

## RESEARCH ARTICLE

# Authorship in Facilitated Communication: An Analysis of 11 Cases<sup>†</sup>

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### Abstract

We studied the authorship of messages produced through facilitated communication (FC) for all users of FC in two comprehensive schools in a small city in Finland. The participants were 11 children with intellectual disabilities, including autism, all having used FC from 1–3 years. The test conditions involved open and blind information-passing tasks in which the participants were directed to write down the contents of written or pictorial stimuli. The results failed to validate FC as a method of communication for any participant or facilitator. An analysis of the messages produced under the FC condition revealed a large degree of facilitator influence on the content of the messages produced. Additionally, FC impaired the performance of the two participants who had previously demonstrated some independent writing skills.

**Keywords:** *Autism; Facilitated communication; Intellectual disabilities; Augmentative and alternative communication*

### Introduction

Facilitated communication (FC) refers to a specific communication procedure developed for persons with autism, severe intellectual disabilities, and others with complex communication needs. In FC, a facilitator typically supports the hand or arm of the person with the disability, thereby assisting them in pointing to letters on a keyboard or communication device (Crossley, 1994; ICI, 2010). Based on empirical research that systematically investigated the role of the facilitator in the creation of the message, by the mid-1990s, FC was generally discredited as a method of communication (Cummins & Prior, 1992; Jacobson, Mulick, & Schwartz, 1995; Simpson & Myles, 1995). Successive research reviews have indicated that no empirical support was available for the claim that texts produced using FC truly came from the client. On the contrary, several studies on FC have suggested that the facilitator, rather than the person with complex communication needs, was responsible for the communication produced (Eberlin, McConnachie, Ibel, & Volpe, 1993; Montee, Miltenberger, & Wittrock, 1995; Mostert, 2001, 2010; Regal, Rooney, & Wandas, 1994; Wheeler, Jacobson, Paglieri, & Schwarz, 1993). The production of messages using FC was attributed to unconscious movements of the facilitator, known as ideomotor responses (Wegner,

Fuller, & Sparrow, 2003), which may be similar to those observed in hypnosis or spiritism sessions (Burgess et al., 1998). Recent reports provide evidence that facilitators appear to be genuinely unaware of their authorship role in the creation of the message, and are surprised when provided with evidence that they, and not the person with a disability, are the authors of the message (Boynton, 2012).

Tests of authorship are typically conducted by controlling access of the facilitator to the information given to the client (i.e., the person being facilitated). Typically, screens are used that prevent the facilitator from seeing the object that is shown to the client. Wheeler, Jacobson, Paglieri, and Schwarz (1993) used a T-screen apparatus that allowed them to show different pictures to the client and the facilitator. They demonstrated that the client-facilitator pair wrote the name of the picture correctly only when the facilitator was shown the same picture, and the pair never typed the name correctly when different pictures were presented to the client and the facilitator. Thus, message passing through FC succeeded only when the facilitator was not masked but had access to the same information as the client.

When Mostert (2001) completed a review of the FC research published between 1995 and 1999, he found no support for the validity of FC in controlled studies

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where message passing was used while the facilitator was masked. He reported that the only findings that were presented as providing support for FC came from uncontrolled studies, in which the facilitator had access to the requested information. In contrast to controlled studies, the conclusions from every uncontrolled study have supported the FC claims (Mostert, 2001). An example of an uncontrolled study claiming to validate FC is that of Biklen et al. (1991), where the facilitated writing of 22 participants happened in natural situations. Their writing aroused the suspicions of parents and educators because the communication was at unexpectedly high levels, the participants communicated only with selected persons, and support was given to the wrist or hand (Biklen et al., 1991). Authorship was validated on the basis of six qualities: (a) unique typographical errors, (b) unique phonetic spellings, (c) unusual phrases, (d) unique physical movements, (e) different levels of independence, and (f) delivery of information not thought to be known to the facilitator. However, it can be argued that none of these six qualities provide conclusive proof of the validity of FC. The first three idiosyncratic results of the communication can be recognized less generously as the artefacts of the FC writing process itself (Saloviita & Sariola, 2003). The next two qualities, concerning the participants' motor differences (or unique physical movements) and different levels of independence, can hardly be seen as definitive proof of the authenticity of FC. The last criterion, delivery of information not thought to be known to a facilitator, would be important evidence, but without experimental control over the information being relayed, the claims remain at the anecdotal level.

Since 1999, several new validation studies on FC have been published in refereed journals. The conclusions reached have been closely associated with the methods used. All studies based on controlled message-passing trials have refuted the validity of FC (Emerson, Grayson, & Griffiths, 2001; Perini, Rollo, & Gazzotti, 2010; Wegner et al., 2003). In contrast, all studies using non-controlled observational designs claim to have validated FC (Bernardi & Tuzzi, 2011a, 2011b; Niemi & Kärnä-Lin, 2002; Scopesi, Zanobini, & Cresci, 2003; Sipilä & Määttä, 2011; Tuzzi, 2009; Zanobini & Scopesi, 2001). One such study (Emerson, Grayson, & Griffiths, 2001) refuted FC on the basis of controlled trials, but claimed to provide evidence for the validity of the approach on the basis of non-controlled clinical experience.

Recent non-controlled studies have mostly used linguistic analysis of the texts produced to verify their authenticity. In one study, eye-tracking and video analysis were used to confirm a loose but statistically significant relationship between an FC user's looking and pointing behaviours. The results were considered to support the participant's authorship of the emergent texts, despite his failure in the formal message-passing tasks and his inability to show independent literacy skills (Grayson, Emerson, Howard-Jones, & O'Neill, 2012). In the presence of these two absences, however, the conclusion seems too far-reaching.

The controlled studies conducted so far have consistently documented that it is the facilitator, and not the person receiving support, who is generating the text in message-passing tasks (Mostert, 2001, 2010). Despite the accumulated empirical evidence against FC, the method has spread from the US and Australia to many new countries including Great Britain (Emerson, Grayson, & Griffiths, 2001), Finland (Niemi & Kärnä-Lin, 2002), and Italy (Tuzzi, 2009). Proponents of FC have argued that the empirical studies do not invalidate the use of FC because it can still provide important supports for communication, at least with some persons with whom it is practiced (Biklen, 2005; Biklen & Cardinal, 1997; Kerola, Kujanpää, & Timonen, 2009). The proponents contend that controlled experiments create unnatural communication situations that may produce test anxiety, and interpret the results of qualitative uncontrolled studies as supporting the validity of FC (Biklen, 2005; Biklen & Cardinal, 1997).

