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Does Linguistic Analysis Confirm the Validity of Facilitated Communication?

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Abstract

Facilitated communication (FC) has been interpreted as an ideomotor phenomenon, in which one person physically supports another person's hand and unconsciously affects the content of the writing. Despite the strong experimental evidence against the authenticity of FC output, several studies claim to support its validity based on idiosyncrasies found in the texts produced. A review of these studies showed that, because of the logical circularity of the reasoning proposed in the studies, no decisive evidence that validated FC was presented. In addition, the idiosyncrasies found were better explained as by-products of the unusual writing process itself. Finally, the studies did not fulfill the quality standards proposed by the FC field itself.

Keywords: facilitated communication, linguistic analysis, autism, validation, augmentative alternative communication

Does Linguistic Analysis Confirm the Validity of Facilitated Communication?

Facilitated communication (FC) was introduced in the United States during the early 1990s as a revolutionary invention in special education. In facilitated communication, a facilitator typically supports the FC user's hand to make his or her index finger touch letters on a keyboard or point at objects. With the help of FC, proponents argued, individuals who had been diagnosed with serious or profound intellectual disabilities exhibited unexpectedly high literacy skills (Biklen, 1993). Very soon, however, problems were found. Empirical studies using controlled message passing showed that the client could give the right answers to questions only when the facilitator knew the correct responses (Cummins & Prior, 1992; Jacobson, Mulick, & Schwartz, 1995; Simpson & Myles, 1995). This finding strongly supported the notion that the facilitator wrote the texts, not the client (Eberlin, McConnachie, Ibel, & Volpe, 1993; Montee, Miltenberger, & Wittrock, 1995; Regal, Rooney, & Wandas, 1994; Wheeler, Jacobson, Paglieri, & Schwarz, 1993). However, the facilitators firmly insisted that they did not move the client's hand. A former facilitator who reversed her opinion about FC wrote about her initial feelings: "The interactions felt real to me then. The communications felt real" (Boynton, 2012, p. 6). An explanation was found in ideomotor or unconscious movements. Ideomotor actions are movements that are unconsciously initiated without a sense of conscious control (Carpenter, 1852). The delusion inherent in ideomotor responses springs from our inclination to interpret the actions of our bodies as always consciously willed. However, as Wegner (2002, p. 187) put it, "breakdowns in the sense of authorship do happen and in fact are quite likely under certain conditions."

Ideomotor responses have been shown to explain many illusions, such as hypnotic suggestions, religious gift of tongues, automatic writing, dowsing, and spiritualist sessions using a Ouija board (Burgess, Kirsch, Shane, Niederauer, Graham, & Bacon, 1998).

Ideomotor responses were also found to explain the case of “Clever Hans”, an Orlov Trotter horse that was claimed to have been able to perform difficult arithmetic calculations (Pfungst, 1911).

The case seemed to be closed after this simple explanation was found for the improbable results obtained with FC. However, instead of being forgotten, the method began to show unexpected vitality. During the subsequent years, facilitated communication began to spread from United States and Australia to many other countries, including the majority of Western Europe (Jacobson, Foxx, & Mulick, 2005, p. 365). Although empirical message-passing tests discredited the validity claims of FC (Mostert, 2001, 2010), proponents sought support in several other types of validation (Rossetti, Cheng, & Lavoy, 2013). As listed by the Institute of Communication and Inclusion (ICI) (2014b), these means included (a) video eye-tracking of communicators identifying the letters before typing them (Emerson, Grayson, & Griffiths, 2001), (b) evidence of speech before and during typing (Broderick & Kasa-Hendrickson, 2001; Kasa-Hendrickson, Broderick, & Hanson, 2009), (c) portfolios containing naturally occurring and school-based evidence of authorship, and (d) linguistic analysis of typed messages revealing communicators’ unique uses of language (Biklen, Saha, & Kliever, 1995).

