gilmore et al., 2003), possibly enhancing participation in and outcomes of the same activities and similar pedagogical content as the other students in the class. Although the established picture of children with Down syndrome as socially well-functioning is moderated in recent research (Cebula & Wishart, 2008), positive expectations from the teachers and peers based on this picture may have benefited the children at times, for example, by enhancing their initial acceptance during social activities. However, two of the children did not eat meals with the class. This does not necessarily mean that they ate alone, but it might be appropriate to question why these teachers did not use mealtime as an opportunity for social interaction and inclusion in the mainstream classrooms.

Concerning the outcome of presence during academic subjects, there was less agreement among the resource teachers about whether such presence benefited the students with Down syndrome. Nearly half of the teachers provided additional comments about why they considered classroom attendance during academic instruction unfavourable for their students; these comments predominantly noted a lack of learning outcomes. The resource teachers appear to give higher priority to the individual child's learning and development than to his or her education within the mainstream classroom when these objectives conflict. Together, the ratings and comments of the teachers indicate an ambition to also exploit the intellectual potential of the students with Down syndrome in an optimal learning environment. This goal was perceived as incompatible with teaching particular subjects (e.g., mathematics and second-language lessons) in the mainstream classroom. One could object that it should have been possible to align parts of these lessons, such as song sessions in English or practical sessions that included group work, with the learning needs of the students with Down syndrome. Furthermore, a change of activity during a 45-minute lesson, such as shifting between individual or small-group arrangements and classroom participation, would perhaps benefit all of the children, especially those who have short attention spans. This type of flexible organisation offers possibilities for taking individual children's changing needs into consideration (Rix et al., 2013). Although the findings of segregated arrangements may be interpreted as an indication that the inclusion of students with intellectual disabilities is far from being fully realised (cf. Pijl, Frostad, & Flem, 2008; Wendelborg & Tøssebro, 2008), they could also be perceived as an indication that inclusion has been achieved in the areas in which students with Down syndrome profit from classroom attendance. When the resource teachers perceived that segregated instruction was more beneficial than instruction in the mainstream classroom, the children received instruction in a separate room (individually or in small groups). However, this segregation does not imply that the students were excluded from the class community. Rather, it appears that when the students in the current study were in the mainstream classroom, they participated as active and accepted members of the class.

### ***Environmental and Child-Related Predictors of Inclusion***

To better understand the complex process of inclusion, we examined potential environmental (teacher collaboration) and child-related (expressive language) explanations for the variations in the

quality of inclusion reported by the resource teachers. Both teacher collaboration and expressive language contributed substantially to this variation. A significant portion of the variation was explained by how well the resource teachers and classroom teachers collaborated. As the indicators of inclusion are related to presence, participation, and acceptance, as well as outcomes, teacher collaborations *may have* enhanced the quality of inclusion in several ways. Potential explanations are outlined in the following.

Close collaboration may have contributed to increased *presence* by preventing the student with Down syndrome from becoming the sole responsibility of the resource teacher, whereas fragmented collaboration may have led to more instruction being provided in separate settings because of a lack of coordination of plans or infrequent discussions among the teachers regarding how to facilitate inclusive practices. Additionally, close collaboration may have contributed to individual adjustments that allowed the students with Down syndrome to *participate* as members of the class community, as emphasised in the research literature on teacher collaboration (Grubert, 2011; Soodak, Podell, & Lehman, 1998; Wolpert, 2001). Concerning *acceptance*, close collaboration with frequent meetings and coordination of a child's IEP and the curriculum for the remainder of the class may have facilitated opportunities for group work and peer interaction in classroom activities, as argued by Dolva et al. (2011). In terms of *outcomes*, close collaboration may have contributed by coordinating educational plans to ensure that the students with Down syndrome work on equivalent yet individually adapted tasks. In this manner, a sense of relatedness and affiliation is maintained while learning opportunities are increased. Overall, our data suggest that teacher collaboration affects the quality of inclusion. Nevertheless, while nearly half of the resource teachers reported close collaboration with classroom teachers, a minority ( $n \leq 6$ ) of the students with Down syndrome were present in the mainstream classroom during particular academic subject lessons. This finding suggests that although these teachers cooperated well, inclusive education in mathematics and second-language lessons was particularly challenging, and the collaboration primarily contributed to achieving a moderately high quality of inclusion in more practical subjects and social activities. The fact that half of the teachers reported some form of fragmented collaboration may raise further questions about the teachers' practices given the documented importance of teacher collaboration shown in previous educational research (Flem & Keller, 2000; Friend & Cook, 2013; Gable & Manning, 1997; Grubert, 2011; Ripley, 1997).

Another significant portion of the variation in the quality of inclusion that was found in the current study was explained by the children's expressive language skills. Both concurrent and previous expressive language skills predicted the resource teachers' rating of the indicators of classroom inclusion. More advanced expressive language skills may have provided the children with a capacity to act and exercise agency (cf. Ahearn, 2001), such as initiating classroom *presence* in subjects and activities that the children experienced as meaningful and motivating, and *participation* through active contribution in classroom activities. Capabilities of engaging in verbal peer interactions may have led to increased *acceptance* by peers. Although Laws et al. (1996) found that the language competence of students with Down syndrome was not related to their popularity (which their peers rated positively), the researchers noted that children have a sympathetic view of people with disabilities that may lead to unequal interactions. In the current study, abilities to engage in imaginative play and other verbal peer interactions may have contributed to the formation of more equal interactions among the children with Down syndrome who had relatively advanced expressive language skills and their peers. It is also likely that the children whose expressive language skills most closely resembled those of their classmates were more likely to benefit from class discussions and activities and that these children thus had better learning *outcomes* than the children with Down syndrome whose expressive language skills were less advanced.

