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Event: Pauline Nott and Andrew Kendrick.

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>> Donna Sorkin: Good afternoon, everyone. This is Donna Sorkin from Cochlear Americas HOPE Program and we're very, very pleased to welcome you to today to Early Language Development and First Words in Young Children with speakers Pauline Nott and Andrew Kendrick. And as always, we are providing this HOPE on-line as a way to support our entire community of Cochlear implant recipients and the professionals who work with them. We have many, many courses for individuals of all ages. This one is really focused on the needs of parents of young children and as a tool that professionals can use to let parents know about those so we're really happy to have with us from Australia -- what is that saying -- live from Australia. She really is up very early in the morning to join us. Pauline Nott is a research fellow at the Hearing Cooperative Research Centre and she's the Manager for Research Assessment and Education at Taralye which is the Oral Language Center for Deaf children. This is in Melbourne, Australia. And she's been in the field of early intervention for a long, long time. I think she's -- must have started when she was about 15 years old because she looks very young. And she has been most recently working in the research area of the Centre and has gained her doctorate recently and this product that Pauline is going to share with us today was really part of her studies and she's been very involved in her own country in helping Deaf children develop language as well as being a consultant and lecturer in Vietnam for the period in the 1990s and she has wonderful broad knowledge of the field and we're so pleased to be able to learn more about her work today. Also joining us at the end is Andrew Kendrick in Australia. Andrew has had a very interesting set of international experiences and has been with us at Cochlear for, oh, he'll tell you but maybe the past four or

5 years but prior to that he worked in -- as a therapist in other areas of the world and as part of his experience with Cochlear was very involved with developing auditory verbal therapy in China. So very exciting experiences to share with you from both of our speakers. So with that, I'm going to turn this over to Pauline and I'll talk to you again at the end

>> Melissa Freund: Pauline, you can go ahead and unmute your microphone. Click that button. No. Go ahead and click that button again. Make sure there is no line going through it. No, Pauline. Go to the microphone button and go to the disconnect feature. When you see the drop down and go ahead and reconnect it. Let's just restart the microphone for you. Pauline, go ahead and go to the drop down under the microphone and go to adjust my microphone volume and make sure that you can turn the volume up. You should hear yourself in your headset to see how loud it sounds. Yep. Go ahead and do that. Okay. We're just going to give her one quick second to get her microphone reset. Give me just two minutes. We are going across the pond so we have to make sure we can get everybody heard. Okay. All right. Pauline, why don't you go ahead and try again when you're ready. I think we're starting to hear you. We're trying to get her back on. Pauline, if you can click on that button. Increase the volume. Let's try that. Okay, let's see. I don't know if Andrew can start. Let me check on that. Okay if you can hear me, Pauline, go ahead and see if you can hear yourself. Go ahead and click that adjust microphone volume. It is under the mic button there. A little menu option. Increase your microphone volume. Let's see if that makes any difference. Make sure you can hear it as well.

>> Caption Provider: On stand by.

>> Andrew Kendrick: Okay. I just want to check that everyone can hear me. This is Andrew Kendrick on the other end of the mic. Melissa, can you confirm that I can be heard?

>> Melissa Freund: Yes. You sound perfect. Thanks, Andrew.

>> Andrew Kendrick: Okay, great. While Pauline is trying to sort out her technical works, I shall just give you some general information on Di-EL and how it is used and how we use it. If Pauline is not on at the end of that I'll talk about the China experience, how we adapted, translated and are now using Di-EL as one of our diagnostic tools. Perhaps very quickly about myself, I am an auditory verbal therapist and I have

been working primarily with pediatrics but also with teenagers and adults. Been lucky enough to work in a couple of different countries. It has been a great experience. I now work for Cochlear heading up rehabilitation. That's -- and the benefit of that is to look at, I guess, strategically where we want to be placed in terms of rehabilitation. Make sure that we have got lots of great new resources and products for you guys for parents and professionals out there that we come up with every year. So it is a really fun job as you can imagine. I'm actually sitting in a hotel in Tokyo at the moment and hoping not to have any aftershocks which we had yesterday. 12 months -- almost 12 months from the big earthquake that was on the 11th of March. Anyway, what is Di-EL? Di-EL is an absolutely fantastic program and I'm sure Pauline will come on-line really soon but it is Pauline's baby and she developed it. Cochlear bought the worldwide license to Di-EL to have as one of our resources in our portfolio a couple of years ago. Di-EL is recording of the child's first 100 expressive words. This is a really great program. It works in tandem with the parent and professional working together because as you would be aware, typically language develops not in our therapy session where we see the family for one hour a week or one our a night but language develops in the home or in the environment with the parents. This is a really great tool to use with the parent to help them record emerging language of the child. As I said, we're looking at the first 100 expressive words. So what Di-EL did not record, we don't record imitation or babble; however, we do talk to the parents about what imitation is and what babble is so they have a really clear understand coming they would start recording on Di-EL. So we are recording first words. We are recording frozen phrases and by frozen phrases I mean a sentence or a phrase that is one unit where the child only perhaps or part of it but not all words. For example, shut the door. The child may say uh-oh but they may have in their vocab just know door and not know shut or the but they use it as one sentence and phrase. We call that a frozen phrase. Thirdly and finally we're recording true words combination. That is true to word combinations and above. Let's just move on here. Owe what do we use Di-EL? We use it as a measure of tracking the child's progress. So we want to make sure that the

>> Melissa Freund: Andrew, I think we hear Pauline here.

