
French Translation of MUSS and Analysis of its Relationship with a Clinical Measure of Speech Use in a Group of Children Using a Multichannel Cochlear Implant

Traduction française du MUSS et analyse de la correspondance entre cet outil et une évaluation clinique de l'utilisation de la parole chez un groupe d'enfants utilisant un implant cochléaire multi-canaux

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Key words: MUSS, speech use, daily environment, hearing impaired children, cochlear implant

Abstract

Changes in the daily use of speech in children using cochlear implants are rarely reported in the literature. Since the clinical assessment of this behaviour is complex, Robbins and Osberger (1991) developed a questionnaire approach [*Meaningful Use of Speech Scale* (MUSS)]. The first objective of this project was to translate the MUSS scale into French. Also, an analysis of its relationship with a clinical measure of speech use was carried out. The French version of MUSS was administered to parents of 15 implanted children. Video recordings of each child were also made in different situations of communication. The videotapes were viewed by two judges who had to count the number of words orally produced over all words communicated. The high correlation between the scores to the MUSS and the use of speech in the communication settings confirms that this scale is a valid tool to evaluate the daily use of speech in hearing impaired children.

Abrégé

Les changements dans l'utilisation quotidienne de la parole chez les enfants sourds ayant reçu un implant cochléaire sont peu documentés. Puisque la procédure clinique pour évaluer ce comportement est complexe, Robbins et Osberger (1991) ont développé une approche par questionnaire (Meaningful Use of Speech Scale; MUSS). Le premier objectif de ce projet était de traduire le MUSS en français. Une analyse de la correspondance entre cet outil et une évaluation clinique de l'utilisation de la parole devait aussi être réalisée. La version francophone du MUSS a ainsi été administrée aux parents de 15 enfants implantés. Des enregistrements vidéos des enfants dans différentes situations de communication ont également été réalisés. Ces vidéos ont ensuite été visionnées par deux juges qui devaient évaluer le nombre de mots parlés sur le nombre total de mots exprimés. La forte corrélation entre les scores au MUSS et l'utilisation de la parole dans les situations de communication confirme que cet outil est valide pour évaluer l'utilisation quotidienne de la parole chez les enfants sourds.

Changes in the daily use of speech in children using multichannel cochlear implants are rarely reported in the literature. Formal tests such as phonetic inventories, syllable imitation, or elicited sentences are somehow limited and don't provide many clues on the daily use of speech. This information, however, is very important in order to specify the impact of cochlear implants on spoken communication in everyday situations.

The clinical procedures required to collect data on the use of speech in everyday situations are complex. A natural communication setting must be used, or reproduced, and recorded on video. As such, this setting can only represent a part, or an approximation, of the use of speech in a daily environment. The video recording must then be analyzed by many judges following a specific and tedious protocol. These conditions are more specific to a research setting than to a clinical context.

In this regard, Robbins and Osberger (1991) developed the *Meaningful Use of Speech Scale* (MUSS) based on a parent interview, making this procedure easier to administer. This scale is designed to assess the children's use of speech in different natural contexts. It also creates a more formal setting for collecting this data from parents. In this context, the information given by the parents is more complete than the one obtained from an informal interview.

The MUSS is made of 10 probes which assess three components of spoken communication: "the child's volitional control of speech (probes 1, 2, 3), the child's use of speech alone in situations where this is appropriate (probes 4, 5, 6, 7) and the child's ability to modify his speech to increase comprehension of his message by a listener (probes 8, 9, 10)" (Robbins and Osberger, 1991, p.1). The scaling for each probe goes from zero to four, for a maximum performance of 40 points.

As most of the cochlear implant users in Quebec are French speaking, the first objective of this project was to translate the MUSS scale. Also, as no validation of this French version has been completed, an analysis of its relationship with a clinical measure of speech use was carried out.

Methods

The MUSS was first translated by a speech-language pathologist and revised by a professional translator. This experimental version was submitted to a panel of speech-language pathologists to confirm the agreement of the translated version with the original scale.

The MUSS was then administered to parents of 15 children with prelingual profound deafness aged from 3 to 13 years old. These children had been using a Nucleus MSP cochlear implant for three months to four years. Their communication mode was total communication, except for two children who migrated from an initial total communication mode to a mainly oral communication mode.