It can be argued that message-passing tests should be the only proof required to denote the validity or invalidity of FC. If the client can communicate only content that is familiar to the facilitator but is unable to relay information unfamiliar to the facilitator, then FC does not function as a means of communication. However, studies that use other types of validation are continually published in scientific, peer-reviewed journals. As confirmed by a recent discussion, qualitative reports supporting FC now prevail in peer-reviewed journals, while articles providing opposing evidence have almost vanished (Cardinal & Falvey, 2014; Mostert, 2014).

The Linguistic Argument

The ICI at the Syracuse University School of Education (formerly the Facilitated Communication Institute) is perhaps the best known academic institution that promotes FC. According to the institute, authorship in FC has been successfully demonstrated, among other things, with the method called “linguistic analysis” of individuals’ typing (ICI, 2014b).

Linguistics is defined as the scientific study of language. In linguistic analysis, a language is analyzed mostly by phonology, morphology, syntax, semantics, or pragmatics. Linguistics has been used, for example, in the study of the language use of people with autism spectrum disorders to show specific characteristics (Eigsti, de Marchena, Schuh, & Kelley (2011). When aiming to validate FC, the linguistic structures of interest have included personal patterns of typographical errors, phonetic and creative spelling, style, and unusual expressions (Biklen 1993, pp. 128–130). The unique or idiosyncratic features found and their perseverance over time and across various facilitators are claimed to prove the authenticity of the authorship in FC. Essentially, it is argued that, because the facilitated text is different in style from the texts written by the facilitators, it cannot originate from them (Biklen, 1993; Biklen et al., 1991; ICI, 2014b).

A simple counterargument against this reasoning is of course its logical circularity. In order to attribute distinct features of writing as evidence of authorship, one must have independent means of knowing what the facilitated person’s true writing style is. We need knowledge, independent from the writing via FC, that the person really communicates in the proposed way. Without such independent confirmation, the linguistic argument is left up in the air because mere idiosyncrasies found in the text do not reveal its origin.

Proponents of linguistic argument have stressed that, because the texts produced via FC differ from the normal writing style of the facilitators, the facilitators cannot be authors of these texts. However, the same argument also holds for the disabled persons whose work is

facilitated. The texts produced via FC strongly differ from the typical expressions of these people. Comparative linguistic analyses of independent communication produced by individuals with autism have not replicated the idiosyncratic features obtained via FC. The expression of participants with autism obtained via FC has repeatedly been described as manifesting high-level vocabulary, innovation, creativity, and astonishing complexity (e.g. Biklen, 1990, p. 292; Niemi & Kärnä-Lin, 2002). In contrast to this finding, researchers have shown that the independent communication of people with autism is rigid and impoverished when compared with the communication of the comparison groups (Eigsti, et al., 2011). It can therefore be concluded that the texts written via FC differ from the typical expressions of both the facilitators and the persons whose writing is facilitated.

Because several linguistic studies claiming to validate FC have been published in recent years, it seems justified to review them in order to assess the weight of these claims. This review is not exhaustive across the full history of FC; instead, it concentrates on recent papers and studies currently referred to as supporting the validity of FC.

The following issues will be studied:

- 1) What is the role given to message-passing tests in these studies?
- 2) Do the studies abide by the methodological recommendations made by the ICI on the correct use of facilitated communication (ICI, 2010, 2012)?
- 3) How is the linguistic argument developed in these studies? Does the argumentation surpass the trap of logical circularity discussed above?

Finally, the discussion section provides an alternative and more parsimonious explanation for the strange style characteristics typically found in the facilitated texts.

Method

Identification of Studies

The studies included in this review had to meet several inclusion criteria. The main

inclusion criterion was that the study participants' facilitated communication was argued to be validated with linguistic analysis of the text samples presented in the study. This means that texts written with FC were analyzed in terms of their unique features such as grammatical structure and word use, and the researchers claimed that the unique features found confirmed the texts were authored by individuals with disabilities. In addition, the study had to have been published in a peer-reviewed journal or an edited book.