>> Andrew Kendrick: Wonderful. Pauline, can you hear us?

>> Pauline Nott: Oh my goodness. It was looking dim.

>> Andrew Kendrick: Pauline, I have given a really brief introduction of Di-EL. I have just given a brief review of what we're looking at in Di-EL and not imitation and babble but we're looking at single words, frozen and true word combinations and we're on slide 2

>> Pauline Nott: Thank you very much, Andrew. It is wonderful. Let's hope that we can get moving now. Andrew spoke about the basics of the Di-EL and for me it was looking that emanated from my practice with young children and children with hearing loss and gathering some information about how we might understand the progress. How we can actually inform families what is happening with children. Really just wasn't an awful lot around to give us that information at the time. We need tools to help us know if little tots are progressing at the rate that they should be in the way that they should be. For us to know how we guide families and how we -- how we actually implement our therapy practices, whether we need to change things. And if we do, at what point in time? And some of those questions were things that I wanted to gain more information about. Obviously, it is really difficult to assess language ability in young children for lots and lots of reasons. For those who are therapists and the standardized tests that we have around are just not appropriate for that age group. Children can't cooperate or even attend to the tasks that are being required and often don't -- clearly don't have the language yet to know what you're saying to them and in terms of instructions. Some of the ways recently that people have looked at trying to overcome this problem with standardized tests, what do we do with young children who are under two years of age have been to look at the mechanism of parent report. And that is good that has taken a little bit of time for practitioners to take onboard. There's been a reluctance for a variety of reasons but fortunately now we're having a whole range of tools in the market that using a parent report either exclusively or part of it in their assessment tools. Some of the tools that you'll see available and one that is very, very commonly used in the field is the McArthur Bates Communicative Development Inventories. Words and gestures and words and sentences and inventories some of the parents who are listening may have actually completed. And that is one big list of words that you take off at that point in time in a child's development.

There is also a tool that is quite commonly used in Australia. There is the Rossetti Infant Toddler Language Scale and that is using the report by interview log with some observation and sometimes the interaction with the child also and then of course there is the diary technique. Now, diary studies or diary use of diaries is actually not new in the field of language development. In fact, almost all or a good part of what we know about the early language development in normally hearing children has come from some diary studies and they emerged way back in 1939 where a similar piece of work was done by a researcher known as Leopold who actually recorded the words of his daughter, Hildegaard. And subsequent to that we have had other similar pieces of work by Drummy in 1987 that looked at her own daughter's development of Hebrew. Her daughter Karen and Eve Clark and more recently in 1999 who looked at the development of her son Damon and they were researchers who were probably very talented linguists and looking at language in young children and looked at their own children. We have also had diary studies used in small groups and one of the most I suppose well-known of those is work by Katherine Nelson in 1973 where she looked at children in that very early period and got parents to report on the word development of their children at that time. There is very extensive information about the use of diaries and diary techniques in the normally hearing children. This is something that is investigated and in very recent times probably a really reappropriate level so that I think that we can now be very confident that tools that are using anecdotal information recording or parent information, in fact, quite valid and reliable measures. We have seen a series of studies now that have found a significant correlation between what parents report about their child and then have that child -- how that child performs on a particular test like say, for example, the Peabody Picture Test or Bailey Kates in particular. But, of course, we can't just suppose ad-hoc ask parents to report in a particular way or on information. We need some guidelines about how they go about this that will help to maximize the validity of that information that they're receiving. In particular there is research that is being conducted by Di-EL in 1989 that gave us quite a few features that we needed to consider when we're looking at parent report. For example it is much more accurate if we're looking at getting parents to report on actually what is happening now rather

