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REVIEW

Facilitated Communication and Authorship: A Systematic Review*

RALF W. SCHLOSSER¹, SUSAN BALANDIN², BRONWYN HEMSLEY³, TERESA IACONO⁴,
PAUL PROBST⁵ & STEPHEN VON TETZCHNER⁶

¹Speech-Language Pathology and Audiology, Northeastern University, & Otolaryngology and Communication Enhancement, Boston Children's Hospital, Boston, MA, USA, ²School of Health and Social Development, Deakin University, Victoria, Australia, ³Speech Pathology, The University of Newcastle, New South Wales, Australia, ⁴La Trobe Rural Health School, La Trobe University, Australia ⁵Psychology, Universitaet Hamburg, Hamburg, Germany, ⁶Psychology, University of Oslo, Oslo, Norway

Abstract

Facilitated Communication (FC) is a technique whereby individuals with disabilities and communication impairments allegedly select letters by typing on a keyboard while receiving physical support, emotional encouragement, and other communication supports from facilitators. The validity of FC stands or falls on the question of who is authoring the typed messages – the individual with a disability or the facilitator. The International Society for Augmentative and Alternative Communication (ISAAC) formed an Ad Hoc Committee on FC and charged this committee to synthesize the evidence base related to this question in order to develop a position statement. The purpose of this paper is to report this synthesis of the extant peer-reviewed literature on the question of authorship in FC. A multi-faceted search was conducted including electronic database searches, ancestry searches, and contacting selected authors. The authors considered synopses of systematic reviews, and systematic reviews, which were supplemented with individual studies not included in any prior reviews. Additionally, documents submitted by the membership were screened for inclusion. The evidence was classified into articles that provided (a) quantitative experimental data related to the authorship of messages, (b) quantitative descriptive data on the output generated through FC without testing of authorship, (c) qualitative descriptive data on the output generated via FC without testing of authorship, and (d) anecdotal reports in which writers shared their perspectives on FC. Only documents with quantitative experimental data were analyzed for authorship. Results indicated unequivocal evidence for facilitator control: messages generated through FC are authored by the facilitators rather than the individuals with disabilities. Hence, FC is a technique that has no validity.

Keywords: Autism; Developmental disabilities; Facilitated Communication

Introduction

Facilitated Communication (FC) (also described as “supported typing”) is a technique whereby individuals with disabilities and communication impairments allegedly select letters by typing on a keyboard while receiving physical support, emotional encouragement, and other communication supports from facilitators (Syracuse, n.d.). Although it is acknowledged that FC also includes the pointing to pictures or objects, the focus of this review is on typing. According to the Institute on Communication and Community Inclusion (see Syracuse, n.d.), the physical support may be provided at the index finger, hand, arm, elbow, or shoulder. Besides the provision of physical supports, the facilitator may provide emotional encouragement, and other communication supports (e.g., monitoring

to make sure the person looks at the keyboard and checks for typographical errors) (see Syracuse, n.d.). The main area of dispute is whether people with disabilities are being facilitated to express their own communicative intentions, or whether the source of the output is that of the facilitators (e.g., Mostert, 2012).

The purpose of this review was to examine and synthesize the research evidence on who is authoring the messages generated through FC. In addition, in the paper we outline the methods and procedures of the review that informed the development of the Position Statement, formally adopted by a majority vote of the Council and Executive Board of the ISAAC on 20 July, 2014. Since the Council Meeting on the 20 July 2014, minor changes have been made in the formatting of the review to meet journal article requirements (e.g., APA6

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Correspondence: Ralf W. Schlosser, Department of Speech-Language Pathology and Audiology, Northeastern University, 106 Forsyth, Boston, MA 02115, USA. E-mail: R.Schlosser@neu.edu

formatting, introduction of sections and headings) and these changes do not affect the content of the review.

