APPENDIX A

APPROVAL BY THE ETHICS COMMITTEE OF THE UNIVERSITY OF PRETORIA
4 June 2008

Dear Dr Swanepoel

Project: A novel auditory brainstem response technique for auditory assessment of children with Cerebral Palsy
Researcher: C van der Westhuizen
Supervisor: Dr DCD Swanepoel
Department: Communication Pathology
Reference number: 20055588

Thank you for your response to the Committee's letter of 7 May 2008.

I have pleasure in informing you that the Research Proposal and Ethics Committee formally approved the above study at an ad hoc meeting held on 3 June 2008. The approval is subject to the candidate abiding by the principles and parameters set out in her application and research proposal in the actual execution of the research.

The Committee requests you to convey this approval to Ms van der Westhuizen.

We wish you success with the project.

Sincerely

Prof. Brenda Louw
Chair: Research Proposal and Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: brenda.louw@up.ac.za

Research Proposal and Ethics Committee Members: Prof P Chinn, Dr NAH Gertler, Prof C Delport, Dr JEH Grobler, Prof KL Harris, Ms H Klopper, Prof E Kruger, Prof B Louw (Chair), Prof A Memie, Prof G Prinsloo, Mr C Puttergill, Prof H Stander, Prof E Taljaard, Dr J van Dyl, Prof C Watson, Mr FG Wolmarans
APPENDIX B

APPROVAL BY THE GAUTENG DEPARTMENT OF EDUCATION
<table>
<thead>
<tr>
<th>Date:</th>
<th>08 April 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Researcher:</td>
<td>Van Der Westhuizen Christine</td>
</tr>
<tr>
<td>Address of Researcher:</td>
<td>90 Ossewaalaaan Die Wilgers</td>
</tr>
<tr>
<td>Telephone Number:</td>
<td>0128074537/0825780482</td>
</tr>
<tr>
<td>Fax Number:</td>
<td>N/A</td>
</tr>
<tr>
<td>Number and type of schools:</td>
<td>1 LSEN School</td>
</tr>
<tr>
<td>Districts/HO:</td>
<td>Tshwane West</td>
</tr>
</tbody>
</table>

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the schools and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

Permission has been granted to proceed with the above study subject to the conditions listed below being met, and may be withdrawn should any of these conditions be flouted:

1. The District/Head Office Senior Manager concerned must be presented with a copy of this letter that would indicate that the said researcher has been granted permission from the Gauteng Department of Education to conduct the research study.
2. The District/Head Office Senior Manager must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.
3. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher has been granted permission from the Gauteng Department of Education to conduct the research study.

Office of the Chief Director: Information and Knowledge Management
Room 401, 111 Commissioner Street, Johannesburg, 2000 P.O. Box 7710, Johannesburg, 2000
Tel: (011) 355-9609 Fax: (011) 355-0734
4. A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Heads Office Senior Managers of the schools and districts/offices concerned, respectively.

5. The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.

6. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher(s) may carry out their research at the sites that they manage.

7. Research may only commence from the second week of February and must be completed before the beginning of the last quarter of the academic year.

8. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.

9. It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.

10. The researcher is responsible for supplying and utilising his/her own research resources, such as stationary, photocopiers, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.

11. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.

12. On completion of the study the researcher must supply the Director: Knowledge Management & Research with one Hard Cover bound and one Ring bound copy of the final, approved research report. The researcher would also provide the said manager with an electronic copy of the research abstract/summary and/or annotation.

13. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.

14. Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

[Signature]

CHIEF DIRECTOR: INFORMATION & KNOWLEDGE MANAGEMENT

The contents of this letter has been read and understood by the researcher.

Signature of Researcher: ____________________________

Date: 14/04/05

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APPENDIX C

CONSENT LETTER TO THE PRINCIPAL OF THE PRETORIA SCHOOL FOR CHILDREN WITH CEREBRAL PALSY
17 March 2008

Dear Principal,

RE: AUDITORY ASSESSMENT OF CHILDREN WITH CEREBRAL PALSY WITH A NEW OBJECTIVE TEST

I am a postgraduate, M. Communication Pathology, student at the Department of Communication Pathology, University of Pretoria. My research project entails the evaluation of a new objective auditory assessment technique. The project will be approved by the Ethics Committee of the University of Pretoria. I would like to request your consideration to allow me to conduct my study at your school.