Research into the validity of FC has typically been based on isolated cases selected for study. This method remains vulnerable to criticism because it can be argued that negative results in a particular case cannot rule out the possibility that FC can function in some other case. The present study has, therefore, chosen a broader approach: to study an entire population by selecting all available cases of regular FC users in a restricted geographical area in order to see whether any successful examples of FC (as measured by a series of message-passing activities) could be found.

## Method

This study was conducted in the local comprehensive schools of a small Finnish city of about 200,000 inhabitants. The Finnish comprehensive schools instruct children between the ages of 7 and 16 years old. Two local comprehensive schools (the first was a special education school and the second was a mainstream school with some special education classes) were identified as having established FC as a customary practice. They were the only schools in the town reported to make regular use of FC.

The facilitators at the schools were special education teachers and personal assistants. Of the 11 students, 5 were also facilitated at home by their parents (Table I). The experience and training of the facilitators varied, with some having participated in an in-service FC training of 1–3 days, while others had received only practical training on the job. Some of the facilitators reported having had immediate success in using FC, whereas others reported having tried some months before they saw what they believed was evidence that the children were beginning to produce independent texts with FC support.

The use of FC in these schools was supported and advised by the local hospital district psychologist, the Finnish Association for Autism and Asperger's

Table I. Description of Participants.

#	Age	Sex	Initial diagnosis	Speech	Years of FC	Location of FC use	Facilitation technique
1	15	M	Autism <sup>a</sup>	Some speech	2	School	Wrist support
2	14	M	Severe intellectual disability <sup>a</sup>	No speech	1	School	Strong wrist support, observed to resist facilitation
3	10	F	Autism	Echolalic speech	1	Home and school	Wrist support
4	13	M	Profound disability, Down syndrome	No speech	2	School	Wrist support, observed to resist facilitation
5	13	F	Profound intellectual disability	No speech	2	Home and school	Wrist support
6	11	M	Profound intellectual disability, autism	No speech	3	Home and school	Wrist support
7	14	M	Down syndrome <sup>a</sup>	Some speech	1	School	Wrist support, observed to resist facilitation
8	7	F	Severe intellectual disability	Some speech	3	School	Palm support
9	8	F	Severe intellectual disability <sup>a</sup>	Some speech	3	Home	Palm support, observed to resist facilitation
10	10	M	Severe disability, autism <sup>a</sup>	Some words	3	Home and school	Palm support
11	7	M	Severe disability, autism <sup>a</sup>	No speech	1	School	Palm support

<sup>a</sup>Considered as intellectually typical or superior by the school staff.

Syndrome, and the neuropsychological clinic at the University of Helsinki. There was general agreement between the schools and the children’s families that facilitation provided a reliable form of communication. No disagreements between families and schools concerning the use of FC were reported.

In doing the research, the ethical standards of the National Advisory Board on Research Ethics in Finland (2009) were followed, as per the ethical principles accepted by the University of Jyväskylä. We obtained informed consent from the school principals to contact the parents of all of the students with whom FC was regularly used. The families were told that the validity of FC had aroused scientific debate and that the purpose of the study was to investigate the issue. All of the parents who were contacted agreed to allow their children to participate, and all provided informed, written consent. A total of 11 children participated in the study.

*Description of the Participants*

Table I presents a description of the 11 participants. On the basis of intelligence tests, all were originally diagnosed by Finnish school officials as having severe disabilities and were placed in special classes. The children were diagnosed by physicians on the basis of an examination made by school psychologists: five had a diagnosis of autism, two had a diagnosis of Down syndrome, and four had a diagnosis of severe to profound intellectual disabilities. School staff considered six of the participants to be intellectually normal or even superior on the basis of the results obtained through FC.

The age of the participants varied between 7 and 15 years. All used a paper keyboard for FC at school, and for the writing activities used in this study. The paper keyboards were laminated photocopies of real computer keyboards, with the addition of the words *kyllä* (yes) and *ei* (no), reproduced in a normal size

of approximately 20 cm × 45 cm. Participants 1 and 3 also sometimes used a computer keyboard for some writing activities at school; Participants 4 and 5 sometimes used a Light Writer<sup>1</sup> for some communication activities.

All of the participants received physical support from the facilitator, at either the wrist or below the palm, to isolate the participant’s index finger so that it could be used to point to letters. The facilitator typically sat behind the participant. Four participants (2, 4, 7, and 9) sometimes appeared to resist the FC process, either through force or through spitting and kicking. None of the participants were observed to maintain continuous and stable eye contact with the keyboard when facilitated, even though two of them (3 and 10) wrote single words independently without FC or any other physical assistance. On these occasions (i.e., when typing independently), they looked directly at the keyboard. Two participants (1 and 8) looked at the direction of the keyboard but did not change their focus according to keys pressed.

Two participants (3 and 9), regularly spoke a small number of words. Three other participants (1, 7, and 8) occasionally spoke some words. Because of Participant 9’s ability to use speech, FC was not used for her at school; however, she was included in the study because FC was used with her at home. Some other participants occasionally used spoken words. Pictures were used as a means of receptive communication for some students, but none used pictures as a means of expressive language. Participants 3 and 10 demonstrated the ability to read and write independently, at least for short words. Nevertheless, they were facilitated, seemingly in order to produce more rapid and extensive responses. Participant 3 had attained the basics of these skills prior to her participation in FC, whereas Participant 10 showed some basic reading and writing skills after he had been facilitated for about one year. However, it is not possible to say what

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the specific role was of the use of FC in the attainment of these skills.

Facilitation was used as a means of communication throughout the school day, both in academic and non-academic contexts. The communication produced through facilitation typically consisted of full sentences. Because all of the participants had used facilitation for 1–3 years, the teachers and parents reported that FC was an established form of communication for them.