Five studies that used linguistic analysis and were characterized as having "successfully demonstrated authorship" were first identified from the internet pages of the ICI (ICI, 2014b). Three of these studies were completed in Italy (Tuzzi, 2009; Tuzzi, Cemin, & Castagna, 2004; Zanobini & Scopesi, 2001), one in Finland (Niemi & Kärna-Lin, 2002), and one in North America (Janzen-Wilde, Duchan, & Higginbotham, 1995). Based on the reference lists in the studies already identified, three additional Italian studies were discovered (Bernardi & Tuzzi, 2011a, 2011b; Scopesi, Zanobini, & Cresci, 2003).

Next, recent systematic reviews on facilitated communication were explored via several additional studies (International Society for Augmentative and Alternative Communication [ISAAC] Committee on Facilitated Communication, 2014; Mazerolle & Legosz, 2012; Mostert, 2001, 2010; Probst, 2005; Wehrenfennig & Surian, 2008). The reviewed studies' logic was appraised, in search of linguistic argumentation. Only one new study was identified (Biklen et al., 1991). Six education and psychology databases were also searched (ERIC, PsycINFO, Academic Search Elite, ProQuest Education Journals, ProQuest Psychology Journals, and PsycARTICLES). The keywords "facilitated communication," "validation," and "linguistic" were used as descriptors. They produced 75 hits, and the papers' abstracts were read in order to determine if they contained claims on the linguistic validation of FC. No additional relevant studies were found. Finally, using the same inclusion criteria a manual search of the most recent (2008–2014) volumes of the following four journals was

performed at the level of the abstracts: *American Journal on Intellectual and Developmental Disabilities*, *Augmentative and Alternative Communication*, *Intellectual and Developmental Disabilities*, and *Research and Practice for Persons with Severe Disabilities*. No additional studies were found.

Based on the two inclusion criteria, nine studies were identified. Seven were written in English and two in Italian. The present study's author is fluent in both English and Italian, thus all nine of the identified studies were included.

Results

The characteristics of the studies are reported in Table 1. The participants in all studies totaled 68, when mutually overlapping participants were excluded. Three studies contained no formal comparison material to check the supposed uniqueness of the texts produced (Biklen et al., 1991; Janzen-Wilde, Duchan, & Higginbotham, 1995; Niemi & Kärnä-Lin, 2002). The remaining six studies applied some form of statistical analysis to support their conclusions. Statistical analysis was used to compare the participants' written output to a normative source to indicate the differences, which were taken as an indication of the authenticity of the texts. Two studies compared the facilitated texts to those written by the facilitators (Bernardi & Tuzzi, 2011a; Tuzzi, 2009), others also referred to some standard lexicon (Scopesi et al., 2003; Tuzzi et al., 2004; Zanobini & Scopesi, 2001), and one study used matched controls as a reference (Bernardi & Tuzzi, 2011b).

Description of the Studies

Anecdotal studies without comparison data. Biklen et al. (1991) reported the use of FC in U.S. public schools. A total of 50 hours of videotape were collected over 5 months, and transcripts were made from the typed expressions. The researchers identified three linguistic features they claimed confirmed that the students authored the texts. First, each student made unique typographical errors. For example, one student often hit keys above the intended ones.

Second, many students produced particular phonetic spellings that did not appear in the others' work, although the students sometimes shared a common facilitator. Third, each student typed unusual phrases or sentences that would not be expected from the facilitator, for example, "I want to be not walking." No statistical data were presented for these characteristics.

Niemi and Kärnä-Lin (2002) conducted a linguistic authorship analysis using texts produced with FC by a young Finnish man with severe cerebral palsy and brain damage, who had originally been diagnosed with intellectual disability. His ability to communicate orally was limited to a few words. The study material consisted of 1,600 sentences written from 1992 until 1996 when the participant was 15 to 19 years old. The analysis concentrated on specific characteristics of the writings, including errors, odd word order, special lexical features, and swear words. Several informal and anecdotal differences were reported when the texts were compared to those written by typical children, those with aphasia or specific language impairment, or those of his facilitators. The young man was reported to be very innovative in his lexical output. The study's authors reported that they used neologistic word forms and novel semantic interpretations, and his texts expressed unusual linguistic structure and unexpected creativity. The researchers also argued that the facilitators would not use the obscene swear words found in the texts. Because the language was reported to differ considerably from standard Finnish word use, the authors strongly suggested that the output could hardly be the product of another Finnish speaker, including his facilitators (Niemi & Kärnä-Lin, 2002).

