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## Interactional facilitators and barriers to social relationships between students who use AAC and fellow students

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### ABSTRACT

**Purpose:** This paper investigates the perceptions among parents and staff of how relational aspects among students who use AAC, fellow students, and staff may affect the students' social relationships.

**Methods:** The study included semi-structured interviews of 6 parents and 18 staff to 7 students using AAC. The interviews were audio-recorded, transcribed verbatim, and analyzed by using a constructivist grounded theory approach.

**Results:** The analysis identified several interactional facilitators and barriers to social relationships between students using AAC and fellow students.

**Conclusions:** The results demonstrated the importance of considering personal as well as environmental facilitators and barriers to the student using AAC's social relationships. The complexities in how these interactional facilitators and barriers interact with each other are discussed in relation to previous research. Of special importance for the development of the students' social relationships was shared experiences between students using AAC and fellow students, environmental adaption and support provided by staff and fellow students, staff's efforts in building goodwill for students using AAC, and fellow students' confidence in using AAC. As confidence in communicating was associated with reduction of the consequences of challenging communication with students using AAC, the results indicated the importance of providing communication training to fellow students.

### KEYWORDS

Social relationships; facilitators and barriers; children; interaction; school; augmentative and alternative communication (AAC)

### Introduction

Social relationships rely on social interaction, and interaction between students is an important part of inclusive education (Koster, Nakken, Pijl, & Houten, 2009; Soto, Müller, Hunt, & Goetz, 2001). Haug (2014) defined inclusive education as aiming to increase students' fellowship, participation, democratization, and educational benefit. Yet, researchers have revealed significant practice challenges in the inclusion of students without functional speech using augmentative and alternative communication (AAC) in mainstream educational settings (Calculator, 2009; Soto et al., 2001). Although interaction with peers is important to facilitate the development of friendships among students using AAC (Anderson, Balandin, & Clendon, 2011; Østvik, Ytterhus, & Balandin, 2017), findings from several studies have indicated that students using AAC have limited interaction with fellow students without disability. These include students using AAC making fewer initiatives to start an interaction with fellow students (Chung, Carter, & Sisco, 2012; Clarke & Kirton, 2003), using a limited number of communicative functions (Chung et al., 2012), relying on others to initiate communication (Midtlin,

Næss, Taxt, & Karlsen, 2015), often taking a respondent role (Clarke & Kirton, 2003), and having more interactions with adults than peers (Raghavendra, Olsson, Sampson, McInerney, & Connell, 2012). Consequently, students using AAC frequently depend on answering closed (yes/no) questions (Clarke & Kirton, 2003; Midtlin et al., 2015). They also take fewer turns in communicative interactions than their speaking fellow students (Clarke & Kirton, 2003) and participate in activities that require few communicative interactions (Anderson et al., 2011). Researchers have also reported that students who use AAC's opportunities to interact with peers decreased when the activities became less organized or when the group size increased (Chung et al., 2012). Restricted use of a formal symbol system among children using AAC may also limit interaction with fellow students (Chung et al., 2012; Clarke & Kirton, 2003). Moreover, fellow students without disability may also have limited initiations due to restricted expectations of a positive outcome concerning communication with students who use AAC (Beukelman & Mirenda, 2005; Lund & Light, 2007). Additionally, interactions and participation with fellow students without disabilities may become increasingly restricted as the fellow students

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grow older, develop more mature interests and differences in academic ability become apparent (Kent-Walsh & Light, 2003).

Several scholars have characterized children using AAC as passive communicators (Batorowicz, Campbell, von Tetzchner, King, & Missiuna, 2014). Fey (1986) described social conversation participation among children with language impairments along a continuum of two axes, representing conversational assertiveness (i.e. ability and/or willingness to take turn in a conversation) and conversational responsiveness (i.e. response to needs of the communication partner). Fey identified four patterns of communicative behavior: active (i.e. assertive and responsive), passive (i.e. non-assertive, but responsive), inactive (i.e. non-assertive and non-responsive), and non-verbal communication (i.e. active, but non-responsive to their communication partners' conversation needs caused by inability in initiating appropriate topics and maintaining/extending established topics). These findings may represent a starting point for interpretation of communicative behavior among children who use AAC.

For some children, AAC technology facilitates their communication. AAC technology (e.g. on-screen keyboard software) supports perceptions of self-confidence amongst children with physical disabilities (Carpe, Harder, Tam, & Reid, 2010) and this confidence is important for children's desire to communicate using AAC (Light & McNaughton, 2014). However, Johnston, Reichle, and Evans (2004) identified that children may use their AAC technology (e.g. voice output communication aids) infrequently and not well. In their study of symbolic communication among twelve children between 7 and 11 years old using AAC and their fellow students, Clarke and Kirton (2003) found that these children's communicative behavior were consistent with patterns of passive communication in accordance with Fey (1986)'s suggestions. Similar results are reported for children up to five years old (Finke & Quinn, 2012) and between 10 and 17 years (Midtlin et al., 2015).