### *Procedures*

Data collection consisted of a pilot test and a final test. All sessions in the participants' schools were arranged in a similar way. In organizing the study, we worked to address the concerns raised by Biklen (1993, 2005) on the appropriate use of FC. In order to avoid the situation being perceived as oppressive or confrontational, we made the test situation as natural and as comfortable as possible. The researcher was not an outsider, but was the school speech therapist, who was also one of the authors of this study. She had previously worked several times with all of the participants and their facilitators, but had not participated in the use of FC.

Testing was conducted in the speech therapy room for all but two participants, for whom testing, for practical reasons, was conducted in the classroom or a room adjacent to the class. The situation resembled a standard speech therapy session. The participant and the facilitator sat next to each other, with the researcher seated on the opposite side of the table. The test was conducted by the speech therapist; this individual also collected the test data.

The facilitators in the test were the 11 classroom assistants who usually assisted the participants in FC – two men and nine women – whose ages varied between 20 and 50 years old. The facilitators who were considered the most successful in their work were selected by school personnel for participation in this study. Each of them had worked with the participants as long as FC had been used with them. The only exception was Participant 9, who only used FC at home; however, she did know the person who provided FC in the test situations, who was a classroom assistant at the school. For the most part, the same assistant facilitated each participant throughout the entire study. In a couple of cases, because of rotation requirements, the task was divided between two assistants.

It was agreed that the testing would be discontinued if either the participant or his or her facilitator manifested signs of discomfort or tension, and testing was discontinued for this reason on a number of occasions. In these cases the participant began to resist facilitation through force and restlessness, presumably because of fatigue, although it should be noted that a number of the participants were reported to resist the use of FC whenever it was used with them during the school day. Each data collection session lasted about 20–30 minutes.

Depending on the participant, it was possible to collect data for one to three tasks in one session. The total number of sessions needed for each participant varied from three to five and they were completed over a 4-month period. During the test sessions the researcher also made written notes that described the types of physical support given, the keyboard-looking behaviour of the participants, and the observed behaviors of the participant and the facilitator.

Biklen (1993) has proposed that one possible explanation for the poor performance of individuals using FC under controlled testing conditions is that of word finding (difficulty communicating an exact word on command). To control for this possibility, testing protocols for the current study recognized the use of response alternatives that provided approximate descriptions of the target item, rather than only accepting a single response. To investigate for the presence of developmental dyspraxia (Biklen, 1993, 2005) (difficulty with initiating or stopping voluntary actions), testing activities included a protocol of independent pointing. The test protocol also included message-passing tasks, during which it was essential that the facilitator remained unaware of the information that was being delivered. This is usually achieved through screens that prevent the facilitator from seeing the text or object that is shown to the participant. However, because screens can be criticized as making the test situation unnatural, we used two alternative procedures to keep the stimulus material secret from the facilitator. First, when presenting information to the participant, we attempted to hold the sheet of paper so as to prevent the facilitator from seeing the stimulus it depicted. If this was not sufficient, as was the case when presenting objects, we simply asked the facilitator to keep her eyes closed. While presenting the tasks the researcher simultaneously observed whether the facilitator complied with this request. All facilitators were motivated and cooperated well with the researcher, and no attempts at cheating (i.e., opening their eyes to look at the stimulus) were noticed. Therefore, no screen was considered to be necessary.

Using the previously described methods, we worked to obtain data in the most natural ways possible. Data collection activities were similar to normal communication therapy sessions, were performed in familiar surroundings with known staff, and did not include any strange or new elements, such as screening devices.

### *Materials*

The materials used for the six testing activities (object naming, picture-naming, describing a picture, reading, name writing, and independent pointing) are described in more detail in the Final Test subsection. The participants responded using the familiar paper keyboard described previously. After some changes were made on the basis of the pilot test, the following stimulus materials were chosen for the tasks: Object naming: nine small objects; picture-naming: eight graphic pictures;

picture description task: four graphic picture cards for the participants and four sheets with a cue word for the facilitators; reading: 15 pieces of paper, each with one or two words for the participants and facilitators (only four of which were common to both); name-writing: each participant's own card keyboard; and independent pointing: three series of objects drawn on three sheets of paper, which were the same size as the participants' keyboards.

*Pilot Test*

Before the actual experiment was performed, seven participants (1, 2, 3, 7, 9, 10 and 11) participated in a pilot test to explore the functioning of the planned test protocol and to familiarize the facilitators and some of the participants with the protocols. Six of the seven participants were students who were described by school staff as intellectually typical and having demonstrated success with FC. The seventh participant was considered intellectually typical by her mother (but not by school staff) and also had demonstrated success with FC. The pilot testing began with these seven participants, who provided answers via facilitation. They were first asked some simple questions about their lives (e.g., the name of their mother and father), and were then given one part of the planned test protocol, which consisted of several types of tests. As each task was given, the facilitators were asked to close their eyes so that they would be masked during the activity.

Based on results from the pilot testing, the number of items for some of the tests was reduced: the testing was considered too tiring for both facilitators and participants, and there was a consistent pattern of results observed for all test items in each of the activities.

*Final Test*

The final test battery consisted of six tests, as presented in Table II. The number of participants in the different tasks varied for reasons given in each section.

Table II. Summary of Test Results.

#	Test	Condition	Testing materials	Test items performed			
				Right	Wrong	Total	% Right
1	Object naming	Open <sup>a</sup>	4 unfamiliar objects	33	3	36	92%
		Blind – no cue <sup>b</sup>	5 familiar objects	1	40	41	2%
		Open <sup>a</sup>	4 familiar objects	30	6	36	83%
2	Picture naming	Blind – different cue <sup>c</sup>	4 pictures	0	34	34	0%
3	Describing a picture	Blind – different cue <sup>c</sup>	4 pictures	0	35	35	0%
4	Reading	Blind – same cue <sup>d</sup>	4 printed words	18	10	28	64 %
		Blind – different cue <sup>c</sup>	11 printed words	2	70	72	3%
5	Writing one's name	Facilitator unable to see keyboard		0	8	8	0%
6	Independent pointing	Independent pointing with one's finger	22 pictures, numbers, or letters	All were able to point to something independently			

<sup>a</sup>Open: The facilitator saw the cue shown to the participant.