than having to recall information from the past. Also, it's more easy for parents to provide information about skills just emerging. They're just beginning to be used by the child and used with enough frequency that they're noticed but not too much frequency so we tend to ignore them. Another piece of information that will help in terms of providing more validate and accurate data is if we're asking families to give us not just an example of a word but, in fact, to describe some of the detail around when that word occurred, what was the situation that it occurred in? If we're asking parents for that then generally speaking we'll be able to be more confident that the information being provided is, in fact, accurate. Another feature is one that might seem quite obvious in that, in fact, we want to be observing the parent or the parent recording that behavior more than once. They need to see it more than once and record that for us to be more confident and clearly getting some training to families about what they're looking for is important. I think I heard Andrew speaking about the fact that we don't record imitations and we don't record babble. It is actually not that easy in the very early period of language for us to know, oh, was that a word or did they copy that? It wasn't that clear. Do I count it or not? So those sorts of things need to be clearly established and that can be done in affective training strategies. And in the Di-EL I incorporated this in relation to the use of video to say show parents, this is what an example of what you might hear from your child and whether or not we would include it in the diary and why, if we would, why and if we wouldn't why? Of course some work that is being done by Resnick in the early '90s gave us a clue that if parents have a vested interest in knowing the information they're more likely to be tuned into it and motivated about completing the task and clearly parents of a child with a hearing loss are very keen to watch out for and to see that early language development. It is a period of time that they can present some anxiety, in fact, for family when is a child hasn't started to produce words and also a period of great excitement when they do. So our parents in this particular area have a great deal of investment in the early language development of their children so they're prime candidates to be excellent recorders for us. Also we've had quite a bit of information that gives us a clue to the amount or the number of words that parents are going to be able to handle when providing parent report data and up to 100 words

seems to be a bit of a limit in which we can expect good accident review toy that point but that things deteriorate a little bit after that point and is probably not due to parents so much that just a volume of language coming from the child and it becomes incredibly difficult to be accurate at that stage for anybody in fact. And also there's another component in there where combining the use of a diary with another type of information gathering such as just observation by somebody else so that you have got a second person in the equation who is involved in the data collection but not in necessarily the recording of words but just providing some support through observation of the child and again we incorporated that into the diary. So I was quite festive in the areas I wanted to include in the diary so we could exercise the accuracy of the information that parents would be able to give us that was very mindful that there is a family that has often maybe not just one child. They are busy families and have busy lives these days. It needed to be a tool that unlike a researcher who is going to be able to devote lots of times, time to the task, parents have lots of demands on their time and so we wanted to balance up the detail we needed with the time commitment families were able to realistically give to the task.

>> Melissa Freund: Pauline, I'm going to jump in real quick. Do me a quick favor and lower your microphone volume a little bit by going to the menu underneath the microphone button. Just lower that down just for a little bit. It sounds like you're on top of the mic.

>> Pauline Nott: Is that better now, Melissa?

>> Melissa Freund: Thank you so much.

>> Pauline Nott: Okay. Why is parent report especially for assessing first words in young children? The researcher has given us lots of information about why this is a particularly great time for us to use parent report. One of the most obvious things is that the early words children produce are typically in the high context and usually in specific family routines and with very familiar care such as Mom or Dad. And we all avail in that experience where parents might be talking to us. Oh, so-and-so is coming and then when the family comes into a clinical situation or a therapy situation, it is not good that we're observing. There is no surprise about that. Children produce things that are familiar everyday context first. If we want to know the first occurrence of those behaviors then we're probably going to get to have to use the

parent to give that to us. Because we won't say it in the clinic for some time later. We're also well and truly aware that parents are very good at recognizing their own children's attempts at words and in fact better than teachers or therapists for that reason. Children often have very idiosyncratic ways of saying things and parents are very attuned to that and so they are going to pick up some of those words when a teacher or therapist might not in fact. We also know that the sort of words that children come out with in the very beginning is very much related to the ones that their carrier uses most frequently. So the things that the Mom uses in her own language with the child highly frequently out of one that we often hear coming back from children in the first instance. And, of course, there is that feature where there are other words that children don't use particularly frequently. There is some that come out quite often. Words like no and more and there is also lots of words where say in fact they may be particularly relevant only to the home situation where a particular item might be such as a family pet. So the words that are less frequently used are not likely to be seen in a clinical situation either. So for lots of reasons parents say the most are the most ideal people to be able to observe the very first occurrences of children's words. What is particularly valuable about the parent's diary like the Di-EL, it is very useful because it provides literally on-line data about how the child's developing with their words day-by-day as each occurrence is produced by the child. We're recording those sorts of things. So it allows us to observe longitudinally lots of data points of the child's development, to be able to see pattern in that develop. Perhaps periods of fast acquisition or slower acquisition or transition between single word development and when two-word development starts to appear you have got to have continuous data recording to be able to see these patterns of development and this is good that I was particularly interested in, in my Ph.D. work. It allows us when you have got that continuous data coming in to be very affective in both planning and providing opportunities for the child to promote those skills in early language. We have got so much more data at our fingertips to do this. We're not just saying the child is skilled at a six month point or 12 month point. We're getting it progressively throughout that time. It can also for me being a speech pathologist it was always important that assessment tools or monitoring tools provide