Method

Formation of the AdHoc Committee on Facilitated Communication

The ISAAC Executive Committee called to order an AdHoc Committee on Facilitated Communication (subsequently referred to as “the Committee”) and charged it with the development of a position statement on facilitated communication (FC). The committee included the following individuals in alphabetical order: Balandin, Susan (Deakin University, Australia), Bober, Allmuth (Stiftung Scheuern – Einrichtung der Behindertenhilfe, Germany), Hemsley, Bronwyn (The University of Newcastle, Australia), Iacono, Teresa (La Trobe University, Australia), Ochs, India (AAC Consumer, USA), Probst, Paul (Universitaet Hamburg, Germany), Schlosser, Ralf (Northeastern University, USA) (*Chair*), and von Tetzchner, Stephen (University of Oslo, Norway).

Introduction to the Review Process

A democratic process was adopted by the committee throughout the review process. Members of committee were able to reach consensus on most issues. On matters for which the committee could not reach agreement, members voted by e-mail. All members of the committee had input, but each individual member was free to hold his/her own views on the position statement and/or report. Individual views have not been discussed or disclosed in accordance with the rights afforded each member of ISAAC to hold a private view on matters relating to FC. Thus, the accompanying position statement has been based on the evidence found in the review of literature, and not on the personal opinions of the individuals on the committee.

Search for Synopses, Systematic Reviews, Narrative Reviews, and Studies

A multi-faceted search strategy was employed to identify potentially relevant published synopses, systematic reviews, narrative reviews, and studies. This strategy consisted of database searches, ancestry searches, and contacting individual authors. The following databases were searched: Cumulative Index of Nursing and Allied Health Literatures (CINAHL); Educational Resources Information Clearinghouse (ERIC); Medline (via Pubmed); Language and Linguistics Behavior Abstracts (LLBA); and PsychINFO (via EBSCO). Since *Facilitated Communication* is typically not a keyword indexed in the thesaurus of most databases, we chose to use the following terms as free-text phrases: “facilitated communication”, “supported typing”, and “assisted typing”. This strategy resulted in the identification of material that included these phrases in the

title, abstract, or text regardless of how a particular database chose to index the entry (Schlosser, Wendt, Angermeier, & Shetty, 2005). The databases searched are operating in the English-speaking world. Some of these databases do index studies and reviews published in languages other than English (an English language constraint was not imposed). However, there was no attempt to systematically search for non-English documents, which would have required the searching of databases that operate in non-English speaking countries. Ancestry searches involved the searching of bibliographies of obtained studies, reviews, previous position statements, and websites for additional studies that may have qualified for inclusion. Also, select authors were contacted to identify additional studies and reviews. Finally, the journal *Evidence-Based Communication Assessment and Intervention*, the Database of Abstracts of Reviews of Effects (DARE), and the EBP Compendium of the American Speech-Language and Hearing Association were searched for synopses of systematic reviews.

Materials Submitted by the ISAAC Membership

The ISAAC office announced to its membership that written materials related to the issue of FC could be submitted but noted that videotapes would not be included in the review. The additional materials submitted to ISAAC are listed in Appendix A to be found at online <http://informahealthcare.com/doi/abs/10.3109/07434618.2014.971490>. All were considered for inclusion along with the documents obtained through the search methods described above.

Developing the Criteria for Inclusion

The Committee developed an inclusion checklist (see Appendix B to be found at online <http://informahealthcare.com/doi/abs/10.3109/07434618.2014.971490>). The checklist provided the means to the classification of documents (about FC or not; peer-reviewed or not) and their level of inclusion (i.e., quantitative, qualitative, experimental, descriptive, or anecdotal data). Materials that were not about FC were excluded. In completing the inclusion checklist, the committee also captured whether each written document was peer-reviewed. For materials that were peer-reviewed and deemed to be about FC, a decision was made on the appropriate analysis level of inclusion as outlined below.

Level One Written Documents. Studies and reviews that provided quantitative experimental data that related to the authorship of the messages were included for level one analysis. Quantitative experimental studies (or systematic reviews of such studies) involved an a priori controlled manipulation of knowledge/stimuli presented to the facilitator and FC used by the individual in an attempt to empirically establish who was authoring the messages produced in response to the stimuli.

Level Two Written Documents. Studies and reviews that included quantitative descriptive data on the output generated through the process of FC without a priori testing of authorship were deemed appropriate for level two analysis. These were studies that included quantitative descriptions of the output (generated through the FC process) without empirical manipulation related to authorship.