<sup>b</sup>Blind-no cue: The facilitator did not see any cue.

<sup>c</sup>Blind – different cue: The facilitator saw a cue that was different from the cue shown to the participant, but could not see the cue shown to the participant.

<sup>d</sup>Blind – same cue: The facilitator saw a cue that was the same as the cue shown to the participant, but could not see the cue shown to the participant.

*Object-naming.* For this activity, an item was shown to the participant, who was asked to write its name using the keyboard with facilitation. Two groups of items (A, B) were used. Group A included four items identified by the researchers as relatively unfamiliar to the participants: stapler, glasses case, pocketknife, and compact disc. The items in Group B, which were a toy car, small doll, ball, and watch, were thought to be more familiar to the participants.

The participants and facilitators were shown items from the two groups in a total of three tests with each test containing four to five test items. Test 1 used Group A items, Test 2 used Group B items (with the addition of the pocketknife), and Test 3 also used Group B items but without the addition of the pocketknife. In all of the object-naming test activities, the researcher pulled one item at a time out of a cloth bag on her lap and placed it on the table, making sure that the participant (and, as appropriate, the facilitator) saw it. The participant then wrote the name of the object using facilitation.

In Test 1 (open), the facilitator could see the item that was viewed by the participant. In Test 2 (blind, no cue for facilitator) only the participant could see the item; the facilitator was directed to close his or her eyes, and a sheet of paper was also used to prevent the facilitator from seeing the object. In Test 3 (open), both the participant and the facilitator could see the object. By using the same objects in both the blind (Test 2) and open (Test 3) conditions, we sought to control the level of task difficulty. To be scored as correct, the participant had to provide a word recognized as an approximate spelling of the target item (e.g., spelling b-l-l<sup>2</sup> when shown a ball) or a word similar to the target item (e.g., spelling “switchblade” when shown a pocketknife).

*Picture-naming.* For this activity four pictures were shown to the participant, one-by one, and the participant was asked to write (with facilitation) what was in the picture.

The participant was told that one word would suffice as an answer for each picture. The pictures shown to the participant represented car, train, cup, and glass.

The researcher gave the facilitator a sheet of paper containing four pictures that were different from those given to the participants. They presented a man sawing a piece of board, a woman eating a sandwich, a boy swimming, and a man standing in front of a bus and a bus-stop. The pictures presented to the participant were held out of sight of the facilitator, and the pictures shown to the facilitator were hidden from the participant. This condition was labelled as blind – different cue shown to the facilitator. To be scored as correct, the participant had to provide a word recognized as an approximate spelling of the target item.

*Describing a Picture.* For this activity a picture was shown to the participant who was asked to write (with facilitation) what he or she saw. The participant was told that three or four words would suffice as an answer. The four pictures portrayed a sleeping rabbit, a teddy bear eating honey, a mouse under a pot, and a turtle under a leaf.

This activity was also conducted using the procedures for the blind – different cues shown to the facilitator – condition. Before the picture was shown to the participant, the facilitator was given a cue word on a sheet of paper (the participant was unable to see the cue word shown to the facilitator). The word characterized the picture to be presented to the participant, but in a very general way. The four cue words were: sleeps, for the picture of a sleeping rabbit; devours, for the teddy bear eating honey; pot, for a mouse under a pot, and leaf, for a turtle under a leaf. As each picture was shown to the participant, the facilitator was asked to keep his or her eyes closed. After the presentation of each picture to the participant, the facilitated answer was written.

This test replicated the blind condition of the previous test, in that the participant and the facilitator were unaware of each other's cues. In contrast to the previous test, the four cues given to the facilitator were loosely connected to the picture shown to the participant. The design was planned to address the hypothesized word finding problem of the participant (Biklen, 1993), because no precise word was sought but merely an approximate description of the event. By giving the facilitator a word that was loosely connected to the picture, we wanted to evaluate the amount of facilitator influence on the writing result. It was hypothesized that the facilitator's cue word would appear in the text generated using FC but without appropriate supporting details. To be scored as correct, the participant had to write (in addition to the facilitator's cue word) the right context for the event (e.g., "rabbit sleeps" instead of merely "sleeps").

*Reading.* For this activity a piece of paper with one to three words was presented to the participant with instructions to read the text and write it through facilitation. The facilitator was asked to close his or her eyes

when each piece of paper was presented to the participant, and was given another piece of paper not shown to the participant. The facilitator was allowed to open his or her eyes when the participant was instructed to start writing. In total, 15 pairs of items were presented.

For the first pair of items, the participant was given a piece of paper that contained her name. On the facilitator's sheet this was replaced by the date of the session. In 14 successive word pairs there were four pairs in which both the facilitator and the participant saw the same word(s). They were: mouth, bunny, lamp, and car goes. The other 10 word pairs were different for both (e.g., mother/father, car/bicycle, house/school).

This test represented another blind condition, with a mixture of the same and different cues shown to the facilitator. The design made it possible to compare the results from the 11 instances in which the cue words were different from those 4 instances in which they were the same. To be scored as correct, the participant had to write the correct word or its approximation (e.g., writing something like "boy eat" or "boy" when provided with the cue, A boy eats).

*Writing One's Own Name with Facilitation.* In this activity the participant was asked to write his or her own name through facilitation using his or her usual card keyboard while the facilitator was asked to keep his or her eyes closed. To be scored as correct, the participant had to provide a word recognized as an approximate spelling of her name. After this task was completed the researcher asked the participant to write his or her name one more time while the facilitator continued to keep his or her eyes closed. However, the researcher turned the keyboard face down so that the participant had an empty surface in front of her. This task evaluated the effect of the facilitators not seeing the keyboard and the effect of the empty surface on the tapping behaviors of the participants.

*Independent Pointing.* The participant was presented with three series of objects that were the same size as the participant's keyboard keys. The first series consisted of 10 pictures representing common articles: fish, table, car, pen, ball, girl, house, flower, seat, and watch. The second series consisted of 14 letters, and the third series consisted of 10 numbers from zero to nine. Each series was presented separately. The researcher asked the participant to show the object she requested. The requests were presented verbally, in random order (e.g., *Show me the letter k*). The facilitator was present but did not participate in any way.