information for families. Not just things that teachers and therapists use but informative for families. And in particular, for me it was important to allow families to be very tuned to their child. A lot from research in recent years, particularly and it seems to be something that is just continuing to appear where responsiveness of parents in terms of their child is a key factor in how they can promote that language learning. The more tuned they are to what their child is doing the more affective they're going to be in responding. The Di-EL actually helps with all of that. And of course it is a very motivating tool. It is wonderful for parents to see those early words and to actually have the opportunity to document it to. Come and report to it somebody. It is a very exciting time and one that they can share in terms of how we use the Di-EL. Now, in developing the Di-EL, lots of things came into play and part of the Di-EL technique can be -- has been, I think Donna spoke to you how it is now available on the website in Australia. There are a few tools we have used and to have it downloadable from the web at Cochlear is wonderful. The product that I'm actually speaking to that you'll see some screens on the computer screens for -- in the PowerPoint relates to more of a day-by-day product. The information is exactly the same. I'll move forward and talk to you a little bit about how we use the Di-EL. On the Cochlear website you'll find five different components to the Di-EL. A section called about the Di-EL. One called getting started. One relating to the Di-EL database. One relating to parent feedback. And one relating to sources -- resources rather. In the midst of being developed I'll show you some components of that database throughout the next couple of slides and hopefully we can within the next 12 months the database itself that incorporates software for helping you to keep the diary as a therapist will become available. As I, in my research collected all the information with the diary by hand and it is good that you can do having the software program. Di-EL makes it a little easier but it is not an imperative. When we look at the website in terms of getting started, you'll see there is a range of four different items that give you a clue to this. There is a Di-EL guide and this is particularly a very brief type of PDF that is available on the website. It provides clear instructions for the role of the parent, the role of the therapist in the diary because it is a collaborative process. It is not something where the parent does it on their own and comes

back to you at some point in time with a completed diary of 100 words. It is something that I would encourage you to do with your families if you're a therapist or teacher and really revisit it. The revisiting is an important part of the validity of the tool and I'll speak to that as we go along. Of course there is a tutorial that is involved and remember we spoke about the importance of training. Training families about what to look for and what things might sound like. What to include in the diary. There's a strategy for looking at how or the forms that parents might record on these options for parents really like to use those forms that others might use other particular ways. Some like to use their own diary. The imperative here is that a family or the parent is using it, a strategy that is very easy and manageable for them within their own daily routine. And of course there is a guide to how you might use the actual database, whether you're downloading it as you will eventually from the Cochlear website. There's information about how to go about that. Here is a sample for you of -- in fact what the Di-EL guide looks like. It is a three page document in which it outlines a little green button there talking about the parent role and essentially that relates to recording words and then it also talks specifically about the teacher role because remember I said it was a collaborative process. And you'll find secondly to do this we need to have very clear definitions about what is a word, what's not a word? How do we define an imitation? It might sound like an obvious thing but there is a lot of thought that has gone into actually documenting very clear information for families about what we consider to be a word and providing lots of examples for those. You will -- when you download this document you'll see for example examples of what a single word is and things that are included like the onomatopoeic words like vroom, compound words such as goodbye. We even include the software a word or two if that happens to be produced by a child. The one thing we don't include as a word is words that are produced when the child might be sipping. So we're quite explicit about what gets included and what doesn't get included. Of course we have to be quite clear on some of the combinations that children might produce, also. When children are producing single words, they don't always come out of as one word. Occasionally you get a little phrase. Something like all gone or my turn. Those particular interventions are common for children to produce in their first 100 words and, so, it was

important for me to be able to give a clear definition to family bill of sale what that was. What was a phrase? And in fact what do we call that in our instance here we're using the word frozen phrase. Also in the research I was especially interested in when did children start to combine words? When could we say to a family, well, look it might not be too long before word combinations start to appear. May be able to provide that sort of support or guidances to a family I needed to know much more about how it happened and so I to do provide in the definitions also a bit of an example of when do those real word combinations and? The ones where the child is actually making that up themselves, those two words. Like doggy gone. Or Mommy gone as opposed to a little phrase they might have learned all by themselves like all gone. And the third page of the diary actually gives a literal example to the family about what information is recorded for them? So it is quite clear what's required of both the teacher and the parent, what are our definitions, we're all on the same page and this is an example of what you need to write down. So for the parent to record the information, it is important one person be nominated for this in the family. That is an important feature of the validity of the tool. We need typically the one who is involved with the child most and in most of the situations the child is interacting throughout the day. We need to have the family watch the tutorial, the parent before starting the diary. We need to have a discussion with the family. How would you like to record the words? Do you want to do it on the Di-EL form or perhaps your own diary? I had one family who actually liked to do it on the computer themselves. So it doesn't really matter. As long as it is readily accessible from the family's point of view and they could fit it into their daily routine. It does need to have that sort of feature. In terms of what you need to record? They need to enter in what they observed. What the parent directly observed. Not from what someone else might have told them. Not what the child caregiver might have said. I heard this today. It has to be something that the parents saw and heard themselves. Only spontaneous words which means none of the imitations. We're asking family to get into the strategy of try to put it down as soon as they could hear it. It doesn't always happen on the day but as soon as they could actually get to it. We were asking for words and any combinations up to 100 where we could identify the 100 word