Level Three Written Documents. Written documents that included qualitative descriptive data on the output generated through the process of FC without pre-testing of authorship were deemed appropriate for level three analysis. Qualitative data were considered those generated through qualitative research methods, such as participant observations and interviews.

Level Four Written Documents. Documents representing anecdotal reports written by individuals using FC, individuals who previously used FC, facilitators, former facilitators and others sharing their perspectives on FC were deemed appropriate for level four analysis.

The Criteria of Peer Review for all Written Documents. Given that the committee included researchers and scholars from both qualitative and quantitative traditions in which peer-reviewed articles enjoy the highest regard, the inclusion of articles, across all four levels of analysis, was restricted to those that appeared in peer-reviewed journals.

Process for Determining and Applying the Level of Inclusion to Written Documents

The first author and Chair of the Committee coded all potential written documents found through the search or submitted to the ISAAC office for inclusion. Exceptions were those articles that were written in languages beyond the competence of the Chair (i.e., neither German or English). In these cases two other members of the committee with competence in the relevant language read the articles. Approximately 60% of written documents were independently coded by a second member of the Committee (Schlosser, Wendt, & Sigafos, 2007). Any disagreements between the two coders were resolved through consensus (Schlosser et al., 2007).

Handling of Non-English Literature. Within the committee, all members were able to read English and some were also able to read French ($n = 3$), German ($n = 4$), and Italian ($n = 2$). Materials in languages other than English, German, French or Italian were not included in this review.

Classification of Level One Written Documents

Level one evidence has the potential to appropriately inform conclusions regarding authorship, and hence, the validity of FC. In order to determine the author of messages, an experimental design was required.

Further requirements were the inclusion of conditions (e.g., blinded facilitator, non-blinded facilitator, facilitated, not facilitated) that were established a priori and manipulated while assessing the impact of each condition on the output that was generated.

Studies Including Both Blinded and Non-blind Conditions. In the peer-reviewed journal literature, the following nine systematic reviews met the criteria for level one analysis: Cummins and Prior (1992); Felce (1994); Jacobson, Mulick, and Schwartz (1995); Kezuka (2002); Mostert (2001, 2010); Probst (2005); Simpson and Myles (1995a); and Wehrenfennig and Surian (2008). Per analysis of the Probst (2005) systematic review, 23 studies (all dated in the years 1993–1998) met the criteria for level one analysis and included a blinded FC condition with a nonblinded FC condition as a comparison (Bebko, Perry, & Bryson, 1996; Bligh & Kupperman, 1993; Braman, Brady, Linehan, & Williams, 1995; Cabay, 1994; Calculator & Hatch, 1995; Eberlin, McConnachie, Ibel, & Volpe, 1993; Hirshoren & Gregory, 1995; Hudson & Arnold, 1993; Kerrin, Murdock, Sharpton, & Jones, 1998; Kezuka, 1997; Klewe, 1993; Konstantareas & Gravelle, 1998; Montee, Miltenberger, & Wittrock, 1995; Moore, Donovan, & Hudson, 1993a; Myles & Simpson, 1994; Myles, Simpson, & Smith, 1996; Oswald, 1994; Shane & Kearns, 1994; Simon et al., 1994; Simpson & Myles, 1995b; Smith, Haas, & Belcher, 1994; Vasquez, 1994; and Vasquez, 1995). In addition to studies included in Probst's (2005) systematic review, four studies (dated in the years 2001–2014) met criteria for level one analysis and included both a blinded FC condition and a non-blinded FC condition: Olney (2001); Perini, Rollo, & Gazzotti (2010a); Saloviita, Leppänen, and Ojalampi (2014); and Schiavo, Tressoldi, and Martinez (2005). Thus, in total, 27 studies considered in this review included both blinded and non-blinded conditions.