The project will focus on hearing assessment of children with Cerebral Palsy, who are a difficult to test population traditionally, using a new advanced technique. Information obtained will not only be helpful to gain more insight into the hearing status of a child with Cerebral Palsy, but could also be a valuable contribution towards early identification of a hearing loss in children with Cerebral Palsy, in whom the prevalence of hearing loss is higher than the general population.

This new instrument offers important advances and this study will aim to compare results with this technique with those of conventional behavioral and objective audiometric techniques. The test battery will consist of four different procedures (Pure tone audiometry, Immittance, Distortion Product Oto-acoustic Emissions, and Auditory Brainstem Response testing). The new technique is an advance Auditory Brainstem Response test. All the procedures are non-invasive. One procedure (pure tone audiometry) will require responses if the child is able to provide it. The other procedures will involve a probe in the ear canal and 3 electrodes on the scalp with no required responses from the child. The procedures will be conducted in the position which is the most comfortable for the child and will take approximately 1-2 hours. A minimum of 20 children will be needed for this project. All the procedures as well as what is expected of the child will be explained to the parents in an informed consent letter.

Informed consent letters will be given to parents of children who are in the age group 12 – 18 years and who are Afrikaans or English – speaking. It would be appreciated if the speech therapists could identify children whom they are concerned about their hearing abilities and also distribute the informed consent letters to the parents of the identified children. As discussed with the speech therapist, this project will be conducted within scheduled school hours and within the soundproof room of the speech therapy department. The speech therapists will be consulted in order to allocate a time for the assessment of each child in accordance of the schedule of the speech therapists as well as the needs of the child. If a second assessment is needed, the parents will be contacted and a suitable time for an appointment will be scheduled.

The hearing assessments will be free of charge. A copy of the child’s hearing status will be given to parents as well as the school. The parents will have the right to withdraw the child from this study at any
time without any negative consequences. All information will be treated as confidential and the child’s name will not be used since each participant will be assigned an identifying code which will be used for all data processing. Results will be published in the final thesis report. The data will be stored for a minimum of 10 years according to University of Pretoria Regulations.

As information regarding the diagnosis of Cerebral Palsy, as well as the type and the severity of this condition, are imperative for this project, I would like to request and would appreciate access to the medical records of the children whom would be involved in this study.

For any further information, you can contact me at 082 5780 482.

Sincerely,

Christine van der Westhuizen
M. Communication Pathology Student

Dr De Wet Swanepoel
Lecturer/Project Supervisor

Professor Brenda Louw
HEAD: Department of Communication Pathology
APPENDIX D

INFORMED CONSENT LETTERS (PARENTS)
6 June 2008

Dear Parents,

AUDITORY ASSESSMENT OF CHILDREN WITH CEREBRAL PALSY WITH A NEW OBJECTIVE TEST

I am a postgraduate masters degree student at the Department of Communication Pathology, University of Pretoria. My research project entails the evaluation of a novel objective auditory assessment technique. If you are interested to have your child participate in this study, the study details are as follows.

This project will specifically focus on hearing assessments in children with Cerebral Palsy. Information gathered could be helpful to develop test procedures and protocols that will be most appropriate to assess the hearing status of children with Cerebral Palsy. A new advanced technique for assessing hearing objectively in children without requiring them to provide a behavioral response will be compared to a conventional system (Auditory Brainstem Response) without the advanced features. For comprehensiveness a full diagnostic audiological test battery will also be conducted.

The procedures will be conducted in the position which is the most comfortable for your child and none of the procedures is invasive or will result in any discomfort. If a test procedure cannot be performed or completed by your child it will not preclude further testing on other procedures. The following table explains the procedures which will be followed for each test and what cooperation will be required of your child.