Although use of AAC may elicit communication challenges for students using AAC and communication partners, fellow students have demonstrated awareness of their friends' disability and their role in providing support. Altruistic attitudes were prominent characteristics among peers with supportive roles (Anderson et al., 2011; Kent-Walsh & Light, 2003). In their systematic review of interventions directed to help children who use AAC, Shire and Jones (2015) highlighted support from communication partners. Furthermore, support from fellow students was one among several criteria for inclusion of students using AAC in a study involving staff of students using AAC in elementary to high school programs (Soto et al., 2001). Considering these

findings, the importance of providing communicative training to peers as reported by several researchers might be crucial. Researchers have reported that communication training to peers increased learning of skills to communicate with students using AAC (Fisher & Shogren, 2012) and the social interactions with students using AAC (Carter & Maxwell, 1998; Fisher & Shogren, 2012; Raghavendra et al., 2012; Thirumanickam, Raghavendra, & Olsson, 2011), and increased use of comments and the number of communicative turns (Fisher & Shogren, 2012). However, having a helping role may lead to an imbalance in social power and thereby disturb the social equality among children (Østvik et al., 2017). In addition to communication support, fellow students' attitudes and behaviors have also impact on participation (Guidera, Olsson, & Raghavendra, 2010; McCarthy & Light, 2005) and the development of friendships (Anderson et al., 2011) among students who use AAC. However, in a study of self-reported attitudes towards students using AAC, attitudes among fellow students in fourth and fifth grade were not influenced by the students' using AAC communicative competence or the type of AAC system used (i.e. communication board or voice output device) (Beck, Bock, Thompson, & Kosuwan, 2002). Similar results are also reported among adults concerning children's type of AAC system or kinds of disabilities (Beck et al., 2001).

A preliminary summary of existing research indicates that researchers have investigated several relational aspects between students using AAC and fellow students. However, we still lack extensive knowledge about these issues (Chung et al., 2012; Clarke & Kirton, 2003; Light & McNaughton, 2015) and how they influence the students' social relationships. Røgeskov, Hansen, and Bengtsson (2015) argued that it is important to take account of environmental factors (i.e. how the environment is organized and how the environment relates to the individual's impairment) as well as the nature of the impairment when analyzing social relationships between students with and without disabilities. It is also important to note that several researchers have reported that parents have limited shared attention on friendship as a topic (Batorowicz et al., 2014; Light & Smith, 1993), and there are gaps in our knowledge concerning the attention and value that parents of children who use AAC place on friendship (Østvik et al., 2017). Due to restrictions in communication and interaction, students using AAC may have experienced difficulties in elaborating on the relational aspects which are important for their social relationships. Hence, in the present study it was important to explore the adults' perceptions about these issues. Previous research has not addressed issues concerning the relationship between social relations and interaction

between students using AAC and fellow students very well. The purpose of this study was to investigate parents and staff's perceptions of how relational aspects among students who use AAC, fellow students, and staff may affect the students' social relationships. Of special importance is extrinsic aspects which influence on these relationships, including the school's attention on friendship among students using AAC.

## Method

This was a qualitative study based on a constructivist grounded theory design according to Charmaz (2014).

## Recruitment

Information about Norwegian mainstream public schools expected to have students using AAC in first to fourth grade<sup>1</sup> was obtained from the Norwegian national service for special needs education (Statped) and habilitation services for children. The schools were invited to provide anonymous information about students using AAC. Based on the acquired information, invitations to participate in the study were sent to selected schools, staff, and parents using the following criteria: (1) The schools had students using AAC in first to fourth grade. (2) Only public mainstream schools were selected. (3) The first author had not provided supervision to the schools in his previous employment. (4) Previous colleagues of the first author did not provide supervision to the students using AAC at the selected schools. (5) Due to funding constraints, the schools were located within a reasonable travel distance for the first author. No incentives were offered to the participants. These procedures are in accordance with the recommendations of the Data Protection Official for Research (NSD) in Norway and with the Norwegian national ethical guidelines for Social and Humanistic Sciences. NSD approved the study.

## Participants

Six parents and 18 staff for seven students who used AAC1F in first to fourth grade in Norwegian mainstream public schools accepted the invitation and participated in the study. The study included five mothers and one father, five class teachers, four special teachers, four activity therapists, and five assistants. Six schools were included in the study, with the total number of students attending the schools ranging from 230 to 700. The schools were spread over six municipalities in rural and urban areas, with populations ranging from 7000 to 130,000 citizens.

The staff had worked closely with the students using AAC for an average of approximately 2 years, with a spread ranging from 3 months to four years. Table 1 presents an overview of the participants and their relationships with the students using AAC. The names in the table are fictitious.

## Interviews and data analysis

The first author conducted a semi-structured interview with each participant. A separate interview guide was used for parents and staff. On request, the interview guides can be obtained from the first author. Both interview guides included questions about the student's using AAC communication and social relationships with fellow students at school. In addition, parents were asked questions relating to the school's attention to friendship. Staff was asked about the interactions between students using AAC and fellow students, and extrinsic aspects with influence on the students' social relationships. Each interview took place in a quiet room at the school without any other present and were audio recorded. The sequence of the interviews of parents and staff were mixed. The interviews lasted from 24 minutes to 1 hour and 44 minutes, with an average of 50 minutes. The first author transcribed the interviews verbatim<sup>2</sup> and de-identified the data to protect confidentiality.