Studies Including a Blinded Condition Without a Non-blinded Condition. In the peer-reviewed journal literature, and per analysis of Probst (2005), a further 13 studies (all dated within the period 1992–1996) met the criteria for level one analysis and included a blinded FC condition *without* a non-blinded FC condition: Beck and Pirovano (1996); Bomba, O'Donnell, Markowitz, and Holmes, (1996); Calculator and Singer (1992); Cardinal, Hanson, and Wakeham, (1996); Crews et al. (1995); Heckler (1994); Regal, Rooney, and Wandas (1994); Sheehan and Matuozi (1996), Siegel (1995), Smith and Belcher (1993); Szempruch and Jacobson (1993); Weiss, Wagner, and Bauman (1996); and Wheeler, Jacobson, Paglieri, and Schwartz (1993).

Other Studies Including Controlled FC Conditions. In the peer-reviewed journal literature, and per analysis of Probst (2005), six studies (all dated within the period 1993–1995) involved controlled FC conditions, and rendered conclusions about the validity of accusations of sexual abuse made through FC: Bligh and Kupperman (1994); Calculator and Hatch (1995); Hudson, Melita,

and Arnold (1993); Heckler (1994); Shane and Kearns (1994); and Siegel (1995).

Classification of Level Two Written Documents

In the peer-reviewed literature, 11 studies (all dated within the period 2001–2012) met the criteria for level two analysis: Bara, Bocciarelli, and Colle (2001); Bernardi and Tuzzi (2011a; 2011b); Bigozzi, Zanobini, Tarchi, Cozzani, and Camba (2012); Bruno, Schnakers, Vanhaudenhuyse, Moone, and Laureys (2010); Emerson, Grayson, and Griffiths (2001); Grayson, Emerson, Howard-Jones, and O'Neil (2012); Tuzzi (n.d.); Tuzzi (2009); Tuzzi, Cemin, and Castagna (2004); and Zanobini and Scobesi (2001).

Classification of Level Three Written Documents

In the peer-reviewed literature, seven studies (all dated within the period 1991–2011) met the criteria for level three analysis: Bennett (2011); Biklen and Schubert (1991); Broderick and Kasa-Hendricksen (2001); Niemi and Karna-Lin (2002); Olney (1995); Sipila and Maatta (2011); and Zanobini and Scopesi (2001).

Classification of Level Four Written Documents

In the peer-reviewed literature, 24 written documents (all dated within the period 1994–2012) met the criteria for level four analysis: Ackerson (1994); Biklen and Burke (2006); Biklen and Schneiderman (1997); Boynton (2012); Bryen and Wickman (2011); Causton-Theoharis, Ashby, and Cosier (2009); Clarkson (1994); Emerson et al. (1998); Focht-New (1996); Johnson, DMan (2011); Kasa-Hendrickson, Broderick, and Hanson (2009); Koppenhaver, Pierce, and Yoder (1995); Marks (1994); Mirenda (2008); Mostert (2012); Niemi, and Karna-Lin (2003b); Palfreman (2012); Pentzell (2010); Savarese (2010a); Savarese, Baggs et al. (2010a); Savarese, Block et al. (2010b); Stock (2011); Todd (2012); and von Tetzchner (2012).

Excluded Materials

In total, 334 documents were excluded entirely because they did not focus on FC, mention of FC was made only in a tangential manner, or the documents were not published in a peer-reviewed journal. Excluded materials are listed in Appendix C to be found at online <http://informahealthcare.com/doi/abs/10.3109/07434618.2014.971490>.

Results

Evidence on Authorship

In the following four main sections, results based on the sources described above for level one, level two, level three, and level four evidence are presented. In light of the purpose for constituting the Committee, the

validity of FC as a method of communication was judged according to the evidence regarding message authorship: that is, evidence to indicate who authored messages – the FC user or the facilitator. Following classification of the materials, the next level of analysis focused on the strength of evidence in relation to authorship.

Level One Evidence

In the analysis of level one evidence, the pyramid of navigating evidence-based information sources in health care fields in general (DiCenso, Bayley, & Haynes, 2009; Haynes, 2006) and augmentative and alternative communication in particular (Schlosser & Sigafoos, 2009) were followed. Accordingly, consumers of research evidence should seek out systematic reviews before individual studies. Systematic reviews have been shown to be preferred sources of evidence because they provide systematic aggregated evidence to minimize error that may arise from relying on any one individual study. They often include additional methodological steps to increase confidence in the conclusions (e.g., identify risks of bias in included studies, and take this into account).