<table>
<thead>
<tr>
<th>Test type</th>
<th>Procedures</th>
<th>What is expected of your child?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure tone audiometry</td>
<td>Headphones will be placed on your child’s ears and sound at a comfortable loudness level will be presented.</td>
<td>Your child will need to indicate every time he heard a noise in whichever way is the most convenient for him/her.</td>
</tr>
<tr>
<td>Acoustic Reflexes</td>
<td>A small probe will be placed in the ear canal and sounds at a comfortable loudness level will be presented</td>
<td>Your child does not need to do anything – just sit quiet and relax.</td>
</tr>
<tr>
<td>Oto-acoustic Emissions</td>
<td>A small probe will be placed in the ear canal and soft sounds will be presented</td>
<td>Your child does not need to do anything – just sit quiet and relax.</td>
</tr>
</tbody>
</table>

University of Pretoria  
Pretoria, 0002  
South Africa

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Conventional Auditory Brainstem Response technique

An electrode/sticker will be placed on your child's forehead and behind his/her ears. A small probe will then be placed in the ear canal and soft sound will be presented again.

Your child does not need to do anything – just sit quiet and relax.

Novel Auditory Brainstem Response technique

An electrode/sticker will be placed on your child's forehead and behind his/her ears. A small probe will then be placed in the ear canal and soft sound will be presented again.

Your child does not need to do anything – just sit quiet and relax.

All assessments will be free of charge. The entire test-battery should not exceed 2 hours and will be conducted within school hours. The speech therapist of the school as well as the teacher will be consulted in order to find the most suitable time for the assessment for your child. The assessments will be conducted within a soundproof room in the speech therapy department of The Pretoria School. If a longer assessment time period is necessary a second assessment date will be scheduled with the speech therapist and the teacher. A copy of your child's hearing status will be provided to you. You and your child have the right to withdraw him/her from this study at any time without any negative consequences. All information will be treated as confidential and your child's name will not be used since each participant will be assigned an identifying code which will be used for all data processing. Results may be published in the final thesis report but no identifying information will be used at any time. Coded data will be stored for a minimum of 10 years according to University of Pretoria Regulations.

Information regarding the type and the severity of your child's individual condition are essential for this project and will be obtained from the school.

Should you consent to have your child participate in the project, please complete the informed consent receipt provided and hand it to your child's teacher before/on the 30th of June 2008.

For any further information, you can contact me at 082 5780 482.

Sincerely,

Ms Christine van der Westhuizen
M. Communication Pathology Student

Dr De Wet Swanepeel
Lecturer / Project Supervisor

Professor Brenda Louw
HEAD: Department of Communication Pathology
INFORMED CONSENT:
AUDITORY ASSESSMENT OF CHILDREN WITH CEREBRAL PALSY WITH A NEW OBJECTIVE TEST

Please complete the following:

I __________________________ hereby acknowledge and agree that my child may participate in the study outlined above and consent to the data to be used for research purposes.

Signature __________________________ Date __________________________

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Fax/Telefax: 00 27 12 420-3017

herende@up.ac.za
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OUDITIEWE ASSESSERING VAN KINDERS MET SEREbraLe GESTREMDEH DEUR MIDDEL VAN 'n NUWE OBJEKTIEWE TOETS

Ek is tens 'n nagraadse M.Kommunikasiopathologie student aan die Departement Kommunikasiopathologie, Universiteit van Pretoria. My navorsingsprojek behels die evaluerings van 'n nuwe objektiewe ouditiewe assesseringsprocedure. Indien u belangstel dat u kind deelneem word die bevorderde van die studie as volg bespreek.

Die projek fokus spesifiek op die gehooraasessering van kinders met Serebraal Gestremheid. Inligting wat ingesamel word, sal kan bydra tot die ontwikkeling van toetsprocedures en protokolle wat toepaslik sal wees vir die assessering van die gehoorstatus van kinders met Serebraal Gestremheid. 'n Nuwe, gevorderde toets na kinders se gehoor objektief te asseer, sonder enige willekeurige reaksies van die kind, sal vergelyk word met 'n konvensionele stelsel (Ouditiewe Breinstem Response) sonder die gevorderde eierskappe. 'n Diagnostiese audiologiese toetsbatterie sal ter wille van omvattingheid ook uitgevoer word.

Die procedures sal uitgevoer word in die posisie wat vir u kind gemaklik is. Nie een van die procedures is indringend nie, of sal enige ongemaklikheid veroorsaak nie. Indien 'n toetsprocedure nie uitgevoer kan word nie, sal dit nie enige negatiewe invloed hê op die ander procedures nie. Die onderaanstaande tabel verduidelik die verskillende procedures wat gevolg sal word, soos wat van u kind verwag word.