A constructivist grounded theory approach (Charmaz, 2014) was used to analyze the transcriptions. The period of recruitment lasted in 10 months due to difficulty in recruiting enough participants. The analysis followed Charmaz' suggested steps; initial coding, focused coding, memo-writing, and category construction. The first author conducted initial coding on each transcription. Because parents and staff were asked different questions and they possessed different roles and experiences, focused coding and identification of tentative categories was conducted separately for each interview group. To strengthen the coding analysis (Tong, Sainsbury, & Craig, 2007), the third author conducted initial coding of 10% of the data material. The first and the third author discussed the few differences in the coding decisions and resolved them by consensus. For each focused code, preliminary memos were written. Later, memos were written to compare focused codes with each other, across interview groups. Focused codes and their underlying dimensions were compared within and across transcripts and with the raw data. Tentative categories for each interview group were constructed on the basis of selected focused codes within each interview group. To strengthen the credibility of the analysis through collaborative work (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005), the first author and

**Table 1.** Participants in the study.

Participants		Students using AAC <sup>a</sup>	
Parents of students using AAC	Staff at school	Name	Communication modes
Mother	Alice (class teacher) Annie (special teacher) Annabel (assistant)	Anthony	Vocalisations/sounds Facial expression Gestures Other body language Speech Signed Norwegian
<sup>b</sup>	Belinda (special teacher) Barbra (activity therapist)	Beatrice	Vocalisations/sounds Facial expression Other body language Speech Signed Norwegian
Mother	Cornelia (class teacher) Chloe (special teacher) Connie (assistant)	Colin	Vocalisations/sounds Facial expression Gestures Speech Graphical symbols <sup>c</sup>
Mother	Doris (activity therapist) Dolores (activity therapist)	Diana	Vocalisations/sounds Facial expression Eye movements Graphical symbols <sup>c</sup>
Father	Elaine (class teacher) Ellen (activity therapist)	Elaine	Vocalisations/sounds Facial expression Gestures Speech
Mother	Gabrielle (class teacher) Greta (special teacher) Gina (assistant) Gwen (assistant)	George	Vocalisations/sounds Facial expression Eye movements Speech Graphical symbols <sup>c</sup>
Mother	Helen (class teacher) Henrietta (assistant)	Harriet	Vocalisations/sounds Facial expression Eye movements Gestures Speech Graphical symbols <sup>c</sup>

<sup>a</sup> The participants provided interview data concerning seven students using AAC. Except for one student, the students using AAC were enrolled in the mainstream education class. All students using AAC had an individual education plan. Five of the students used a manual wheelchair. The students using AAC participated with fellow students in educational and social activities in class, recess, or at the schools' special unit for students with special needs. They were out of class in more than 50%, spending the rest of the time at the school's special unit or in individual activities (e.g. curricular training, physical training, personal hygiene, resting). Six students used speech with reduced intelligibility, whereas one student had no speech at all. Except for speech, the students using AAC used symbolic communication by means of graphic symbols on paper cards, communication boards (selection by pointing or eye gazing), communication books, speech-generating devices, and/or signed Norwegian. Whereas symbolic communication was the primary mode of communication among three of the students using AAC, four of the students used non-symbolic communication as their primary communication mode.

<sup>b</sup> Data was not accessible.

<sup>c</sup> Graphical symbols on symbol cards, communication boards, communication books, and/or speech-generating device.

the co-authors discussed the focused codes, the tentative and the final categories. Memo-writing identified corresponding sub-categories, consisting of significant focused codes. Corresponding categories were merged across the interview groups through comparison of categories identified in the data from all interview groups. Then, analytical memos about the final categories were written. Examples of initial codes and focused codes are included in Appendix.

## Results

Analysis of the themes and sub categories identified interactional facilitators of and barriers to social relationships between students using AAC and fellow students. Some aspects (e.g. attitudes and support) made both positive and negative impact on the social relationships. The facilitators and barriers are described below.

### *Interactional facilitators of social relationships*

#### *Shared experiences*

Staff emphasized shared experiences as important for the development of social relationships between students using AAC and their fellow students. Staff viewed doing activities together, especially something fun (e.g. participation on trips with the class, project work with other students in class), as important for the students' using AAC experience of belonging to the class. According to staff, shared experiences made it possible to talk about common topics together with classmates in retrospect of the incidents.

#### *Positive attitudes*

Staff considered positive attitudes among fellow students towards interacting with students using AAC as important for promoting possibilities for the student with AAC to become better known. According to staff, fellow students accepted the students using



AAC. Staff referred to fellow students having generosity and patience towards the students' with AAC, accepting the students' participation in activities, and demonstrating supportive behavior:

They [fellow students] do not nag if he [Anthony] takes a slightly longer time ... No one says "Hurry, hurry, hurry." They say to classmates ... "Oh, so slow. Oh, hurry up.". But they never say that to Anthony ... Yes, they're generous. Much more generous, both with applause and feedback and such. So it's like "Oh, well done Anthony!". They do not say that when others complete multiplications ... or sums. (Alice, class teacher)

Staff also claimed that fellow students demonstrated a forgiving attitude towards students using AAC. An assistant referred to an episode where George sat on the floor and played with a Brio® railway together with classmates. Due to spasms, his hands destroyed the railway: "They realize simply that he doesn't do it on purpose" (Greta, assistant). Parents provided similar views and described fellow students as being kind and understanding towards their children who use AAC. Diana's mother stated: "I think they are a very nice group, the girls in the [mainstream] class. And the way there were at the birthday party yesterday – they are so, yes – beautiful with her [Diana]".

### **Environmental adaption and support**

**Reporting needs for support.** Parents described support from adults as essential in communication and participation between students using AAC and fellow students. Colin's mother described how vulnerable participation is when a situation involving Colin and other students without disabilities changes: "When they start to play, he may be left standing. So I feel that I really have to be his arms and legs [to support participation]." (Colin's mother). Georges' mother stated the importance of support in communication: "He relies on adults in order to have communication with children." Elaine's father reported the significance of having a stable staff, who know his daughter well, are able to interpret for her and give her confidence through communicative support in her interactions with fellow students.