Synopses. Implementation of the pyramid further requires that consumers seek out synopses (or appraisals) of systematic reviews before the systematic reviews. This preference for appraisals has been based on the premise that not all reviews are equal in terms of quality of methods to address trustworthiness (Schlosser, Wendt, & Sigafoos, 2007). Hence, we followed this approach. One synopsis by Schlosser and Wendt (2008) was identified which provided an appraisal of a systematic review by Probst (2005). A search in other sources for synopses of systematic reviews (i.e., Database of Abstracts of Reviews of Effects; EBP Compendium) failed to yield other synopses.

Systematic Reviews. Several reviews published in the peer-reviewed journal literature were located that included level one evidence. Among the systematic reviews located, some were quite dated (Cummins & Prior, 1992; Felce, 1994; Jacobson et al., 1995; Mostert, 2001; Simpson & Myles, 1995), with a further one being in Japanese (Kazuka, 2002) and, therefore, excluded. Among the more recent systematic reviews (Mostert, 2010; Probst, 2005; Wehrenfennig & Surian, 2008), we relied primarily on Probst (2005) because it has been appraised in a synopsis and was deemed as a high-quality systematic review (Schlosser & Wendt, 2008). The other two systematic reviews by Mostert (2010) and Wehrenfennig and Surian (2008) were also examined for additional and more recent studies. Conclusions from these studies and reviews were also compared to those of Probst (2005).

The systematic review by Probst (2005) was the only one that has since been appraised in a synopsis (Schlosser & Wendt, 2008). It is important to note that

while Probst (2005) is a German language publication, all of the primary studies included in Probst (2005) were also included in three systematic reviews published in English: Felce (1994), Jacobson et al. (1995), and Mostert (2001). Specifically, we relied on the body of studies that included a facilitator-blinded and a facilitator-non-blinded condition as studies without a non-blinded condition are not as rigorous and therefore convincing methodologically. Based on his analysis and synthesis of 23 studies, Probst (2005) concluded that there was overwhelming evidence for facilitator control in FC. In terms of the validity of accusations made through FC communication regarding sexual abuse, Probst concluded on the basis of an analysis of six studies that the majority of communicative messages were influenced by facilitator control.

The review by Wehrenfennig and Surian (2008) included no additional studies to those included in Probst (2005). Their conclusions concurred with those by Probst (2005). It is unclear whether the quantitative results/interpretations provided in their Table 1 were arrived at independently or simply taken from Probst (2005). However, Wehrenfennig and Surian (2008, p. 457, translated from P. Probst) noted that "Overall, the conclusions from our review are consistent with the conclusions of the previous reviews (Jacobson et al., 1995; Jordan et al., 1998; Mostert, 2001; Probst, 2005)".

Mostert (2010) added four more recent studies relative to the review by Probst (2005), but none were deemed to include any control procedures, which were necessary for level one evidence. The conclusions reached by Mostert (2001, 2010) are fully consistent with Felce (1994), Jacobson et al. (1995), Probst (2005), and Wehrenfennig and Surian (2008). The review by Mostert (2012), although not following systematic review guidelines closely, did include a review of previous reviews of FC and drew broader conclusions from the more recently generated evidence of the pro-FC movement; no additional studies were reviewed.

Individual Studies. As well as the systematic review studies, four individual studies met the inclusion criteria for level one analysis in the current review (Olney, 2001; Perini et al., 2010a; Saloviita et al., 2014; Schiavo et al., 2005). The study by Olney (2001) was not included by Probst (2005), Mostert (2010), or Wehrenfennig and Surian (2008). It is likely that this omission was due to it being published in *Disability Studies Quarterly*. This is a journal in the field of disability studies linked to literary analysis in the humanities that is indexed by the Modern Languages Association database rather than databases commonly searched in the field of communication sciences and disorders. The study by Perini et al. (2010a) was too recent to be included in any of the reviews. The study by Schiavo et al. (2005) was too recent to be included in Probst (2005), and was excluded by Mostert (2010) due to the English-language restriction as a criterion for inclusion. The study was included in Wehrenfennig and Surian (2008) in their narrative

analysis, but not the tabular summary of studies. The study by Saloviita et al. (2014) was too recent to be included in any of the reviews. Therefore we engaged in our own appraisal of these four studies and provide here a summary of the study and the appraisal and conclusions of the Ad Hoc committee about each study.