The first task, comprised of pictures, measured the existence of possible developmental dyspraxia among the participants. It has been proposed that developmental dyspraxia would inhibit a person from writing independently and thus would provide support for the use of FC (Biklen, 1993). The series consisting of letters and numbers also examined the participants' ability to recognize letters and numbers, which are skills closely

associated with reading and writing performance. To be scored correct the participant had to point to the object requested.

*Reliability*

In order to measure interobserver agreement for correct and incorrect responses, the shared judgments of the second and third authors were compared with the judgments made by the first author by dividing the number of agreements by the total number of items. The interobserver agreement on item evaluation was counted in all items in Tests 1 through 4. The agreement was 100% in each case with the exception of the first series in Test 1, which was 97%. All persons scoring the items were conscious of the conditions under which they were collected (open or blind). Therefore, 26% of the responses were also scored by a trained individual who was blind as to the condition under which they were collected as well as the goals of the research project. Interobserver agreement was 99%.

To assess the possible personal effect of a facilitator on the results, we evaluated the test-retest reliability of FC in the picture-naming and picture-telling tests by replicating these tests with Participant 7 using another facilitator after an interval of 1 week. To study the stability of the results, the picture-telling test was repeated with Participant 2 using the same facilitator. The outcomes of these measurements are provided in the Results section, because they relate to the evaluation of FC as a method.

**Results**

*Pilot Test*

The pilot test activities included both simple questions about the participants’ lives and a sampling of activities to be used in the final testing activities. When the participants were interviewed during the pilot phase, all but one wrote full sentences using FC (Participant 9

refused facilitation and gave her answers using speech). For example, when asked, *Why do you not facilitate with all people?* Participant 10 answered in Finnish and spelled letter-by-letter (without errors): “Kaikki eivät osaa. Haluan olla varma siitä, että minua ymmärretään oikein”, which translates as “Everyone cannot do it. I want to be sure that I will be understood right.” When using facilitated writing, all of the participants wrote their diagnosis, but none of them were able to write their own birthday. All of the participants successfully wrote the name of their mother, but only one was able to write the name of their father. In summary, a consistent pattern of results was observed in the pilot test: Accurate information was provided in situations in which the facilitator may have known the response, and no correct answers were provided in those situations in which the facilitator would not have known the information asked. However, in the pilot test we did not control for whether the facilitators knew the information that was requested from the participants (e.g., parent names). Because this phase of the study was only meant to investigate the usefulness of the test activities, no detailed results are presented here.

*Final Test*

The proportion of correctly performed items under the blind and open conditions is summarized in Table II. The individual results are summarized in Table III. In summary, when facilitators were aware of the correct response (object naming [open], reading [blind – same cue]), the participant produced, using FC, a correct response in 81 out of 100 test opportunities. When the facilitator was not aware of the correct response (object-naming [blind – no cue], picture-naming, picture-describing, and reading [blind-different cue]), only three correct or partially correct responses were provided out of 182 test opportunities. The detailed results follow.

Eight of the participants completed all test activities, including Participants 1, 2, 4–7, 10 and 11. With three participants (3, 8 and 9), only partial results were

Table III. Individual Test Results in Tests 1–5.

#	Object naming		Picture naming	Describe picture	Reading		Writing	
	Open	Blind – no cue	Blind-different	Blind-different	Blind-same	Blind-different	Facilitator masked to keyboard	
1	4/4	0/5	4/4	0/4	0/4	4/4	0/11	0/1
2	4/4	0/5	4/4	0/4	0/4	1/3	0/5	0/1
3	–	–	–	0/4	0/4	–	–	–
4	2/4	0/5	1/4	0/4	0/4	1/3	0/5	0/1
5	4/4	0/5	1/4	0/4	0/4	4/4	0/11	0/1
6	3/4	0/5	4/4	0/4	0/4	1/4	1/11	0/1
7	4/4	0/5	4/4	0/4	0/4	3/4	0/11	0/1
8	4/4	1/5	4/4	–	–	–	–	–
9	–	–	–	–	–	–	–	–
10	4/4	0/1	4/4	0/2	0/3	2/2	0/7	0/1
11	4/4	0/5	4/4	0/4	0/4	2/4	1/11	0/1
Total	33/36	1/41	30/36	0/34	0/35	18/28	2/72	0/8

Note. The first number = the correct responses, the second number = all items in the test trial.

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obtained. For Participant 3, results using FC were obtained only for the picture-naming and picture-describing tasks. For the other activities, Participant 3 demonstrated a preference for responding by speaking or writing independently. While typing independently, she used all 10 fingers. On these occasions her responses were correct with only some small spelling mistakes (e.g., “lampu” instead of “lamppu”). When Participant 3 did use FC she wrote only nonsense responses: “mj loho” “juokn”, “joko”, and “kioo kollo.” However, she was able to correctly identify through speech all four objects in the pictures, and to write the words independently in a fully correct form. In the picture-describing task the results were equal to those of picture naming. In one picture, for example, she used FC to write a nonsense expression “ollo illoillo oppi”. When writing independently she wrote the fully correct words “nall-esyö hunajaa” (Teddyeats honey).

Participant 9 responded in speech and gave correct answers to all picture tasks, but no correct responses were obtained for any of the reading tasks and she did not demonstrate the ability to point independently at letters and numbers. Her results were retained because the aim of the study was to be a total population study that would include all children with whom FC was practiced in the selected geographic area. The partial results obtained from Participant 9 indicated that FC was not validated for her as an authentic form of communication.

Participant 8 only participated in the object-naming task of the final test. It provided clear evidence that the use of FC resulted in messages produced by the facilitator, and not the participant. The researchers decided to excuse the participant from the rest of the study, because it was reported that her mother placed great importance on the messages produced using FC, and school personnel expressed concern that the accumulation of negative evidence could have a negative impact on the mother. The decision to excuse the participant was made in conjunction with the mother, who agreed that the collected data could be used on condition that the family’s anonymity would be guaranteed.