and we stop and we didn't have any problems with that. We were looking at the type of information we wanted families to record. I was trying to be careful to get enough information for the research but not too much so it was overloading families. So just the word, the date it occurred, a situational information and might only be a couple of words. A line. And the date only of the second time that word was used. The teacher or therapist role was to introduce the diary to the family and I typically used the time of correlate when the child started to imitate words. Usually when children start to imitate it is not too long before spontaneous words and. It gives you a clue, a bit of a marker when you might hear spontaneous words. You don't want to introduce the diary too early to a child. You want to try to time it when the actual behaviors are going to start to appear. I would -- we need to look at the tutorial and I would do it together as a therapist with the parent. Talk about providing the Di-EL forms or whatever are the strategy. Then once you get going with this, I would be reviewing it with the family on a regular basis. Now, the technique is typically where you would have your contact with the family, whether it is physical contact in terms of a therapy context or a home visit or even contact on-line or on the phone. Regular contact is important. Every couple of weeks. And the teacher would collect that information that the parent provides. Put that into a database of some sort. Whether it is done on a computer or it is done manually. Provide an update and parent may have one or two or three or four or five words for you to add into the database or the least you add those to your list the information about the word, the date, the situation, then you also do the categorizing of the words in terms of whether they are counted, whether they are coded. I'll talk a little bit about that a bit later for you. Give you a little update back to the parent. So they know what words they have got already. I don't have to go back to their list. It is there for them. Oh, I have got that already. I don't need to record that or oops I actually need a second date for that one. I have only heard it once. That is very helpful to provide those updates. You might be able to provide some information to fit parents. If you hear a sound or a word appearing and the parent has not clued into it, you might suggest, oh, I think something might be appearing. Have a listen for something because it is the parent that needs to observe and recording and eventually when you get to your

100 words, which can be quite quick on some occasions or a bit longer for other children, you can print and bind the diary. There is a lovely little picture on the front. It is sort of a personalized product for the family. Something I can keep as a keepsake, I think. I really like to reflect back on that. When we look at the tutorial, this is available on the website. You'll see the tutorial has, in fact, several items or several examples of a variety of the things that we're looking for. For some examples also are those that we're not looking for. So we're not looking for babble. We're not looking for imitation. But we do need to clue families into what those are. In the instance of a single word, we actually have five different examples there for the parent to get a clue, a video sample of what you in fact will see. So for the words in the single words you have an example of shhh. An example of the word there. The word go. The word milk. And the word yucky. And the example was specifically chosen to give parents an idea these are the things we use in a single word category. Some families don't think that the word shh every time you are saying to, you know, pat the baby to be quiet is actually called a word or may look for the word milk and not tune in much to the words like here or there, that sort of thing. So sort of strategically chosen and you'll see these examples of several what we call frozen phrases and several through-word combinations. When the -- in the tutorial what you see for each example is there is a short video excerpt where you'll hear exactly what the instance is. There will be a brief explanation there for you and the family to look at. And then there will be an example of how that information would be recorded in the diary and for each of those single words clearly they're going to be put in the diary. For each of these imitation examples there are no entries in the diary because we don't record those. So you'll be able to work through each of those levels in the tutorial. I'm suggesting that you probably don't get too fussed about the word combinations in the beginning. You can always revisit the tutorial at any stage. So if you want to clue in a family to some emerging behaviors. Not overloading the parent I think is quite important. The database. In the actual database that is provided through the day-to-day and at the moment and will be very much replicated in the website download eventually, we've got three different types of screens. Child search where we can set up a child's file and where we can locate