Olney (2001). In this study, individuals with developmental disabilities and their regular facilitators were asked to respond to multiple-choice questions, vocabulary-based computer game items in blind as well as non-blind conditions.

Appraisal by the Committee. This experimental study included nine participants, aged 16–42 years ($M = 28.5$, $SD = 7.3$). The dependent variable was the accuracy of verbal comprehension of written language: the number of correct responses was examined under facilitator-blind and facilitator nonblind conditions (the independent variable). The participants were expected to match words to definitions by selecting one of four alternatives (A, B, C, D) presented in a multiple choice format: for example, the word "loyal:" A "devoted", B "easily controlled or handled", C "thick, crowded" and D "lazy". The internal validity of this study was fundamentally flawed, in particular by (a) lack of pretesting, (b) lack of control for unspecific factors that may confound the independent variable (blind-nonblind) with participant training and assessment implementation variables, and (c) selective consideration of outcomes in favor of the FC-is-valid-claim.

Conclusions of the Committee. The outcomes do support the assumption of facilitator influence and thus are consistent with other experimental studies. While some of the participants were literate and were the authors of the letter completing task, the outcomes for these participants were not better with FC than without. The lack of evidence of validity is consistent with the systematic reviews presented in the present report.

Perini et al. (2010a) (Italian). This study was an investigation of the performance of a 12-year-old child with autism in two different settings using two different interventions: a special facility that the child attended in the afternoon and used FC, and at the child's school where a behavioral approach to enhancing the child's communication was used. Three different procedures were used in testing the child's picture naming: (a) non-blind facilitator, (b) blind facilitator, and (c) support of the investigator. The child's answers were more appropriate when the facilitator was familiar with the questions. The authors found no empirical evidence to support the effectiveness of FC and recommended further research of both FC and the behavioral approach.

Appraisal by the Committee. This single case study was of a 12-year-old nonspeaking boy (M) diagnosed with autism and moderate to severe intellectual disability,

who reportedly functioned in the normal cognitive and socio-emotional range under FC conditions. The study aims were to examine (a) the validity and effectiveness of FC in a controlled study within the setting of an afternoon-care center, and (b) the effectiveness of a behavioral treatment program (without using FC) for the enhancement of low-level written language abilities within an inclusive secondary school classroom. Greater emphasis will be placed on the first aim.

For the first aim, M's linguistic behavior, the dependent variable, was the number of correct responses: for example, picture naming, was measured under three conditions (Independent Variable): facilitator not blind, facilitator blind and only experimenter's control (i.e., unspecified physical and emotional assistance). The results indicated clearly better achievements under the facilitator not blind condition than under the other two conditions. The authors illustrated this finding by the following example: Under the facilitator not blind condition M responded to "What animal is this?" correctly with "A simple elephant"; under the facilitator blind condition he typed: "Ansino Fenicorte" [notabene: "asino" is the Italian word for "donkey"]; and under the only experimenter control condition M typed "Pujiypupu". From these results, the authors concluded that the study failed to provide empirical evidence of the validity and effectiveness of FC.

The internal validity of this study was compromised by the following: (a) incomplete facilitator control: due to unexpected technical problems, the facilitator was only visually, but not acoustically blinded, (b) incomplete description of the dependent variable, which comprised three different tasks formats, and (c) incomplete presentation of results. Despite the methodological deficits described, the authors' conclusions were in accordance with those of numerous other controlled studies. Overall, the first partial study did not provide any empirical evidence to support the validity and effectiveness of FC.

For the second aim, the pre-training assessment of M indicated low-level literacy competencies for skills such as letter recognition. The subsequent behavioral training targeted comprehending and writing one-word expressions as for example, "fico" (fig) or "luna" (moon). The results showed significant improvements following training. The authors' conclusions in terms of the effectiveness of the behavioral training for enhancing literacy abilities were consistent with the interdisciplinary state-of-the-art knowledge.