Staff reported the students' using AAC need for support in several areas. Support strategies included having structured and predictable activities, an understanding of both social and the activity's rules, opportunities for communication and participation in activities with fellow students, and using initiatives to develop social relationships with fellow students. A staff member emphasized the importance of communicative support: "It is the adult who has to keep the dialogue going. To help him [Colin]. He's not there yet ... To keep the conversation going." (Chloe, special teacher). Another staff member highlighted the

importance of support to find common activities: "Beatrice needs support from adults to find activities so that they can have fun together" (Barbra, activity therapist).

**Requesting support.** According to staff, students using AAC seldom requested support from adults during interactions with fellow students. If they did, they asked for communication support (e.g. asking for the communication book by tilting backwards towards the communication book hanging back on the wheelchair, or by saying "Book"). Staff reported that fellow students requested communication support from adults more often than the students using AAC. Fellow students who knew the students using AAC well and younger students without disabilities often initiated these requests after failure to understand the students using AAC. A staff member stated: "They turn to us adults, instead of talking directly to Beatrice ... they often come to me and then I have to bring Beatrice into the conversation" (Belinda, special teacher). Other students without disabilities often requested support from adults when they approached the student using AAC for the first time.

**Providing support.** Staff reported that fellow students in mainstream classes were more likely to use the students' with AAC communication systems (e.g. partner-assisted scanning techniques, communication book, speech-generating device) than fellow students in the school's special unit. Moreover, according to staff, most fellow students in classes close to the students using AAC acted as assistants. They provided communicative support, support for mobility, and general encouragement. A special teacher commented:

They watched a movie in his [Colin] group room. And then I was going to fetch the [Colin's] bag, because it was in the classroom. When I came back, neither Colin nor Casper [fellow student] were there. Then I turned around. Then they had gone over to the light switch and then Casper had turned the entire wheelchair to the wall so Colin could press the light switch. (Chloe, special teacher)

Staff reported efforts to support communication and participation between students using AAC and fellow students and also that they initiated interaction between students (e.g. inviting fellow students to interact in play, encouraging fellow students to communicate directly with the student using AAC, organizing smaller groups of students). Similarly, a mother noted the importance of the staff making an effort to organize play. In addition, staff supported communication and interaction between students (e.g. interpreting for other students with or without disabilities, keeping the conversation going, giving "homework" to fellow students that included using

the student's communication book). However, staff themselves rarely used the students using AAC's communication books or speech-generating devices although they encouraged the students using AAC to take the initiative with fellow students and participate in activities with them. George's assistant commented: "And sometimes we sit in class and ... Gabrielle [class teacher] asks something. So I say "You know this" I say, "So now you can raise your hand"." (Gwen, assistant). Finally, staff reported that they withdrew from interactions between students using AAC and fellow students in order to let the students be alone. Although staff claimed that adult support promoted social relationships between the students, some staff emphasized that an adult presence could detract from the interaction between students: "It is slightly inhibitory when adults are there, because then other children consult us adults" (Belinda, teacher). Staff argued that an absence of adults promoted dialogue and initiative among the students using AAC and fellow students, and made the students more independent. Nevertheless, withdrawing from interactions still implied being nearby in case students needed adult support.

[We] try to pull ... a little further away if it ... is possible ... Knowing that as we are older, then it is perhaps a bit difficult to bring ... to talk about what they want to talk about and things like that, if I'm so close. (Dolores, activity therapist)

There is a balance of trying sometimes to withdraw slightly to let them get space and dare to speak and dare to do it in their own way, but ... at the same time one must be there in case they need you. (Barbra, activity therapist)

The staff considered themselves important in building goodwill between students using AAC and other students. They reported three strategies used to build goodwill. First, staff attempted to develop good relationships with fellow students in order to become well liked among the fellow students.

Chloe, a special teacher, acknowledged her social power over a student's social relationships with fellow students:

I feel that ... I almost can decide whether he has friends or not. And it's a bit of a scary thought ... If I'm not accommodating and friendly with the other kids, then they will not have anything to do with Colin. Because I'm around Colin. If they do not like me, then they do not like Colin.

Second, staff made efforts to encourage fellow students to be interested in students using AAC (e.g. make a clear standpoint that the student using AAC want to spend time together with fellow student, invite for interaction). Third, staff tried to avoid appearing as a prominent authority figures. Staff argued that attitudes among their colleagues

influenced the basis for interaction between students (e.g. positive attitudes to create or grasp opportunities for interaction). The staff noted that their own attention and desire to create or grasp opportunities for interaction between students was important for the student's social relationships (e.g. supporting the student using AAC with transfers when fellow students were playing soccer in the schoolyard and introducing the student using AAC as a teammate).

According to staff, fellow students asked questions about the students using AAC's disabilities. These questions related to causes of behavior, communication modes, why they were using a wheelchair, and why they sighed. Staff of three students with AAC stated that they provided information to fellow students about the disabilities. However, information was not always provided to all fellow students interacting with the students using AAC (i.e. at SFO<sup>3</sup>). According to staff, fellow students with the closest relationships to the students who used AAC had the best insights into the causes of the disabilities, they solved the communication challenges better, and they demonstrated a greater acceptance of the students' disabilities than other fellow students.