Janzen-Wilde et al. (1995) studied a 6-year-old boy with a moderate intellectual disability. The boy pointed independently, identified numbers and lowercase letters of the alphabet, and wrote his first name independently. According to the authors, he had exhibited these skills when he was 3 years old. He spoke understandably with a moderate delay in

speech development, but his motor development was grossly within normal limits (Janzen et al., 1995). The authors analyzed the products of 12 writing sessions, which were performed at a special school over 8 weeks. The sessions were videotaped, and the texts were transcribed from the tapes. The evidence that the messages originated from the boy was based on six categories: (a) unexpected content, (b) atypical spelling, (c) unique phrases, (d) anecdotal evidence that the information was unknown to the facilitator, (e) oral spelling, and (f) self-corrections. When the participant wrote independently, he produced nonsense words. When he was facilitated, unexpected content, atypical spellings, and unique phrases were recorded, which was reported as a confirmation of FC's validity. The study also contained a statistical section in which the researchers concluded that the participant produced more complex and novel utterances via FC than he made orally.

Studies with comparison data. Six studies employed some statistical comparison data in order to demonstrate the existence of unique features in the facilitated text corpora. Tuzzi et al. (2004) analyzed the texts of 11 young persons with autism. Every participant was facilitated from the elbow and had been writing with FC for at least 1 year. The corpus of the facilitated texts included a total of 24,499 word tokens. It was compared with the text corpus produced by the facilitators, which comprised 23,386 word tokens. The facilitators' texts consisted of questions and comments that had appeared during the FC writing sessions. The text corpora were compared with TaLTaC software using simple word types and complex textual unit coding procedures. A comparative perspective was obtained from the newspaper *La Repubblica* stored in the TaLTaC software. The results showed that the participants with autism used more word types compared with their facilitators, employed unusual terms and short phrases. The authors concluded that the special style of writing observed "supports the hypothesis that the texts are the fruit of individual production of autistic subjects, not inevitably influenced by facilitators" (Tuzzi et al., 2004, p. 1097).

Tuzzi (2009) performed a statistical analysis over several years of FC texts written by 37 individuals with autism. The data were obtained from four accredited FC centers in Italy, and seemingly included material from Tuzzi et al.'s (2004) study. The texts of the 37 participants were compared with the texts of their 92 facilitators using TaLTaC2 software. The material consisted of almost 900 pages and included almost 300,000 words. The findings showed that the texts attributed to individuals with autism showed increased lexical richness compared with the facilitators' written output. Compared to the latter, the texts attributed to the individuals with autism revealed greater complexity in terms of lexis and morphological and syntactic structures. For example, the texts indicated more creative expression and a higher frequency of unusual words, such as neologisms that were used only once, called a *hapax*. Even children younger than 10 years of age used these high-register words often when facilitated, for example, "*emulare*," which translates as "emulate." However, verbs and "grammatical words" were less frequent. Tuzzi (2009) concluded that these results supported the authenticity of the texts produced through FC.

Bernardi and Tuzzi (2011a) continued to analyze the data of the previous study using cluster analysis to demonstrate the differences between the text corpora of the individuals with autism and their facilitators. The outcome of the cluster analysis graphically showed that the texts of participants with autism were similar and differed from those written by their facilitators in many respects, including greater complexity and stylized language. The authors regarded that it would be difficult to believe that the majority of facilitators could manage to imitate such a specific style and use two different lexicons. Therefore, the researchers thought their results favored the distinctive authorship hypothesis.