Some inconsistencies in the test activities occurred for Participants 2, 4 and 10. Participant 10 occasionally gave spoken responses, and these items were deleted from the database. The reading test was not completed for Participants 2 and 4 because they began to resist guidance. Occasional resistance towards guidance during FC was their usual behaviour in the school.

It is of interest to note that for those participants (3, 9 and 10) who were able to produce responses through speech or independent writing, their performance was actually worse when they were provided with FC.

*Object-naming.* In the object-naming activity, the participant was shown an object and directed to spell its name while receiving facilitation. The vast majority of items were identified correctly under the open conditions (Test 1 and Test 3), in which the facilitator was

aware of the cue shown to the participant. Only one correct answer was obtained under the blind-no-cue condition (Test 2), in which the facilitator was not shown the cue that was shown to the participant. This pattern of results was observed for both familiar and unfamiliar test items. The test items that were thought to be unfamiliar (Group A) were named correctly (93%) under the first open condition (Test 1). Except for one item noted below, the items thought to be more familiar (Group B) were not identified correctly under the blind condition (Test 2), resulting in a group score of 2% correct. These same familiar items (Group B) were, however, correctly identified (83%) in Test 3 (an open condition).

The only correct response obtained in Test 2 (a blind condition, in which the facilitator was unable to see the test item) was for the test item pocket knife, an item that also was used in Test 1 and in the pilot test. It is of interest to note that immediately before Participant 8 provided this response using FC, the participant had also written with FC the word “linkkuveitsi” (pocket knife) when viewing a ball (“pallo” in Finnish).

*Picture-naming.* In this activity four pictures were shown to the participant, who was asked to write down what was seen. Different test materials were presented to the participants and facilitators, who were kept unaware of this dissimilarity in the contents.

All 34 answers were incorrect; 10 were nonsense words (e.g., “gettu far” or “iy 3 jh”). Of the remaining 24 understandable answers, 13 written answers contained themes appearing only in the facilitators’ pictures but not in the participants’ pictures. These included “autobussi, ihminen seisoo pysäkillä” (bus, person stands at the bus stop), with one of the facilitators’ cues presenting a man standing in front of a bus stop; or “syö kakkua hän on nainen” (eat cake she is a woman), with one of the facilitators’ cues showing a woman eating a sandwich. The number of responses containing elements originating in the facilitator’s cue differed among participants and varied from every item to none.

*Describing a Picture.* Four pictures were shown, one by one, to the participant, who was asked to write what he or she saw. The facilitator was given one cue word each time, which partly corresponded with the picture.

All responses given by the participants were incorrect. Of the 35 answers, 12 were nonsense words. Of the remaining 23 answers, the facilitator’s cue word or its synonym appeared in 14 answers. The frequency of contents deriving from the facilitator’s cue was similar to that of the previous test. For example, the first picture presented a bunny asleep in a cage. The cue word for the facilitator was sleeps. The responses written by the eight participants through FC were: “tyttö nukkuu” (girl sleeps), “nukkuu” (sleeps), “tuletg” (nonsense), “tyttö rastaa” (girl nonsense), “lakki KYLLÄ” (cap YES), “tyttö nukkuu kotona” (girl sleeps at home), “ahmii” (devours), “tyttö nukkuu sängyssä ja on yö” (girl sleeps in the bed and it is night). The response of Participant

3 was a nonsense word. Neither bunny nor cage was mentioned in any response. Instead, in four responses the word “tyttö” (girl) appeared, and the word “nukkuu” (sleeps) appeared in four responses. Participant 11 showed no resistance whatsoever to guidance. He wrote rapidly and his responses were more detailed than those of the other participants, despite showing strong facilitator influence. In this task his responses were errorless sentences which all referred to the facilitator’s cue words: “tyttö nukkuu sängyssä ja on yö” (girls sleeps in the bed and is night), “syödään ruokaa” (food is being eaten), “täti laittaa ruokaa” (a lady makes food), and “setä lukee lehteä” (a man reads the newspaper).

*Reading.* A piece of paper with one or two words was presented to the participant with the instructions to read the text and write it through facilitation. Of the 15 items presented, the test word was the same for both the participant and the facilitator on four occasions. In the other 11 cases, the word was different.

Of the 72 blind tasks in which the written cue was different, a correct or partially correct answer was given in two cases. While the written cue for the facilitator was tyttö leikkii (a girl plays) and the written cue for the participant was poika syö (a boy eats), Participant 6 wrote “poika poika [kyllä-painike] ajaa” (boy boy [yes-button] drives). Participant 11 also succeeded once. While the cue word for the facilitator was koru (a jewel) and text for the participant was kello (watch), the participant wrote “loppu kirjoitus” (end of writing). When the researcher asked the participant to continue, he wrote the correct word “kello” (watch).

The facilitator’s cue word appeared in 35 of the 72 trials in which the cue words were different, equivalent to 49%. The rest were mostly nonsense words. In those 28 trials in which both had the same cue word, the common cue word appeared in 18 or 64% of the responses, while the remainder were mostly nonsense words.

*Writing One’s Own Name with Facilitation.* No one was able to write his or her own name through facilitation when the facilitator kept her eyes closed. The results were nonsense words like “hareq”, or “kfeu wf 21452”. During blind facilitation, Participant 10 wrote his name “gâujy”, although he could write his name correctly with a pen without any help. The child’s name in Finnish contained five letters, none of which appeared in the facilitated version. When the keyboard was secretly turned facedown (unseen by the facilitator), two participants (2 and 6) turned the keyboard back over. The others continued to write on an empty base guided by a masked facilitator.

*Independent Pointing.* For this task, three series of objects consisting of pictures, numbers, or letters were presented to the participant, who was asked to point to the requested objects. No facilitation was provided at this time. Eight out of 10 participants correctly pointed to all 10 pictures when directed to do so, while two par-

ticipants (5 and 6) failed on every occasion. However, Participant 6 demonstrated his ability to point independently by succeeding in this task after the picture was first pointed to by the researcher, and then the participant was asked to *Indicate this fish*, for example. Participant 5 was able to turn on the Light Writer and press its sound button, thus indicating her ability to use her index finger in pointing and pressing.