### *Confidence in communication*

Staff stated that fellow students' confidence in communication contributed to increased interaction with students using AAC. Confidence in communication included initiating conversations, improved interpretation of communication, and questions about ambiguities in communication. Annie, Anthony's special teacher, described: "Someone is a bit unconfident to ask [him] directly. But someone is very confident and ask him directly. "What do you mean now?". Or ask "Was that what you meant or was this what you meant?"." Additionally, staff reported that fellow students who had a good understanding of the students' AAC based upon experience demonstrated the highest communicative confidence. Confidence in communication was also related to learning the students using AAC's communication. Diana's activity therapist Dolores stated the following: "It is that they learn her form of communication and that they are comfortable with it and that they are comfortable with being with Dina. If there are any communication difficulties ... then it's ok". Interactional barriers to social relationships.

### *Communication challenges*

Both parents and staff reported that students using AAC's use of communication aids in school was limited. They described constraints in the use of communication materials and speech-generating devices (e.g. lack of training, missing vocabulary, operation difficulties, access restrictions). One mother emphasized the importance of using a

speech-generating device. George's mother reported a lack of a satisfactory means to communicate: "But it's a long way to go to make it work as a language for George". She stated that her son was unhappy for his first two years at school due to communication challenges:

Now George thrives well. He didn't do that in the beginning...There were many misunderstandings of what he was trying to convey...It changed this summer when he started school. He has started with ... language materials [Bliss] that are adapted for him. The greatest challenge [for thriving] is the language. (George's mother)

Both parents and staff commented that communicating using AAC was time consuming. They also reported that a lack of competence in using AAC among fellow students (e.g. insufficient knowledge of the student's communication, using too many words, communicating at too fast a pace), as well as breakdowns in dialogues (e.g. fellow students did not repair dialogues and leaved students using AAC) impacted negatively on developing close relationships. These issues also restricted when and what the students using AAC were able to communicate. In addition, staff stated that not knowing whether or not students using AAC would provide a response to requests from fellow students weakened interactions. They noted that communication difficulties interrupted play and reduced social contact.

According to parents, students using AAC mainly responded to questions from fellow students that could be answered with yes or no. In addition, staff provided the following description of the interaction and communication characteristics of the students using AAC: (a) a lack of communicative initiations towards other students, (b) few interactions with students, (c) interactions often involving support from staff, (d) short sequences of interaction, (e) an emphasis on action in preference to communication, (f) superficial content of conversations, and (g) a lack of typical gender specific conversations (e.g. girl talk). These characteristics were to some extent determined by context. Reports from staff indicated that students using AAC handled experiences of not being understood in different ways. Staff reported that most students using AAC expressed frustration only when staff did not understand them. However, staff stated that one student expressed frustration and then resignation when fellow students did not understand her.

### **Restricted initiatives**

Staff reported restricted initiations for interaction between students using AAC and fellow students. Students using AAC displayed no or few attempts to make contact with fellow students at school: "In

regards to having contact with others I wish he could take a little more control and [say] 'Hello, shall we play together?'" (Chloe, special teacher). When they took the initiative, the students using AAC initiated contact directly to other students through vocalizations (e.g. saying "Hi") and body language (e.g. smiling, stretching out a hand, taking hold of students), or by making inquiries through staff. "If they [the class] are going to do something ... then George asks to be allowed to participate." (Gwen, assistant). The assistant Annabel referred to a song and music performance at the school where students from several classes sat on chairs and sang songs they had rehearsed:

Allan is in the same grade, he has always been aware of Anthony, and [says] "Hey", "Good, Anthony" and such like. He [Anthony] thinks it [the song] is fine and he took his right hand and laid it on his heart because ... [the text of] the song refers to the heart. And he looked at his right hand and then he looked along, and then he stretched his hand past August [who sits between Anthony and Allan], and then he reached over and put his hand on Allan's heart. Then he sat like this throughout the song. Touching his and Allan's hearts.

However, students using AAC rarely asked staff about spending time together with other students in class or at the special unit, and they made few attempts to meet other children at recreation periods.

Parents and staff reported that some fellow students were more likely to initiate contact with students using AAC than vice versa. These fellow students were likely to belong to the class or special unit, they knew the students using AAC well, they were the same gender, and they were likely to be characterized by staff as caring persons, helpers and playful. However, fellow students without close relationships with the student using AAC occasionally initiated contact. A special teacher described an episode when she approached the classroom:

Then Colin was alone in the classroom. Almost. Because in front there sat a boy who was reading to him ... because it's quiet reading. It was Claus. Who has not been inside much [at Colin's room] at all. He has realized that 'No, he wanted to read for Colin so that Colin would not have to sit alone.'" (Chloe, special teacher)

Staff commented that some fellow students made direct contact with students using AAC, but most fellow students initiated contact through the staff or asked the staff about the student if they had not seen the student using AAC for a while. On the other hand, some fellow students did not talk with the students using AAC at all: "Since she does not belong [she lives outside the school district], there isn't anyone coming to her home because they belong around here, those who attend her class" (Helen, assistant).



With the exception of invitations for birthday parties, parents reported that very few fellow students contacted the students using AAC outside school hours.

### *Ever increasing differences in functioning*

Both parents and staff reported lower levels of functioning on several developmental areas among students using AAC compared to their fellow students in class. These areas related to skills (i.e. social, linguistic, motoric, and academic), independence, speed of completing tasks, and overall life experience. They argued that the students using AAC developed more slowly than the majority of their peers, and any gaps in functioning between the students increased with age. Anthony's mother stated: "They outgrow him ... Yes, they are in a way much older than him. After all, they read ... He does not". This lag in skill development led the students using AAC often being unable to cope with typical age appropriate activities. Consequently, according to staff, some students using AAC stopped participating in some activities with the class (e.g. gym, board games, natural science). The staff for one student using AAC considered the special unit to be a more appropriate context than class. The activities in the unit were better adapted to this student's skills, the opportunities for coping were better, and self-assertion was easier with students at a similar level of functioning.