<table>
<thead>
<tr>
<th>Type Toets</th>
<th>Prosedures</th>
<th>Wat word van u kind verwag?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suiwertoon-oudiometrie</td>
<td>Oorfone sal op u kind se ore geplaas word en klinka sal by 'n gemaklike luidheidsvlak aangespik word.</td>
<td>Daar word van u kind verwag om aan te du, op enige manier wat vir hom/haar maklik is, elke keer wanneer hy/sy 'n klink hoor.</td>
</tr>
<tr>
<td>Akoestiese Refleksie</td>
<td>'n Klein propie word in die oorkanaal geplaas en klinka sal by 'n gemaklike luidheidsvlak aangespik word.</td>
<td>Geen reaksies word nou van u kind verwag nie - u kind kan nou net stil sit en ontspan.</td>
</tr>
<tr>
<td>Oto-akoestiese Emissies</td>
<td>'n Klein propie word in die oorkanaal geplaas en sagte klinka sal aangespik word.</td>
<td>Geen reaksies word van u kind verwag nie - u kind kan nou net stil sit en ontspan.</td>
</tr>
</tbody>
</table>

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Konsensuslike Oudtibewie Breinestam Response Tegniek

'n Elektrode/plankker sal op u kind se voorkop en agter sy/haar oor geplaas word. 'n Klein proppie sal dan in die oorkansal geplaas word en sagte klanke sal weer aangebied word.

Geen reaksies word van u kind verwag nie - u kind kan weer net stil sit en ontspan

Nuwe Oudtibewie Breinestam Response Tegniek

'n Elektrode/plankker sal op u kind se voorkop en agter sy/haar oor geplaas word. 'n Klein proppie sal dan in die oorkansal geplaas word en sagte klanke sal weer aangebied word.

Geen reaksies word van u kind verwag nie - u kind kan weer net stil sit en ontspan

Alle assessorings sal gratis wees. Die hele toetsbattery sal nie langer as 2 ure duur nie en sal binne skoolure plaasvind. Die spraaktherapeet van die skool asook die onderwyseres sal gekonsulteer word ten einde 'n gesikte tyd vir u kind te reël. Die assessorings sal uitgeoefen word in 'n klinkkamerteker van die spraaktherapie departement van die Pretoria Skool vir kinders met Serebrale Gestremtheid. Indien 'n langer assessoringstyd benodig word, sal 'n kwetsers afgesien met die spraaktherapeet asook die onderwyseres gekonsulteer word. 'n Kopie van u kind se gehoorstatus sal aan u verskaf word. U, asook u kind, het die reg om te ontker van die studie op enige tydperk, sonder enige negatiewe gevolge. Alle inligting is konfidentsiëel. U kind se naam sal nie tydens die studie gebruik word nie aangestien wie deelnemer 'n kode sal hy wat gebruik sal word vir die procesering van die data. Afhanklik van die resultate gepubliseer mag word in die finale toetsverslag, sal geen identifiserende inligting op enige tydplek gebruik word nie. Alle inligting sal gestoor word vir 'n minimum van 10 jaar na aanleiding van die Universiteit van Pretoria se Regulasies.

Inligting aangaande die lop Serebrale Gestremtheid, asook die graad waarin u kind dit ondervind is essensieel vir die projek en sal van die skool verkry word.

Indien u toestemming gee dat u kind mag deelname in die projek, voltooi asseblief die onderstaande toestemmingstrokie en besorg dit terug aan u kind se klasonderwyseras voorop 3 Junie 2008.

Indien enige verdere inligting, kontak my per gesig by 082 5780 482.

Byvoorbeeld dankie,

Me Christine van der Westhuizen
M.Kommunikasiepathologie Student

Dr De Wet Swarte
Lektor / Projek Supervisor

Professor Brenda Louw
HOOF: Departement Kommunikasiepathologie

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INGELIGTE TOESTEMMING:

ODITIEWE ASSESSERING VAN KINDERS MET SEREBRAAL GESTREMDHEID DEUR MIDDEL VAN 'N NUWE OBJEKTIEWE TOETS

Voitooi asseblief die volgende:

Ek____________________ gee hiermee toestemming dat my kind aan die bogeneemde studie kan deelneem en dat die inligting gebruik kan word vir navorsingsdoeleindes.