Video recordings of each child were also made in different situations of communication: conversation with the parent on familiar and unfamiliar topics, play activity, social exchanges with a hearing person, and conversation with an unfamiliar hearing person. The recordings were made at home or, when homes were not accessible, in the clinic. Some social exchanges were recorded at home with a neighbour or at school with someone familiar to the child but who did not use sign language. Other recordings were made in a restaurant. The MUSS was administered to the parents when the video sessions were completed.

A hundred utterances were extracted from the video recordings. The samples were chosen to represent seven communication settings: a) general conversation, b) commu-

nication on a known topic, c) communication on an unknown topic, d) behaviour to attract attention, e) repair of communication breaks, f) social exchanges, and g) interaction with an unknown person.

The edited videotapes were viewed by two judges (both speech-language pathologists) who had to count the number of words orally produced over all words produced, that is words communicated either orally and/or by gesture. A score corresponding to the percentage of this ratio was calculated.

Results

The mean scores and standard deviations for each probe from the MUSS are shown in Figure 1. Answers to probes 1 and 2 gave the highest scores, while answers to probes 8, 9, and 10 yielded the lowest scores. Table 1 shows inter-item correlation coefficients. A fairly high Cronbach's alpha

Figure 1. Mean scores and standard deviations for each probe from the MUSS scale.

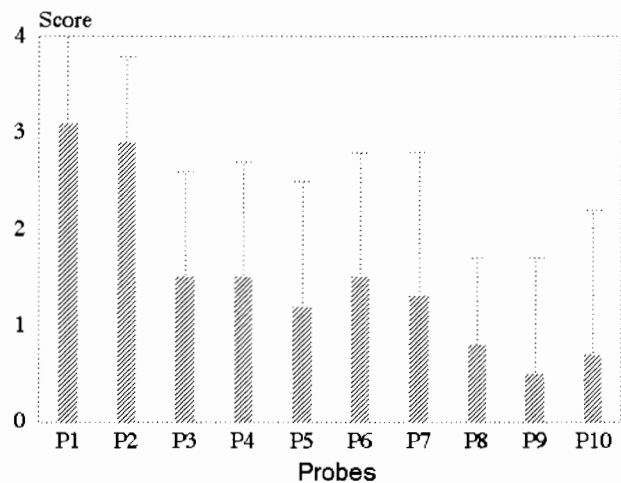


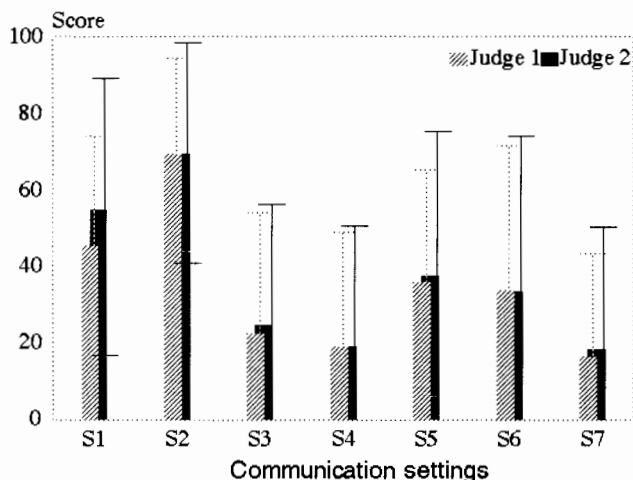
Table 1. Pearson product-moment correlations between scores to the ten probes from the MUSS scale.

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
P1	1.00									
P2	0.61	1.00								
P3	0.22	0.48	1.00							
P4	0.58	0.68	0.39	1.00						
P5	0.62	0.56	0.56	0.89	1.00					
P6	0.45	0.66	0.70	0.85	0.89	1.00				
P7	0.54	0.61	0.66	0.75	0.87	0.89	1.00			
P8	0.31	0.46	0.63	0.57	0.55	0.56	0.66	1.00		
P9	0.36	0.51	0.47	0.79	0.71	0.60	0.63	0.83	1.00	
P10	0.33	0.48	0.53	0.71	0.73	0.61	0.70	0.85	0.94	1.00

reliability coefficient (0.94) is observed for the 10-probe scale, indicating a strong relation between the items of the scale. Probe 3 is not involved in this relation since its elimination from the scale gives a similar coefficient (0.94). Furthermore, deletion of Probe 1 causes a slight increase from 0.94 to 0.95. From the correlation matrix of Table 1, we observe that these two probes are less related to the others.