In addition, staff also reported other differences in functioning between the students. In class, those with mobility aids experienced restrictions in mobility (i.e. doorsills, narrow passages between desks) that limited access to fellow students and materials. Staff claimed that restricted mobility impacted negatively on the development of social relationships as it hampered interactions between the students:

It is impossible to get around here because of the doorsills. The kids can't move him [in the wheelchair], they can't get over doorsills and they [the school] don't do anything with the doorsills. Yes, it can be a barrier enough that ... yeah, come around, around the classroom. (Chloe, special teacher)

The classroom is certainly not ... ideal when it comes to having a wheelchair in there. (Estelle, class teacher)

According to staff, three students using AAC were interested in activities more appropriate for younger children (e.g. sliding on the slide, playing in the sand, reading Winnie the Pooh) than in interacting with fellow students in class. While fellow students developed new interests (e.g. football, music, students of the opposite sex), the students using AAC held on to their established interests. Staff noted that as fellow students grew older they used language more actively, and spent less time playing with younger activities such as the carousel and sandpit. Staff also reported

that fellow students often spoke to some of the students using AAC using a childish voice, and they did not always listen actively when they communicated about topics that they were less interested in:

Some students consider George as ... when they talk to him then it's just like talking to someone who is a bit younger. And it's probably something with not being able to express himself. Thus, they think that ... almost as if they can baby talk sometimes. (Gina, assistant)

### *Struggling with health*

In addition, parents reported that the students' using AAC health conditions limited participation in activities with classmates. Tube feeding was time consuming and parents reported that this caused restrictions in time spent at recess, as the meal lasted longer than those of other students. Outside school, tube feeding required parents to plan and facilitate practical solutions if the students using AAC went to meet other children. Elaine's father explained:

Elaine has tube feeding. So when she is going out to be part of something, and they'll be gone for more than two or three hours, then she has to bring the feeding tube with her. And it includes ... a pump that operates the tube food but also different hose pieces and syringes to flush it afterwards. And also perhaps boiling water to rinse the hose after she has the food. And she often has to bring a change of clothes, because she ... occasionally throws up. So there are a few things that have to fall into place for you to ... get to that kind of meeting.

Several of the students using AAC had seizures. This resulted in reduced performance capacity or the need to rest and also to absences from class, thus causing restrictions in the quality and the extent of participation with class. Seizures also made overnight visits to other children difficult:

And then you have to take into account that ... George who tires quickly and is suffering from epilepsy in 70% of the night's, needs rest in a completely different way and ... it's not just to jump into it. And he cannot just pop over to a buddy and be there. It doesn't work like that. (George's mother)

### *Violations of social codes*

Staff considered that social maladjustment among students using AAC was a threat to social relationships among the students. Staff referred to several episodes where two of the students using AAC who were ambulant violated social codes common among fellow students in class (e.g. causing trouble when not getting their own way, becoming jealous when adults gave attention to classmates, interrupting play when rules restricted freedom in the activity, imitating other students' physical play by jumping on the backs of fellow students with a disproportionate amount of force). As Belinda, a teacher, noted:

“And then there is also these unwritten rules of the game. They are difficult.”. Staff stressed that the students using AAC needed to learn social skills. Such incidents seem to relate only to ambulant students, there were no similar incidents reported for students using wheelchairs.

Staff commented that students using AAC sometimes frightened other students. One of the students using AAC used physical force (e.g. pinching, kicking, hitting, squeezing) towards other students. Usually, fellow students retreated. According to staff, other students using AAC were perceived by some fellow students as frightening because they behaved differently (e.g. speaking loudly, spasming, acting differently) than the other students.

### **Uncertainty**

According to staff, students using AAC demonstrated several kinds of uncertainty when participating with students in class. Staff argued that uncertainty influenced the students using AAC’s social relationships with fellow students. Colin, one of the students using AAC, reacted negatively to loud noises. This triggered anxiety and a refusal to face situations that involved the risk of experiencing such stimuli (e.g. social gatherings with many people in the gym). Social gatherings, which Colin basically enjoyed, could turn into painful experiences.

He [Colin] is incredibly sensitive [to loud noises] ... and his ears hurt. And he cannot keep his hands on his ears himself. If we participate in activities where there is loud noise, he is terribly unsafe. And then he becomes unsafe for many weeks in the same room ... His eyes look desperate. He looks at you and then “uuuuuuu mommy” and begins to, yes the tears flow a bit. (Chloe, special teacher)

Staff commented that Harriet demonstrated uncertainty of the unknown. According to an assistant, uncertainty often limited her possibilities for further development of social relationships. The assistant described an episode where Harriet rejected a classmate’s request to write in her memory book as a response resulting from lack of experience with this kind of invitation.

I think it has something to do with her being reluctant to everything new ... such as when Heidi [class student] came with the friend book. She would not write in it. When Heidi came over. And then Heidi was ... speechless because she, she had never got no for an answer before. (Helen, assistant)

Staff also reported that Beatrice exhibited uncertainty about what should happen when she was in class. She sought confirmation through eye contact with the activity therapist who sat at the back of the classroom, and was passive towards fellow students and the class teacher. Elaine occasionally appeared

shy at circle time with fellow students in class. In such situations, she seldom initiated contact with fellow students or the class teacher.