their existing file. You may be working with several children so you'll have several children's files in that section there and you'll be able to search for each child. And when you want to bring up their diary as a teacher or therapist, there is a screen relating to child details where you put all the information in about the child in terms of the family, the address, just identifying information. In fact a photo which we typically use to put on the front cover and one that will help you to identify the child's file on your screen. And then where you can view all of the diary information, where you can print it and in fact e-mail it to parents if that is an affective way for you to provide your update to the family. And then there is a third screen where you actually do all the entering of your word information. So there is some technique that help with the actual identifying of frozen phrases and word combinations that we'll talk a bit about. But firstly, this is an example of the child search screen. So here we have two children's files. We've got some basic information about the child. That's the child's photo. If I click on that particular bar then the child's diary will come up. If we go to the next screen, it actually provides that child's details about the family information and the date of birth there. We can edit that if we want to. And then it provides us with some information down here where we can look at the actual diary. We can look at background information. Might want to include some notes about say, for example, the child might have a middle ear problem or difficulty with a hearing aid or an implant. And this is where you can download the photo for the child. And this is the screen that you'll use mostly once you have set up your child's file is where you actually enter information for the child in terms of the words. So here we have where you are writing the word that the parent reported to you. You are write -- the date of the occurrence of that first word. You might have a second occurrence for that word yet and then you write in the scripting, descriptive information for the -- when that word was produced. And in the diary technique, there is a simple strategy of once you get words coming quite frequently, you may, in fact, hear the second occurrence of a word on the same day or literally in the same activity. You'll hear that word. Say it a second time and you can just simply put same as the first. So there is options to try and expedite the diary recording for us. You'll notice, also, when we're doing the word entry that we're quite trying to provide you with

information here that gives you the definition information of what we call a single word. So that's fairly simple information about the database be. What I thought we might do now is actually give you a few excerpts of what is a single word. What's a frozen phrase. And what's a true word combination from that actual tutorial. These will be actual examples that you'll find on the website download in the tutorial and I thought we would run through a couple so you would get the idea of what is involved. So if we go to the ideas about what a single word is. The definition here is quite plain. Any word used in an appropriate situation consistently, that is in the same way. It doesn't have to be said clearly. Most children's first words are approximations but it does need to be said that way each time you hear it from the child. Some examples that are provided, there are words that might be included of those -- of that early period and clearly what we can include and not include in words that are used for singing. So once a family has that particular definition that is provided -- oh, now, I think, Melissa, what we might do, just looking through the slides probably have -- we need to -- yes. We'll have the excerpt now and we'll go back to that slide that you saw of computer screens that will show us how we're going to put that information in.

[Video]

>> Pauline Nott: We might show that again, Melissa, because they're very short excerpts.

[Video]

>> There is any more?

>> There.

>> Where?

>> Pauline Nott: Thank you, Melissa. You can see that the excerpt is short and that is because I wanted to have it quite obvious what we're listening for. So we had to cut out information around that can be looked at two, three, four times. Sometimes those are missed by families and so it is really quite easy to see the excerpt and then the tutorial will come and show us, actually, this is how we enter that information. We find in the diary. This is how it would look in the database. The word there is written. We have the date that that word appeared. We have a descriptor when he was pointing to a car. Now, in this instance we also have down an example of what it is going to look like down at the bottom of the screen when we give the diary back to the family and it is

printed out. So this is what the family will get. Now, there are a couple of things here to note and one is that there is an asterisks here. We're using that notation to remind family that we have only got one occurrence of this word. We need a second example in terms of a date. We need to hear this word again before it will be counted in the word or the counting of the words. So of course remember we're going to count words up to 100. But only words that occur a second time are accounted. In this instance we don't have an account that is noted in the database. Notice next to number there is no number yet because we don't have a second occurrence of that word. The database actually has already coded automatically for you that this is called a single word as opposed to a frozen phrase or a word combination. So if we move on to an example of a frozen phrase. We'll hear a number of these. In fact every child who produces words up to 100 single words along wait they will have some of these little examples of a frozen phrase in the mix of those words. We've defined this as a phrase of two or more words used in an appropriate situation and said in the same way. The important feature here is that at least one of the words in that phrase has not been recorded previously as a single word. And that's relating to the fact that it's likely that the child has learned this as a single unit rather than independently figured out how to put those words together in a two word combination. The fact that they have not said the word -- the words or both of them previously as single words in the list that we already have clues us into that. I'll talk a little bit more about that later. The child has learned the phrases of a single unit in this instance when we've only got it in the example all gone. The child might have said gone beforehand but not likely two had said all. So in that instance if that happens we call that a frozen phrase. And the frozen phrases included in that count of words so really in that single word tally all the way to 100 words we've got both single words and frozen phrases included. So now Melissa, if you could show us that next excerpt.

[Video]

>> No more.

>> No more.

>> Pauline Nott: And one more time.

[Video]

>> No more.

>> No more.