The mean scores and standard deviations for each video setting are shown in Figure 2 for each judge. Use of speech appears more frequent in situations 1 and 2 than in other settings. Table 2 shows inter-situation correlation coefficients.

Figure 2. Mean scores and standard deviations for each video setting from both judges.



Cronbach's alpha reliability coefficients of 0.92 for both judges indicate an important correlation between the different everyday situations.

The mean scores given by each judge for all situations are 34.6 (S.D. 34.0) and 36.8 (S.D. 37.3) respectively. These means are not significantly different as determined by a paired *t*-test ($t=-1.54, p=0.13$).

A significant Pearson product-moment correlation of 0.78 ($p<0.01$) is observed between the scores to the MUSS scale and the two judges' averaged scores for the video sessions. The two children using mainly oral communication scored higher on both MUSS and video. This correlation increases to 0.80 ($p<0.001$) when Probes 1 and 3 are eliminated from the scale. No significant correlation is observed between the MUSS score and the children's ages or experience with a cochlear implant.

Discussion

The French translation of the MUSS scale is completed. This version contains highly correlated items, especially when Probes 1 and 3 are deleted from the original scale. These two probes are less related to the others. In fact, as Probe 1 assesses the strategies used to attract attention of a distant person, use of speech is positively biased. Probe 3 focuses on the quality of speech instead of quantity which is addressed by the other probes. The high reliability coefficient indicates that the edited scale is a very good estimator of all the possible items which could have been included in it.

Table 2. Pearson product-moment correlations between scores from the seven video settings for judge 1 (a) and for judge 2 (b).

a	S1	S2	S3	S4	S5	S6	S7
S1	1.00						
S2	0.15	1.00					
S3	0.60	0.54	1.00				
S4	0.59	0.36	0.92	1.00			
S5	0.72	0.57	0.79	0.63	1.00		
S6	0.53	0.69	0.60	0.55	0.81	1.00	
S7	0.61	0.55	0.82	0.83	0.59	0.54	1.00

b	S1	S2	S3	S4	S5	S6	S7
S1	1.00						
S2	0.44	1.00					
S3	0.73	0.54	1.00				
S4	0.53	0.42	0.85	1.00			
S5	0.44	0.54	0.65	0.72	1.00		
S6	0.67	0.71	0.69	0.63	0.66	1.00	
S7	0.56	0.59	0.79	0.84	0.52	0.66	1.00

The seven observed communication settings are also highly correlated. With a high Cronbach coefficient, these settings can be viewed as representative of any other everyday setting which could have been selected. Evaluation of children's use of speech in these settings by the two judges is comparable, so the averaged final score is a fair picture of children's daily use of speech.

The high correlation between the scores to the MUSS and the scores from the communication settings confirms that this scale (shown in Appendix with Probes 1 and 3 removed) is a valid tool to evaluate the daily use of speech in hearing impaired children. In the near future, we will focus on the reliability and specificity of the MUSS, as we expect to use it on a time scale in order to monitor changes in the use of speech of children using cochlear implants.

Author's Note / Note de l'auteur: The French version of the MUSS appears on page 16.

La version française du MUSS paraît à la page 16.

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Reference

Robbins, A.M., & Osberger, M.J. (1991, November). *Meaningful Use of Speech Scale (MUSS)*. Paper presented at the meeting of the American Speech-Language-Hearing Association, Atlanta, USA.

Erratum

L'article intitulé "L'incidence d'épuisement professionnel chez les orthophonistes du Canada" publié dans le numéro de septembre 1995 (vol. 19, no 3) comportait plusieurs erreurs.

Des données sur le Nouveau-Brunswick ont été omises dans le tableau 1, car les auteurs n'avaient pas reçu les réponses de cette province. Il aurait fallu le mentionner. Le total inscrit dans la colonne "très satisfait" aurait dû s'élever à 28 plutôt qu'à 2. Dans le tableau 7, le total de "NBO" (cas de non-épuisement professionnel) devrait être de 28 plutôt que de 38 sous la rubrique "assez efficace". Dans la section intitulée "Questions à réponse libre", à la page 185, le mot "communication" devrait être remplacé par "communautaires" dans l'appellation du ministère de la Santé et des services communautaires.

La ROA s'excuse de ces erreurs.