### **Negative attitudes**

Staff commented on negative attitudes towards students using AAC. They argued that although many fellow students appreciated interaction with students using AAC, negative attitudes among some fellow students led to exclusion of students using AAC from some desired venues or activities. Staff claimed that negative attitudes among students using AAC limited opportunities for positive interaction with fellow students. A teacher referred to Beatrice’s negative attitudes towards fellow students. Beatrice was inclined to declare ownership of adults at school, and challenge the staffs’ attention toward other children. Beatrice’s strong desire to make all the decisions in activities made interaction with other students difficult sometimes. Her negative attitudes may have related to a lack of understanding of sharing and ownership in social relationships.

Staff also stated that their colleagues’ attitudes to create or grasp possibilities for interaction between students influenced the students using AAC’s social relationships. The need to take and value the students using AAC’s perspective on desired activities, and actively facilitate participation was emphasized. Colleagues’ priorities about which student groups (i.e. class or special unit) the students using AAC should spend time with, were also questioned. Some staff demanded greater reflexivity about the priorities made by their colleagues.

### **Sharing limited attention on friendship**

Parents reported that they rarely spoke about friendship with their children. They discussed friendship a little with staff at school but they did not demand friendship as a topic of focus at the schools. Parents explained their limited attention on friendship resulting from prioritization of other tasks (e.g. adaption of aids and seating position, physical training and stretching, communication training) or goals (e.g. general well-being at school) in this way:

If I have to be honest it drowns a bit ... because we’re talking a lot about school. But when we talk with the school it’s often [about] practical things. Logistics, and it relates to ... adaptation of aids and ... language ... sitting positions and ... that she gets the stretching she needs. Much is practical ... the focus has not been very much about ... friends and stuff ... We talk only to a small extent about it [friendship]. (Elaine’s father)

The parents’ view that friendships were not a prioritized issue to discuss with the schools was interpreted in the context of a demanding daily life at home with their children due to responsibilities

relating to training, caring, meals and other demands for assistance. They valued the development of friendships among their children, but their children's social life triggered a guilty conscience or feelings of concern among several parents.

But it's sort of a bit like a bad conscience that I constantly have. That we do not, because I see that if he is to be with those [other children in the neighborhood], then it's I who must make contact and bring him there. Right? (Colin's mother)

Parents also commented that their children rarely initiated conversations about friendships at home or at school.

Parents had different perceptions of the schools' attention to friendship. Some parents reported that the school now paid more attention to social relationships and friendships than before. A mother identified staff working closely with the student as the most important people to put effort into having friendship at the agenda. On the other hand, another mother believed that the school paid less attention to friendship than before, especially when considering social relationships in recess.

### Summary of results

Students using AAC encountered constraints in communication with fellow students. Both parents and staff reported that shared experiences among students and the communication partners' understanding of and compensating behavior towards these constraints promoted facilitated stability in the social relationships between the students.

In contrast, restrictions in initiatives, communication, and level of functioning among students using AAC as well as lack of dialogues about friendship at home and between home and school formed barriers for the students using AAC's social relationships.

### Discussion

Results from this study depict a complex network of interactional facilitators of and barriers to social relationships between students, and between students and staff. Our results demonstrate the importance of considering personal as well as environmental facilitators and barriers, as noted by Røgeskov et al. (2015). The results revealed that sharing experiences with other children by interacting and being known to them is important for the development of social relationships. This finding is congruent with previous research (Anderson et al., 2011; Haug, 2014; Soto et al., 2001). In addition, our results indicate that shared experiences may be closely connected to several other relational aspects and play a key role in how these aspects interact with each other.

Our results direct attention to how attitudes may influence social relationships. The participants pointed out that negative attitudes among fellow students, staff, and students using AAC had negative consequences for students who used AAC (e.g. exclusion from venues and activities, restricted possibilities for participating and sharing experiences, and difficulties in interaction with other students). The reports about those fellow students with the closest relationships with students using AAC portrayed a picture of children with the capacity for handling otherness through acceptance of difference and attempts at interaction. The importance of their supportive behavior towards the students using AAC corresponds with results from other studies (Carter & Maxwell, 1998; Soto et al., 2001). The impact of attitudes on social relationships between children using AAC and peers without disabilities is also reported in other studies (Anderson et al., 2011; Guidera et al., 2010; Kent-Walsh & Light, 2003; McCarthy & Light, 2005). Thus, our results are similar to previous findings.

The staff's efforts in building goodwill for students using AAC is noteworthy. Building goodwill implied efforts to strengthen the relational basis between students. Unlike other kinds of support reportedly aimed at remedying the current situation, building goodwill represented a strategic influence from staff that was intended to strengthen fellow students' attitudes towards the students using AAC. Furthermore, building goodwill was intended to be important for the future development of friendship. How the staff's efforts in building goodwill affected the roles and actions among fellow students towards students who used AAC is unknown. Building goodwill may have had some kind of effect on fellow students' wish to provide support to students who used AAC. In that case, the risk of leading fellow students into helping roles might have been present, although not necessarily intentional. Anderson et al. (2011) reported similar results among peers who perceived pressure from staff to care for and help students using AAC. However, the results call for reflexivity about potential positive and negative effects of building goodwill as having a helping role may lead to an imbalance in social power and thereby disturb the social equality among children (Østvik et al., 2017)

The results also revealed that confidence in communication played an important role in interactions. Shared experiences between students using AAC and fellow students were more likely to happen if fellow students had confidence in communicating with the students using AAC. The impact of confidence in communication is also noted by Light and McNaughton (2014). In our study, parents and staff characterized communication between students using AAC and fellow students as challenging. Previously,

researchers have reported similar findings (Chung et al., 2012; Clarke & Kirton, 2003; Finke & Quinn, 2012; Midtlin et al., 2015). However, challenging communication caused fellow students to request support from staff, and staff usually responded. Although providing adult support to the students in most cases was valued, the staffs' expressed qualms about being ever-present represent an ambivalence that indicates the need for a reflexive balance between establishing a readiness for immediate support and retreating from the close presence.