Zanobini and Scopesi (2001) presented a case study of a 7-year-old boy with autism and without any oral language skills. The study included facilitated texts from 28 sessions. The study was continued by Scopesi et al. (2003) and contained additional material totaling

51 sessions. These studies statistically compared texts produced through FC with texts produced by facilitators. The researchers also compared the lexicon used by the participant with the frequency of words generally used by elementary school children. The latter frequencies were obtained from a published lexicon. When compared with the lines of the facilitators, those of the child were shorter and contained more original and unusual words, often idiosyncratic. Some of the words that the child used were considered beyond the scope of the lexicon of 7-year-old children. The child also used a highly creative metaphorical language, e.g., “*sono domato da voce distante e dolce di Laura*” (“I am domesticated by the distant and gentle voice of Laura”). The researchers concluded that these peculiarities supported the authenticity of the communication.

Bernardi and Tuzzi (2011b) analyzed texts written through FC by six young individuals with autism whose verbal communication was absent or greatly impaired. For each participant, an individual without disability was selected as the control. The pairs were matched by age and sex. All participants wrote an essay on the same topic. Each pair used the same facilitator and the same contact of the facilitator’s hand on their arms or shoulders. This meant that both groups wrote their essays with the facilitator’s hand on their arms or shoulders. The facilitators were professionals from four accredited FC centers. The textual differences were calculated using the TaLTaC2 software program. Cluster analysis showed that the texts written by individuals with autism were similar to each other and different from the essays produced by the controls. For example, the individuals with autism showed a richer vocabulary and used more adjectives and fewer grammatical words compared with the controls. The researchers concluded that FC might function as a valid means of communication for participants with autism.

Message-Passing Tests

Concerning the first research question, none of the studies reported on the possible

message-passing experiments performed for the participants, or on their subsequent results. However, based on other sources (Alatalo, 1999, 52-53), anecdotal information was found indicating that the participant in the study by Niemi and Kärnä-Lin (2002) had previously failed in two message-passing experiments. In these experiments, a video program was shown to the participant first, and then questions were posed about the contents of the film using FC. The failure to report information unknown to the facilitator was attributed to the participant's nervousness. A second experiment was then organized, so that the participant could write about the film at home, in a relaxed environment. This experiment also failed. In both cases, the participant's mother served as her facilitator. According to Niemi and Kärnä-Lin (2003), these failures were due to "interfering factors" that were not properly taken into account. However, they do not report what these factors were.

The Use of Facilitated Communication

The Institute of Communication and Inclusion at Syracuse University has presented some recommendations for the use of facilitated communication (ICI, 2010, 2012). First, clients participating in FC should manifest, in addition to limited speech, an inability to perform autonomous pointing, which is described as a symptom of developmental dyspraxia (Biklen, 1993). However, a diagnosis of dyspraxia was not reported in any of the studies, and one study (Janzen-Wilde et al., 1995) even reported that the subject was able to point independently, which indicated that he was not among those individuals for whom FC was considered useful according to the ICI (2010) criteria.

A second criterion is eye contact with the keyboard (ICI, 2012). As confirmed by Crossley, "It is vital to ensure that the student makes eye contact with the target before making a selection" because "someone who does not scan the available choices cannot make a meaningful selection" (Crossley, 1994, p. 19). However, among the studies reviewed, only one reported eye contact was controlled for, and facilitation was interrupted when no eye

contact occurred (Janzen-Wilde et al., 1995). In one case, the opposite was true. The individual in Niemi and Kärnä-Lin's study (2002) was reported as not looking at the keyboard at all (Alatalo, 1999, p. 53; Saloviita & Sariola, 2003). Yet this study is constantly referred to as proof of the validity of FC (Annie McDonald Center, 2011; Biklen, 2005, p. 9; ICI, 2014b; Stubblefield, 2011).

Fading of physical support means gradual withdrawal of outside support. Fading is also considered essential, because it helps to foster the person's own control of his or her communication (ICI, 2012). However, only one study documented use of fading (Janzen-Wilde et al., 1995).

Mostert (2001) recommended that the studies on FC should contain a measure of facilitator influence on the contents of the texts produced. The possibility of facilitator influence has been acknowledged by the ICI (2014b). However, measures of facilitator influence were lacking in all the studies reviewed.