Conclusions of the Committee. No empirical evidence was provided that supported the validity and effectiveness of FC. The authors concluded that the use of FC is unjustified and unethical ("ingiustificato e immorale", p. 115) due to the lack of scientific evidence, and because FC can distract from the use of effective interventions with strong empirical evidence. These ethics-related conclusions were concordant with those presented both in systematic reviews and in several position statements published by academic and professional groups.

Schiavo et al. (2005) (Italian). This study included five individuals with autism aged 13–28 years. Participants were read an illustrated historical story or shown a magazine picture and asked to comment in writing. In the blind condition, the answers were written with support from a facilitator who had been out of the room when the experimenter presented the materials. In the non-blind condition, the facilitator was in the room when materials were presented. Results indicated that the answers were more appropriate in the non-blind condition, but also about half of the answers were acceptable in the blind condition.

Appraisal by the Committee. It was not reported (a) how the tasks were assigned to the participants, (b) whether the facilitators knew the item pool, (c) whether one or more facilitators were the same for more than one participant, or (d) whether the facilitators knew each other. It was unclear who determined the correctness of a response; that is, there were no controls in place to minimize the possibility of false point assignments (e.g., no inter-rater agreement of any kind).

Conclusions by the Committee. The results along with the appraised shortcomings in this study do not support FC as a valid method. The finding relative to the participant who was facilitated by the shoulder shed serious doubts about the assumptions made by others (Bernardi & Tuzzi, 2011) that this level of support minimizes or rules out facilitator control when recruiting participants for descriptive studies of the output of FC users.

Saloviita et al. (2014). This study was published too recently to be included in any previous systematic or other reviews. The aim of the study was to explore authorship of messages for 11 students using FC in two schools in Finland. All participants had intellectual disability and the cohort included students with autism and Down syndrome. All students used a paper keyboard, two sometimes used a computer keyboard and two sometimes used a Lightwriter™ for communication. Tests included information passing tasks under facilitator-blinded and non-blind conditions. Results indicated strong facilitator influence on message construction and did not validate FC as communication method for students or facilitators. Furthermore, two students evidenced poorer performance on tasks when facilitated than when communicating independently.

Appraisal by the Committee. In this experimental study with 11 Finnish participants, aged 7–15 years, information passing (dependent variable: number of correct responses) was examined under facilitator-blind and facilitator non-blind conditions (the independent variable). Seven children participated in pilot testing to ensure that the tasks were functional and to familiarize the facilitators and some participants with the protocols. Some small changes (e.g., reduction in length of some tasks) were made after the pilot study. The participants completed six testing activities

(object naming, picture-naming, describing a picture, reading, name writing, and independent pointing). The researchers addressed arguments made by Biklen (1993) against the validity of previous experiments, such as presence of dyspraxia in users of FC. Tasks included facilitator and participants having the same cues or different cues, and the facilitator having no cues and being blind to the task. Test-retest (whether responses were correct or not) and inter-rater agreement were high. Results indicated that when the facilitator was aware of the correct response, the participants' facilitated responses were more than 80% correct. When the facilitators were blind to the task or were given a different cue to that given the participants, only 3 out of 182 test opportunities were correct. Two participants who could type independently were able to complete some tasks correctly when independent, but were consistently wrong when facilitated by a facilitator blind to the task. Limitations of the study included that one researcher collected all the data, the facilitators were trusted to close their eyes rather than be blindfolded or patched, and occasionally the facilitator of a participant differed across tasks. Such changing of facilitators for individuals was common practice in the schools. Furthermore, observations indicated that facilitators did not follow guidelines of the Facilitated Communication Institute (2010)/Institute of Communication and Inclusion (ICI) (2012) guidelines (e.g., ensuring that the person using FC looked at the keyboard, applying fading techniques).