>> Pauline Nott: Thanks, Melissa. So if we move to the next screen, we can see here that the word phrase no more is included there for the child and in this instance it is actually counted in a word combination because I have down -- if you look down at the bottom here or up here in terms of the dates we've got a second date of occurrence and just like for single words like the word more, we need a second occurrence. We also need a second occurrence for the frozen phrase. So in the diary here you can see down at the bottom we've got the word more already said by the child at an earlier date than the word no more. We categorize the no more as a frozen phrase and in the diary it gets a little FP against the number there because only the word more is used previously by the child. The child has not said the word no previously also and that is how we know this gets coded a frozen phrase rather than a word combination. You can either do the computer program that will be available will actually do that automatically for you. It will search back into the diary to make sure if one of those words or both of those words is being used previously by the child and then automatically code either a frozen phrase, FP or two word combination with a TW sitting next to it for you or you can do that manually if you're doing it on a manual level as I did in the research project. So I'm moving on to what we call a true word combination. Our definition for that is any word combination when two or more of the words are used in an appropriate situation. So there is two words combined sometimes come up with a three word theme but what we're interested in here is that at least two of those words in that utterance have been recorded as single words or frozen phrase beforehand. Manipulates there are a couple of exceptions to where something might be added to the diary and occasionally that will be an example of like a bowl. If a child says a bowl or a car, the word a is not likely to be used on its own by the child. So when we are hearing it in a combination like that, it initially would be coded a frozen phrase. But after I have heard a second example of that combination, I would then add it to the diary. I wouldn't worry too much about that one -- that information is an exceptional circumstance. By and large that is quite uncommon. So you'll be able to sort of look in detail in that information provided in the database. Of course children will start to actually learn some little pivot

combinations. Some of the early combinations they do in the early stages so you might hear good like Mommy gone. Daddy gone. All gone. So once you have three examples of a combination like that where you have got that one pivot word gone and different three examples of combinations don't write any more because you'll be writing forever and a day. We don't want that to happen -- in terms of the research for me that gave me a key indicator after three examples that the child had well and truly gotten that combination. So if we have a look now, Melissa, at the example of a true word combination.

[Video]

>> Where gone?

>> What are you looking for?

>> Pauline Nott: And again.

>> Where gone?

>> What are you looking for?

>> Pauline Nott: Okay. Thanks, Melissa. That was a lovely example from Lilly with an implant where she was saying the words, where gone. In fact, it probably said like we're done with a d. Again I tried to use real examples to show and one where the clarity wasn't that good and quite typical and that is what you expect at that very early period. So in the instance here, the thing that is important to note down at the bottom is we've got the word gone and the word where already produced in the diary by the child as a single word. So when we come to before the words combination we're gone it automatically is coded as a true word combination by the database or you will know from having looked back when you're doing it manually. I have got these words in the child's diary. This will be coded TWC and at this stage we're only interested in the single word or frozen phrases in the counts. We're not going to include any word combinations here in the single word count. And of course you can see the database done that associated with that, too. And -- there is some examples for you how the actual database and the way in which we code and count information in the diary. So I hope that gives you some feel for the information that we're looking for and that it is a little easier when you have a facility to use the automatic functions of a database because it will do it automatically for you. And if we move on to looking at the validation of the actual diary the diary technique is something that I developed as part of trying to gain information about how

quickly or slowly children are developing words. When amongst that first 100 words do we see combinations appearing. Real word combinations that the child has created themselves. Those questions dictated the type of diary that I eventually produced and I have just gone through with you; however, to be able to use it to actually look at what children were producing I had to be reasonably competent that it was a valid technique. I couldn't just make it up and not -- and devise the strategy and not check that the data I was getting was valid. So I went about validating the Di-EL before I then could use it in looking at how children were producing words, how quickly, the types of words, and the word combinations that they used. In terms of validity, I was interested in, could parents actually do the Di-EL technique? Was it something that was manageable for them in their daily routines? Was it something that provided information that other tests at the moment or techniques like the CDI was providing could it provide information that was not available from those techniques? In terms of validity, I was specifically looking at the level of agreement in the words that were reported by parents on the diary. This is those that parents reported on something like the McArthur Bates CDI. I used a statistics, a Cohen's kappa to do that. A second strategy of validity was to look at the correlation between scores on the diary, scores on the McArthur Bates and scores on the infant toddler came and see if those cores were related using Pearson's product moment correlation co-efficient. In terms of efficacy, let's move on and see. Actually I'll just check and show you the methods specifically. I gave a battery of tests over a period of a couple of years with the children. The Di-EL was part of that. The Reynell was given and the RITLS was given and MAIS and I did the McArthur Bates at 6 months intervals and once we reached the 100 words in the diary. So a few different tests there. Along six monthly intervals while we were using the diary on a day-to-day basis. In terms of initially there were about 12 children that we looked at -- I think about eight actually that we looked at in this particular phase of the research, the validity. This information presented here just really shows you that the RITLS information, the diary information and Di-EL information we're getting very good ability to actually get the data on the children from all of those tests that are parent report based but when we use a standardized test like the Reynell, developmental language scale, the