Considering the reports that fellow students' confidence in communication reduced the consequences of challenging communication and promoted initiatives towards students using AAC, the results from this study emphasize the importance of communicative training for fellow students at school. The importance of peer training is also reported in other studies (Carter & Maxwell, 1998; Fisher & Shogren, 2012; Østvik et al., 2017; Raghavendra et al., 2012; Thirumanickam et al., 2011).

The finding that students using AAC initiated fewer initiatives than fellow students has also been identified in other studies (Chung et al., 2012; Clarke & Kirton, 2003). To some extent, the limited conversation initiatives by two of the students using AAC can be interpreted as related to uncertainty as reported by staff. As noted, students using AAC did not participate in our study. However, staff's reports that these students made inquiries towards fellow students through staff may indicate that among students using AAC, limited initiatives could be a response to low expectations of being understood by fellow students. The results also identified limited initiations from fellow students. As also noted by several researchers (Beukelman & Mirenda, 2005; Lund & Light, 2007), a conceivable cause for this might relate to participants' limited expectations about students using AAC concerning communication and ability to cope with relationships. The importance of communication partners' positive expectations about successful outcomes is also reported by Lund and Light (2007). In this respect, peer training might strengthen fellow students' insights of the capacities among students who use AAC and thereby enhance the basis for social interactions and social relationships.

The reported communication challenges associated with students using AAC, and the imbalance in initiatives between students using AAC and fellow students can be interpreted on the basis of Fey (1986)'s classification of children's social-conversational participation. The communicative behaviors among students using AAC were often either passive or inactive in social conversations. Hence, our findings support descriptions of children in previous research (Clarke & Kirton, 2003; Finke & Quinn,

2012) using AAC as passive communicators. Still, these findings call for a more thorough investigation of which strategies for increasing communication partners' communication skills may impact on the conversational role that children using AAC take. Although restrictions in communication may lead to passivity (Batorowicz et al., 2014), it is important to identify extrinsic mechanisms that may influence how children who use AAC communicate and interact. It is reasonable to argue that such mechanisms (e.g. not being able to physically access the group easily) may have the potential to force a passive role on the affected children, since the children themselves have few if any opportunities to influence any change.

### *Implications for future research*

This study reported interactional facilitators of and barriers to social relationships between students using AAC and fellow students. We suggest that the complexities identified need to be investigated in more detail. The findings call for further attention on several topics. Although parents considered social relationships as important for their children, the finding that friendship was a rare topic of concern at home and between home and school is noteworthy. Other researchers also report a similar result (Batorowicz et al., 2014; Light & Smith, 1993). However, as one parent noted, children using AAC require support in many different areas, thus, busy parents may entrust the attention to and the follow-up of friendship at school to staff in order to manage their everyday life at home. This is not unexpected as the majority of friendships between children in early and middle school are formed at school. As our knowledge concerning the attention and value that parents of children who use AAC place on friendship is limited, future research could benefit from further investigation of the efficacy of a greater focus on friendship development in school.

Although the impact of attitudes has received attention in previous research, we need more knowledge about the ways in which fellow students handle otherness when encountering children using AAC. We also suggest there is a need for further attention on positive and negative effects of adults' efforts in building goodwill for students using AAC. Future research would also benefit from investigation of causal relationships between extrinsic mechanisms and the passive role in communication identified among students using AAC. The complexities of such relational aspects may also be explored within a more comprehensive framework. Finally, we suggest further exploration of how AAC training for fellow students may influence their social relationships with students who use AAC.



## Limitations

The study has some limitations, which are important to consider when interpreting the results. The study reports findings from parents and staff for students using AAC located in six Norwegian mainstream public schools. A rich description of a small number of students allowed for theoretical generalization across the group but these findings cannot be generalized further. Larger intervention studies are required to test out the ideas raised in this project.

Although the study included two groups of interviewees, students using AAC were not interviewed about the topics discussed. Their views concerning these issues would have expanded the perspectives reported in this study. In particular, their perspectives on the reported challenges in communication with fellow students and how they perceived support from others may have enriched our understanding of the complexity of the interaction and the social relationships.

## Notes

1. Age at different grades in the Norwegian school system: 1st grade: age 6–7 years; 2nd grade: age 7–8 years; 3rd grade: age 8–9 years; 4th grade: age 9–10 years.
2. The data was collected in Norwegian. However, the first author translated the quotes.
3. Day care facilities for schoolchildren.

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## Appendix

### Examples of initial and focused coding

Interview group	Focused codes	Initial codes
Fellow students	Describing reduced functional ability	Describing disease among students Telling about problems with the tongue Being not infected by the student
Parents	De-emphasizing friendship	Speaking little about friendship with school Writing little about social relations in contact book Talking little about friends
Staff	Building goodwill for student	Arguing for being liked by peers Distinguishing between the role of authority and helper Building goodwill for student using AAC