Overall, the presented gains of advanced language skills may have resulted in a "beneficial loop" for the students with Down syndrome. The results of this study suggest that the children with early progression in their language development subsequently experience higher-quality classroom inclusion. In such cases, the children may experience the advantages of greater exposure to a rich

language environment, peer role models and participation in cooperative groups that may facilitate language development, as the study by Laws et al. (2000) found. Additionally, increased teacher expectations based on the children's advanced expressive language skills may lead to a self-fulfilling prophecy. The main argument in the study of Laws et al. (2000) was that mainstream placement results in better language development for students with Down syndrome. The longitudinal findings of the current study add to our knowledge of the causality between inclusion and language by suggesting that children with Down syndrome who have experienced good progress in their early language development are more likely to experience a high-quality inclusive education in primary school.

### **Limitations and Suggestions for Future Research**

Measuring inclusion is challenging because of the complex nature of the phenomena, which may lead to simplifications of the construct. To meet this challenge, the inclusion variable that was constructed for the current study was based on multiple indicators derived from existing theory (Farrell, 2004). One finding of this study that may reflect a potential conflict between two theoretically defined sub-aspects of inclusion (i.e., full-time presence and positive learning outcomes) suggests that future studies should investigate the relationships between the sub-aspects of inclusion more closely.

The four graded response options that were used in the teacher survey designed for this study generate gross results that should be interpreted with caution. Five-point Likert scales are commonly used in surveys; however, the use of a scale with no mid-point forces the respondents to take a stand in either direction, which minimises the risk of social desirability bias (i.e., the risk that the respondents will choose the mid-point instead of what they perceive to be a socially unacceptable answer) (Garland, 1991; Wu, 2007). For this reason, a scale with four semantic categories was chosen for this study.

Although we found a longitudinal predictive relationship between expressive language skills and the quality of inclusion in this study, this relationship may be mediated by a third variable (such as, e.g., teacher competence or attitudes). Therefore, to strengthen the inferences drawn from the current study, future research should verify the findings by adding relevant variables for mediation analysis and applying complementary research approaches. Approaches such as longitudinal studies to clarify the mutual influence between language and inclusion, and tests or ratings of the outcomes of different organisational arrangements provided for students with Down syndrome, as well as interviews with students concerning their own experiences with inclusion, could be applied in the area. By interviewing the students themselves – for instance by means of the communication tool Talking Mats – researchers could expand the perspective of how inclusion is perceived. Such data could provide valuable information about how to facilitate high-quality inclusion for this group of students, but it could also underlie decision making concerning the educational provision of the particular respondent – in accordance with self-determination theory and ethics (Rietveld, 2012; Ryan & Deci, 2000).

Finally, the factors addressed in this study cannot fully explain the variation that was observed in the quality of inclusion. A larger sample could have provided additional strength for the correlations between the dependent and the independent variables. A larger sample would also allow a regression analysis that simultaneously investigates a higher number of predictors, for example, environmental factors (teacher competence, cooperation with teacher assistants, and parents' social economic status) and child-related factors (cognition, social competence, behaviour, and motivation). However, this study is the first international study in this research field to include a reasonably large sample representing a national age cohort.

### **Conclusion**

The results of this study suggest that the quality of inclusion for students with Down syndrome is higher than previous research suggested. However, in certain settings the schools' mission of

offering sufficient individual adaptations to allow these students to achieve optimal educational progress while maintaining the class as one unit posed a dilemma that resulted in the child's withdrawal from the mainstream classroom. Nevertheless, organisational segregation targeting optimal learning in the most challenging academic subjects appeared to coexist with social classroom inclusion. In this manner, real-life inclusion practices may differ from the theoretical and political ideals, which emphasise full-time presence in the mainstream classroom (e.g., Farrell 2004; Ferguson, 2008). Rather, inclusion more meaningfully appears to be an aggregated concept that is associated with a psychological state of belonging to the class community. This sense of shared community may not always be tantamount to a physical presence in the classroom, although a focus on physical presence has historically played an important role in the political movement away from the institutionalisation and segregation of people with disabilities.

In today's schools, leaders face the continuous challenge of creating a collaborative professional culture. Only half of the resource teachers in our study reported that they collaborated closely with their student's classroom teacher. Although the findings indicate that close collaboration does not imply the full-time presence of the student with Down syndrome in the classroom, such collaboration appears to positively affect the overall quality of classroom inclusion and should therefore be given higher priority. Finally, the results of this study highlight the importance of applying a multi-level approach that focuses on both environmental and child-related factors when investigating classroom inclusion. Both teacher collaboration and the expressive language skills of the children with Down syndrome affected the quality of inclusion and are arguably relevant areas for interventions. Because of the longitudinal influence of expressive language, systematic language interventions from an early age combined with inclusive and naturally stimulating preschool practices appear essential for ensuring that school children with Down syndrome experience high-quality classroom inclusion.

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