Conclusions by the Committee. The outcomes in this study did not support independent authorship of messages using FC. The influence of the facilitator when the facilitator knew the correct response was strong. The finding that there was no evidence for independent authorship was consistent with previous studies. Of interest was that one student was withdrawn from the study when it was clear that the facilitator was the author of the messages, as the school staff considered that this news would be distressing for the family. When the final results were presented, FC was immediately stopped in one school, but continued in the other. Although many of the facilitators were trained and FC was a well supported practice in both schools, often the facilitators did not follow the ICI guidelines. It was not clear if this had any impact on the results. Further research testing the ICI guidelines would be needed to determine whether this indeed had any influence on the results in this study.

Overall Appraisal of Additional Level One Studies. The four additional studies identified at level one provided support for the conclusions reached in the systematic review of Probst (2005) and subsequent systematic reviews (Mostert, 2010; Wehrenfennig & Surian, 2008).

Level Two Evidence

Level two evidence provides quantitative descriptive data enabling analysis of the output generated when individuals are being facilitated using FC. By analyzing

the characteristics of the message output, without first blind testing to gauge any facilitator influence, many authors of these studies have made inferences about the abilities of individuals who use FC and indirectly asserted the validity of FC. Based on the committee's expertise in research design, such evidence was found inappropriate in informing the question of authorship, the focus of the committee's work. Numerous alternative explanations cannot be ruled out by using such descriptive designs. In fact, these studies were predicated on the assumption that the participants in their studies were the authors of the messages generated, without having engaged in due diligence by verifying that this was indeed the case. In light of the overwhelming level one evidence for facilitator control, this appears a tenuous assumption at best and an ethically unjustifiable one at worst. In-depth analyses of these studies was not warranted because it was evident that the authors of these studies failed to pre-establish authorship by their participants. Any future level two studies may have merit (not to inform authorship) if participants are first screened to ensure that they are the authors of the messages generated using blind or double-blind procedures, before data are collected to address questions other than authorship.

Level Three Evidence

This evidence provides descriptive qualitative data regarding the output generated by individuals using FC. The same conclusions apply as for level two evidence.

Level Four Evidence

As noted, level four evidence comprised reports that included perspectives of individuals from various stakeholder groups (e.g., former FC users, parents/family members of FC users, teachers, speech language therapists/pathologists) regarding FC. Many of these reports included assertions of positive changes in the lives of people using FC and their families; others included claims of negative impacts of FC on the lives of individuals using FC and their families. Because these anecdotal reports were essentially perspectives of individuals, they could not be accepted as scientific evidence (a) supporting a demonstration of authorship, or (b) refuting a demonstration of authorship. Therefore, for the purposes of this position statement and review, a more in-depth analyses of these perspectives was not warranted.

Conclusions

This paper provides an evidence-based review of the extant literature on the question of authorship in FC. Four levels of analysis were used in this review, although only literature that met level one criteria was deemed to provide scientific evidence of authorship of communicative messages. Three systematic reviews and four individual studies met level one criteria and

this literature provided robust evidence that FC is not a valid technique.

Author Note

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Notes

1. Bronwyn Hemsley served on the Committee as originally constituted. She excused herself after joining the ISAAC Executive Committee and becoming President Elect. Susan Balandin, who had originally been asked to serve as an outside reviewer, replaced Bronwyn on the Committee as of March 11, 2013. Bober, Allmuth resigned from the committee, effective March 9, 2014. In addition to the committee, a group of outside peer reviewers was constituted to serve as readers of draft statements and reports. The following individuals served in this capacity: Balandin, Susan (Deakin University, Australia), Bedrosian, Janice (Western Michigan University, USA), Shane, Howard (Boston Children's Hospital, USA), and Sigafoos, Jeff (Victoria University of Wellington, New Zealand).
2. This paper was published in a peer-reviewed journal, but because it is an editorial it was not considered to have been peer-reviewed and was therefore excluded.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References

Studies included in systematic reviews are marked with an asterisk (*). Following each citation of a study that is included in a review is a listing of the reviews in which it was included. The following

- denotations will be used to designate the reviews: F = Felce (1994); J = Jacobsen et al. (1995); M1 = Mostert (2001); M10 = Mostert (2010); P = Probst (2005); W = Wehrenfennig & Surian (2008). The four additional studies identified at level 1, which have been included in the present review, are marked with a plus (+).
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Supplementary material available online

Supplementary Appendix A, B and C.