__________________________
Handtekening

__________________________
Datum
APPENDIX E

VERBAL ASSENT (SUBJECTS)
Verbal Assent Form

☺ I want to see if these instruments are working. Would you please help me?

☺ You do not have to participate.

☺ You can stop any time during the test.

Test procedures:

☐ Pure tone audiometry
I want you to listen carefully to noises through the headphones. When you hear a noise through the headphone, even a very soft noise, tell me (in whichever way is the easiest for you)

☐ Immittance and OAE measurements
You are going to hear noises through a little probe now. You do not have to do anything right now – just sit quiet and relax.

☐ ABR recordings
I am going to put an electrode/sticker on your head and behind your ears. Then you are going to hear noises again. You do not have to do anything – just sit quiet, relax and watch the silent movie.
Verbale Toestemmingsvorm

☺ Ek wil weet of hierdie toerusting werk. Sal jy my asseblief help?

☺ Jy hoef nie deel te neem nie

☺ Jy kan my stop gedurende die toets as jy nie verder wil deelneem nie

Prosedures:

 Suiwertoonoudiometrie
  Jy gaan 'n fluitjie deur die oorfone hoor. Wanneer jy die fluitjie hoor, al is dit baie sag, moet jy vir my laat weet op enige manier wat vir jou die maklikste is.

 Immittansie en OAE- metings
  Jy gaan klik/piep- geluide deur die proppie hoor. Nou kan jy net stil sit, en ontspan.

 OBR-metings
  Ek gaan nou die elektrode/plakker op jou voorkop, en agter jou ore sit. Dan gaan jy weer klik/piep-geluide hoor. Jy kan weer net stil sit, en ontspan.
APPENDIX F

RATING SCALE FOR SUBJECTS’ AWARENESS DURING ABR RECORDINGS
Rating scale to monitor the state of arousal during both ABR measurements

Encircle the state of arousal:

1- Sleeping, no movement
2- Lying down, eyes open, limb movements, no vocalization
3- Lying down, eyes open, limb movements, no more than quiet vocalization
4- Sitting up, limb movements, more than quiet vocalization
5- Lying down, eyes open, sustained vocalization
6- Sitting up, limb movements, sustained vocalization
7- Lying down, eyes open, limb movements, crying
8- Ambulatory without vocalization
9- Ambulatory with vocalization
10- Ambulatory with crying
APPENDIX G

INFORMED CONSENT LETTER (NORMATIVE SAMPLE)
Dear Participant,

**Project title: AUDITORY ASSESSMENT OF CHILDREN WITH CEREBRAL PALSY WITH A NEW OBJECTIVE TEST**

**Participation request: A NORMATIVE SAMPLE**

I am a postgraduate masters degree student at the Department of Communication Pathology, University of Pretoria. My research project entails the auditory assessment of children with Cerebral Palsy with a novel objective auditory assessment technique. Before children with Cerebral Palsy will be tested, normative values need to be obtained from a group of participants with normal hearing. These normative values will be used to set reference values. Your participation in this regard will be appreciated. If you are interested to take part in this project, the details are as follows.

Three assessments will be conducted: behavioural pure tone audiometry, a conventional Auditory Brainstem Response as well as an Auditory Brainstem Response with alternative filter and averaging techniques. The assessments are non-invasive and will be conducted in a soundproof room at the Department of Communication Pathology at the University of Pretoria. All assessments will be free of charge and should not exceed 2 hours. A copy of your hearing assessment will be provided to you. You have the right to withdraw from this study at any time without any negative consequences. All information will be treated as confidential and your name will not be used since each participant will be assigned an identifying code which will be used for all data processing. Results may be published in the final thesis report but no identifying information will be used at any time. Coded data will be stored for a minimum of 10 years according to University of Pretoria Regulations.

Should you consent to participate in this project, please complete the informed consent receipt provided. We will proceed to contact you for an assessment date and time which is convenient for you.

For any further information, you can contact me at 082 5780 482.

Sincerely,

Ms Christine van der Westhuizen
M. Communication Pathology Student

Dr De Wet Swanepeel
Lecturer / Project Supervisor

Professor Brenda Louw
HEAD: Department of Communication Pathology