In independent pointing to letters and numbers, two participants (3 and 10) successfully pointed to the requested numbers and letters on all occasions. The others failed on every item.

#### *Test-retest Reliability*

When the picture-naming test and the picture-describing test were replicated with another facilitator after 1 week, Participant 7 gave different, but still incorrect, answers to every item. When the picture-describing test was repeated with the same facilitator after an interval of 3 weeks, Participant 2 gave different, but again incorrect, answers to each item.

## **Discussion**

For all testing activities, a clear pattern of results was observed. In those situations in which the test item was known to the facilitator (an open condition), the participant, using facilitation, produced correct and often detailed responses. However, when the test item was not known to the facilitator (182 cases) or the keyboard was not visible to the facilitator (8 cases), only three correct or partially correct responses were obtained, as listed in Table III. Based on these results, there is no evidence that FC was a valid form of communication for any of the 11 individuals who participated in this study. These results are consistent with previous findings (e.g., Eberlin, McConnachie, Ibel, & Volpe, 1994; Montee, Miltenberger, & Wittrock, 1995; Mostert, 2001; 2010; Simpson & Myles, 1995).

The majority of the participants in this study had been described by educational personnel as individuals who, when provided with facilitation, were able to independently produce written texts that demonstrated their normal or even superior intellectual capabilities. However none of the participants in this study were able to write the name for a familiar object, or spell their own name using FC, unless the facilitator could view both the test item and the keyboard.

#### *Analysis of Three Correct Answers*

Only three out of 190 possible controlled trials contained answers that were correct (see Table III). Of the correct answers, two were given in reading tasks, and both were only partially correct. First, when shown the written cue poika syö (boy eats) the participant spelled, letter-by-letter with facilitation, “poika poika kyllä ajaa” (boy boy yes drives). Second, when shown the written cue kello

(watch) there appeared “loppu kirjoitus” (end writing) and then “kello” (watch). It should be noted that both participants later failed to identify any letters. According to Biklen (no date), in order to communicate through typing, the person must know how to read. Because both correct words (boy, watch) were common, it is possible that they appeared just accidentally. It is also possible that the facilitator inadvertently or accidentally opened her eyes.

A third correct response occurred in the object-naming task. It is possible that this was a guess on the part of the facilitator because the object (pocket knife) had been used in testing activities twice earlier, and was additionally used as a response immediately before the successful trial. Similar, but in every other case unsuccessful, attempts at guessing were observed elsewhere during the study. For example, in the blind condition of the object-naming task, Participant 1 wrote the wrong answers “nitoja” (a stapler), and “silmälasikotelo” (a glasses case); both of these test items had been seen earlier by the facilitator, as they were used as cue words in the open condition.

#### *Facilitator Influence*

A strong facilitator influence on the responses produced using FC was observed, and can be seen most clearly in those activities in which either similar or different information was shown to the facilitator. When the facilitator saw the object used in the object-naming test, the correct response was given in 88% of cases, in contrast to 2% under the blind condition. In the reading test, when the cue word was the same for both participant and facilitator, the right answer was given in 64% of cases; when the cue word was different, the right answer was provided only 3% of the time. When the facilitator’s cue pictures or words differed from those of the participant, the facilitator’s cue frequently appeared in the (incorrect) response.

Only in the writing task, in which the participant was directed to write his or her name (a response known to the facilitator), was the facilitator effect not observed. During this activity, the facilitator could not see the keyboard. Under these conditions, no participant was able to write his or her name, and all responses provided through FC were nonsense.

It is of special interest to note that facilitated communication in many ways actually weakened the written communication of two participants (3 and 10), who were able to independently read and write single words. When FC was used they produced text more quickly and were observed to generate more detailed answers, but they also created nonsense words (which did not appear in their independent writing).

We did not have a way to measure the physical acceptance/rejection of FC by the participants, although we did collect observational data. Some participants (e.g., 2, 4 and 7) at times physically resisted FC, although staff reported that this sometimes occurred during daily

activities at school as well, and did not appear to be restricted to the testing activities. Other participants (e.g., 11) did not resist manual guidance at all. This participant also wrote rapidly and produced errorless sentences, which showed strong facilitator influence. He was considered by the psychologist to have superior intelligence and a photographic memory, findings that are understandable if we think that participant acceptance of FC can make it easier for the facilitator to write down his or her own ideas (perhaps with no knowledge of doing so – see Boynton, 2012). Finally, the researcher did not observe, and facilitators did not report, differences in the behavior of the participant when they were using FC to provide responses for blind or open items. Again, consistent with other reports (Boynton, 2012) the participant did not appear to accept or resist the use of FC differently when they were providing responses about items that were known/not known to the facilitator.

#### *Failure to Demonstrate Authorship*

In previous controlled studies, unnatural test situation and test anxiety have been proposed as explanations for the lack of successful communication by persons using FC (Biklen & Cardinal, 1997). In the present study, data collection was designed to be as natural as possible. Procedures imitated typical communication therapy sessions, in which the students with disabilities regularly participated; familiar partners identified by the school as skilled facilitators provided facilitation; and a staff member familiar to the participants performed the test activities. The testing activities were also conducted in a familiar environment, and no sign of test anxiety (other than the occasional resistance to FC, which was previously discussed) was observed.

Biklen (1993) has also suggested a problem with word finding as another possible explanation for the lack of success in FC testing (Biklen, 1993). While it is difficult to formally investigate this hypothesis, the activities used in this study did not provide evidence of word-finding problems for any participant. This was demonstrated by the fact that the results of the picture-describing task (for which participants could provide general descriptions rather than specific words) showed no improvement over the picture-naming tasks (in which specific words were required). All of the participants produced a high frequency of correct responses when the facilitator knew what the right response was, and rarely produced a correct response when the test item was not visible to the facilitator.

In this study, we also collected information on whether the use of FC as practiced with these students fulfilled the criteria for its proper use, as identified by the Institute of Communication and Inclusion. The Institution has written that “Facilitated communication training may be useful for some individuals who have limited or highly impaired speech and who cannot point reliably on their own” (ICI, 2010). Developmental dyspraxia, or the inability to initiate, maintain, or

stop finger movements, has been offered as a reason to try FC (Biklen, 1993).