In sum, all the reviewed linguistic validation studies failed to confirm that their participants qualified for facilitated communication based on the standards presented by the FC field. The only common criteria reported were autism and limited speech. In two case studies, the participants clearly did not qualify for FC (Janzen-Wilde et al., 1995; Niemi & Kärnä-Lin, 2002). It remains unclear whether any of the 68 participants in these studies were considered qualified subjects for FC according to the ICI's quality standards (ICI, 2010, 2012). It also remains unclear whether these studies, with one exception (Janzen-Wilde et al., 1995), followed the norms concerning eye contact and fading.

Linguistic Validation

In all nine studies reviewed, the validation logic of FC was based on a comparison of texts produced with FC with texts written by real or synthetic standard users of the same language. Some studies were anecdotal, while others used statistical analyses to demonstrate

the dissimilarities of the facilitated texts with the texts of the facilitators, the facilitators and a standard lexicon, or matched peers without disability who also wrote with FC. The anecdotal studies claimed to have validated the use of FC with their participants, while the statistical studies were more cautious and limited to affirm that their results at most supported the hypothesis of authentic writing.

The validation claims in all studies reviewed were based on the logic that the unique features in the facilitated texts would support their authenticity if these features were not found in the comparison texts. If the facilitators had influenced the texts, the researchers argued, the result should be similar to the facilitators' personal style (Tuzzi, 2009). It was also argued that the writers made unique errors that persisted even when the facilitators changed (Biklen et al., 1991) and the stylistic features of the person's writing persisted across time and different facilitators (Niemi & Kärnä-Lin, 2002; 2003). The researchers argued that "the hypothesis that the majority of facilitators managed to imitate such a specific style while remaining consistent would be difficult to support", and it was "unlikely that such a large number of facilitators could produce texts characterized by two different lexicons (giving rise to two distinct and homogenous clusters) in a real-time dialogical context" (Bernardi & Tuzzi, 2011a, 428).

In sum, the linguistic studies have shown that the texts produced via FC are different when a comparison is made with the standard users of the language, or with the facilitators' own writings. The authors consider these differences either as strong proof of the validity of FC (Biklen et al., 1991; Janzen-Wilde et al., 1995; Niemi & Kärnä-Lin, 2002; 2003), or, more sparingly, as supporting the hypothesis of its validity. Some authors also refer to the unique and persistent stylistic features of the texts as an additional confirmation of FC's authenticity. All the presented arguments, however, remain essentially circular, because no independent evidence was reported in any study of the supposedly unique communication style of the

participants.

Discussion

Nine linguistic studies on the validation of FC were reviewed in order to find out: 1) whether they contained any successful message-passing tasks that could validate the use of FC in these studies, 2) to what extent the studies followed the recommendations of the FC field concerning the proper use of facilitated communication, and 3) how the linguistic argument was developed and whether the logical circularity of such arguments was avoided by independent information.

It was, first, found out that no attention was paid to the reporting of possible message-passing tests in these studies involving a total of 68 participants. Obviously, the topic of experimental control was not considered essential. Second, it was observed that the studies usually did not follow the recommendations of the FC field on the proper use of facilitated communication. The criteria of dyspraxia, eye contact, and the fading of support were controlled for only in only one study out of nine, and no measure of facilitator influence was employed in any of the studies. As for the third research question, no independent information on the participants' personal writing styles was given; consequently, the claim for true authorship remained unsupported.

The question remains, how it is possible that the process of facilitated writing can produce texts whose stylistic features and contents differ conspicuously from the style of both facilitators and those facilitated? The first answer is that, even if the proponents of linguistic argument want to deny it, it is fully conceivable that the facilitators do use two different lexicons in their dialogue. This type of "code switching" is frequently observed when adults communicate with a small child (Wehrenfennig & Surian, 2008).

When considering repeated stylistic features over time and over several facilitators, some role can be also be ascribed to confirmation bias. The recommendations given to the

practice of FC stress the need for emotional support and the familiarity of the facilitator with the participant (ICI, 2015). This usually means that the facilitator is familiar with the style of the individual's previous texts. Therefore, he or she would be apt to imitate the style found in them. This effect could be avoided by controlling facilitators' access to the individual's previous literary history. However, this measure of precaution was not reported in the reviewed studies.