None of the 10 participants who completed the testing activities in the present study demonstrated developmental dyspraxia as was shown in the Independent Pointing Test. However, all of the participants had similar diagnoses to those individuals typically included in FC studies (e.g., Montee, Miltenberger, & Wittrock, 1995), including studies claiming a positive impact for FC (e.g., Biklen et al., 1991; Tuzzi, 2009). It is unclear whether the studies claiming a positive impact have systematically investigated the presence of developmental dyspraxia. While some individuals with autism may demonstrate difficulty with motor planning (Mirenda, 2008), future studies of FC should systematically investigate this issue, as was the case in the present study.

According to another criterion set forth by the ICI (2010) a person must look at the keyboard. As Rosemary Crossley, the Australian pioneer of FC, stated, "It is vital to ensure that the student makes eye contact with the target before making a selection" (Crossley, 1994, p. 19). Eye contact is vital because "someone who does not scan the available choices cannot make a meaningful selection" (Crossley, 1994). In our sample, none of the participants maintained stable eye contact with the keys when facilitated. Seven out of nine participants also continued facilitated writing on the wrong blank side of the cardboard after the keyboard was turned facedown and the facilitator was masked. Apparently, for these individuals, the existence of keys was not an essential element for the practice of a writing activity in FC. In fact, it showed that they were not writing at all but tapping on a surface, apparently under the guidance of the facilitator. It should be noted, however, that this does not necessarily mean that the participants in this study were atypical compared to the participants in other studies that claim to have obtained positive results. In effect, studies claiming authentic authorship through FC have typically not documented the existence of eye contact of the participant with the keyboard (Biklen et al., 1991; Niemi & Kärnä-Lin, 2002).

Finally, the ICI has also recommended that "fading physical support needs to happen all the time" (ICI, 2012). Fading necessarily means that the participant is given some waiting time before he or she is physically supported, and the facilitator continually tries to diminish the amount of support needed. Rather than fading, we often witnessed brisk and rapid typing, especially when no resistance occurred. Thus, the recommendation concerning constant fading was not followed, at least not all of the time. Again it seems that this criterion did not differentiate the participants of this study from the participants of other studies on FC. Studies claiming the validity of FC typically have not reported on the use of pausing to allow independent movement before providing guidance or support (e.g., Emerson, Grayson, & Griffiths, 2001; Niemi & Kärnä-Lin, 2002).

### *Limitations of the Study*

Some limitations of this study should be mentioned. First, all testing activities were conducted by a certified speech-language pathologist, licensed in Finland to perform tests of communication and language. She was instructed and supervised by a university professor of special education, and demonstrated a complete understanding of the testing procedures prior to data collection. However, because of our desire to keep the testing situation as natural as possible (i.e., not add people or technology to the speech therapy room), we did not collect data on the fidelity of test administration during the assessment activities, so it is not possible to report on the fidelity of the implementation of the test protocol.

Second, in the blinded conditions, the facilitators did not wear eye patches; instead, they were directed to keep their eyes closed. This was more natural, but offered the possibility of observation of the test material. Third, no fixed pairs of facilitators and participants were used during testing activities. Instead, although typically one facilitator (identified by the school as the strongest facilitator for the participant) was used, occasionally (because of staffing issues) another facilitator was used. It should be noted that this was the customary practice at the school, and no difference was seen across facilitators.

### **Concluding Remarks**

All FC users from two comprehensive schools were selected to participate in this study in order to investigate whether the typical use of FC resulted in successful communication. We also collected information on whether the typical use of FC addressed the criteria provided by the ICI. When the use of FC was observed under typical conditions, there was no evidence of independent authorship; rather, there was strong evidence that the facilitator produced the messages, and that use of FC actually worsened participants' communication. The results also indicated that, even though some of the facilitators had participated in training activities, and although FC was established and continued in the studied schools in the presence of professional supervision by several Finnish organizations promoting the use of FC, the technique was used in a manner that did not fully address ICI standards (e.g., participants did not look consistently at the keyboard). It should be noted, however, that it is unclear the extent to which these standards have been addressed in past empirical studies.

When the results of this study were reported to the school staff, the use of FC was terminated in the special school but continued as before in the other school. The consequences were thus both encouraging and discouraging. The episode indicated that the use of FC may be difficult to abandon once it has become established, even in the presence of evidence that the message is being produced by the facilitator, and not the person with complex communication needs.

It has been noted that the field of special education, like the field of medicine, is full of “fad” therapies which promise to provide rapid cures in the absence of sound empirical evidence for their claims of success (Jacobson, Foxx, & Mulick, 2005). It is understandable if parents of children with disabilities are inclined to accept treatments for their children that claim promising outcomes and provide hope. However, the responsibility of professionals is greater in these situations. They should be able to discriminate science from pseudoscience and evaluate critically professional practices to the benefit of their clients. It is especially disturbing that FC was practiced with individuals who were capable of writing independently, and who were, in effect, restricted in their efforts to communicate by the use of FC.

The current study adds to the empirical research base, which has documented the authorship role of the facilitator in messages produced using FC (Mostert 2001, 2010). While it is unclear whether adherence to the ICI guidelines would have made a difference in this research project, future research should report on the presence or absence of these targeted features. At the same time, however, extreme caution should be taken in interpreting the authorship of communications produced using FC until there is evidence that the messages produced can be verified as originating with the person with complex communication needs, and not the facilitator.

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None.

### Notes

1. Light Writer SL40 is available at Comp Aid Oy, Address: Koivuhaantie 2-4, 01510 Vantaa, Finland. Tel. + 358 97288 330; info@compaid.fi
2. All text produced by the persons with autism who participated in this study was spelled letter by letter on a paper keyboard, as described in the Method section. In keeping with the style requirements of the AAC journal, we present this text first according to the conventions for the journal: the text is written in lower case, underlined, and there is a hyphen between each letter. Thereafter, because the text provided by the participants was always provided in the same way (letter by letter spelling), we use quotation marks to indicate the writing of the participants in order to promote ease of reading and analysis.

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### Notice of correction

Since being published online on 20th June 2014, the affiliation information in this article has been updated.