The most important explanation for odd content can be found in the unnatural writing process itself. In facilitated writing, two people actually fight for the control of the writing hand. The facilitator's ideomotor impulses direct him or her in a certain direction. The first letters of a word or sentence can be chosen freely. However, if an unusual letter combination emerges, the facilitator may observe the danger of ending up with a nonsensical word or phrase. Unconsciously, she increases her influence on writing at this phase. Because the alternatives may be limited, she may rescue the situation only by ending up with a rare or strange words or phrases, if she wants to avoid complete nonsense. The freedom of choice diminishes letter by letter and word by word. The facilitator also struggles to get occasional misprints integrated to form a meaningful sentence. For example, when the letters *emu* emerge, an Italian facilitator may end up with the high-register word *emulare* (emulate).

This process explains the odd word orders, neologisms, rare words, unexpected creativity, textual richness, and all other properties reported as typical of facilitated writing but untypical for normal communication of autistic individuals. It seems almost inevitable that the result of any facilitated writing is this type of "creative" text. Individual and personal differences in resistance between clients explain the persistency of idiosyncrasies across time and facilitators.

The consequence of the FC writing process is that the expressions finally produced are typical of neither the participants' nor the facilitators' communication styles. Proponents

of linguistic argument see this incompatibility as proof that facilitators cannot be authors of the texts. It remains unnoticed that the same argument can be used for the participants' side, too. The differences between communication by persons with autism obtained with FC compared with independent communication are really striking. When young people with autism write independently, their texts do not contain the idiosyncrasies reported in FC studies (e.g. Dockrell, Ricketts, Charman, & Lindsay, 2014). If anything, the texts are defined by the lack of those "creative" features so uniformly reported in FC. In this respect, Janzen-Wilde et al.'s (1995) study is illustrative. When the participant wrote independently, he produced nonsense words; when he spoke, he used moderately delayed, simple language; and when he was facilitated, he produced idiosyncratic, linguistically complex, and novel language. The same has been confirmed by the participant in Niemi and Kärnä-Lin's (2002) study. A newspaper article about the participant described how his nonverbal and simple verbal communication contained totally different areas of interest compared with the facilitated writing sample (Kiiskinen, 2000). The requests and ideas that the participant laboriously tried to express with his limited means of communication never emerged in the written outputs. Thus, the end result of FC practice was counter-productive and ironic, with respect to the stated aim of the FC movement to promote agency, respect, support, and participation for people with disabilities.

To sum up, the linguistic studies reviewed here have not produced any support for the claims of facilitated communication's validity. The idiosyncratic features of the texts produced via FC are more easily explained as artefacts of the writing process itself. Accordingly, there is no need to resort to the miraculous explanations provided by FC supporters.

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Table 1

Characteristics of the Participants and Properties of the Facilitation Process

Study	Participants					Facilitation	
	N	Age	Diagnosis	Limited speech	Dyspraxia	Eye contact	Fading
Studies without comparison data							
Biklen et al. (1991)	22	3 - 21	Autism	Yes	?	?	?
Niemi & Kärnä-Lin (2002)	1	15 - 19	Cerebral palsy	Yes	?	No	?
Janzen-Wilde, Duchan, & Higginbotham (1995)	1	6	Intellectual disability	Yes	No	Yes	Yes
Participants compared to facilitators							
Tuzzi (2009) Bernardi & Tuzzi (2011a)	37	9 - 32	Autism	Yes	?	?	?
Participants compared to facilitators and some standard lexicon							
Bernardi & Tuzzi (2011b)	6	8 - 25	Autism	Yes	?	?	?
Tuzzi, Cemin, & Castagna (2004) ^b	11	9 - 22	Autism	?	?	?	?
Zanobini & Scopesi (2001)	1	7	Autism	Yes	?	?	?
Scopesi, Zanobini, & Cresci (2003) ^c	1	7 - 8	Autism	Yes	?	?	?

Note. Question mark = not reported.

^bThese cases were also included in Tuzzi (2009).

^cThe study used the same participant as the study of Zanobini & Scopesi (2001)

and incorporated its data.