pre and plant stage, 6 months, 12 months, even 18 months post we're still not able to get all of the children to complete the tests to get the data. So we're not getting information during that early period that we need to be able to help us guide families. When we're using the standard tests so the parent report tools are providing us with information. The diary could be easily done by families. They reported that they found it a very positive thing and we're encouraged by doing it. They found themselves being quite focused on what their child was doing at this stage. Tuning into it quite well. And as a result more responsive to those early word attempts. You'll be able to find on the actual Cochlear website some excerpts from parents about -- that will talk about their feedback comments about using the diary and you'll find that under a heading called parent feedback. Some video excerpt that I'll talk to you about parents' responsibilities and how they manage the diary, what they felt about it, a range of different examples there. And all of them were positive and so I think that might be quite helpful. We may go to looking at the correlations that were found at 12 months post device use. If we look at the nine children here down this side, these are the scores of words, the number of words at 12 months post device use. Families reported in the diary. This is the words that we had at the CDI when they did that at that point and this is the RITSL these are the levels that the children received at the 12 month period post CID and when we did a correlation of these, we found a high correlation between the number of words in the diary or the number of words on the CDI was related to the number of words on the RITLS so that is fairly obvious. So when you see low scores, low numbers of words reported by the families, correlates with the low skills on the RITLS and conversely high numbers of words reported by the family on the diary and on the CDI correlate with high levels of skill on the RITLS and toddler language scale and that was very positive in terms of the validity of the technique, also. When we look at the actual words parents wrote down in the diary and compared those that they collected over a long period of time day-by-day, we compared that with when we set the parent down on a one off occasion at the time when they got to the 100 words in the diary and kingdom them to take off on the CDI, what words they also heard from their child, we looked at what words were common between those two. What words were both in the diary and ticked off on the CDI?

And we looked at a statistic called the kappa value to help us see the percentage of agreement. This value corrects the chance so it is a more preferable technique than using just percentages which you can see down here. Good to excellent levels of agreement considered those above .6. So we got good to excellent levels of agreement between what families reported on both of those recording or reporting strategies one day-by-day. The other at one single point in time. So that again gave us confidence that the data that the diary was giving us was actually valid. When we looked at -- actually I might move on to this slide 1. It actually points to another question that was the diary providing us with information not provided by other tests at the time because you might ask, well, it is that last piece of information showed us the diary and the CID had common words that were both coming up with common words. Well in fact if that is the case but the difference between the diary and the CID is that the diary will provide us with several on-line points of information and literally you can get day-by-day beta from the child and that is shown in these little case studies here where you have lots of little points here along the bottom indicating a monthly total of words that the child is using. So we're getting information on a monthly basis here. We in fact are getting it on a daily basis from the family that we're just adding it up each month here to see -- show us what we're getting. If we test the child on the CDI or the MAIS; or, in fact, the Rossetti, any of those tools we're only getting two data points for each of these cases. So what we're providing in a diary technique is that much more informative on-line information, more date appear points, more data and we can see being able to get that online date ate provides us with a lot more information, a lot earlier in this very early stage of development. If we go back to the previous slide, one of the things that did come up in terms of the comparison with the Di-EL and the McArthur Bates came was actually there were some differences. Yes, there were a lot of similarities in the types of words, the actual words produced but there were some differences and largely that was around the fact that there were several items that occurred in the parent diary that were not listed on the CID scales. As you know there are hundreds of words that are listed on the words and gestures, 396 words and on the early scale and several times it became apparent that parents couldn't find the option to be able to take off for particular

words. And I call these no option words. We had them in the diary. We could not tick them off on the CID. The types of words that came up in this category were often people names. Pet names. Toy names. Particularly things like TV characters. Number names. Occasionally that might have been symptomatic of the age of the children in the promise that I was looking at. Some of the sound associations listed on the front of the CID. There were several others that I couldn't find a list for. You'll also see a list there of the words poo, come, ta, here, are, ready set go, good girl. Those were words that were produced by half the children in that validity study yet none of them were able to be ticked off on the CID. So really common use of those words but not able to be used or credited at least on the CID. They also -- one of the things I found was often the validity would say come up with more than one word for the same concept and, in particular, for example, a word like bye, a child may have said the word ta-da which may be Australianism or see you. You may have two or three examples of that same concept. But on the CID there is really only one way that you can tick off a word. So you'll probably get an under-estimation of the number of words the child is producing. Half of the words, half of the children in the study this validity study did use multiple reference for the same idea. And of course one of the most obvious differences in the diary was that the use of frozen phrases. Many or all of the children that produced words in the diary produced frozen phrases also. The percentage of those frozen phrases that occurred in that first 100 words varied between nine and 17% so there were many of those in the first frozen words. On the CID at the present there are only two examples of frozen phrases in particular want to and all gone. So it was an area of development that is not being shown on the CID. And that is not Tuesday the CID is not a wonderful tool. It is. But it is just that in the particular work that I was interested in I needed to have an exact -- as close as I could get representation of what were the actual words children were producing. And the individual differences in between those and I needed to have the frozen phrases included in that because I was interested in the conference of real word combinations. It is really a matter of what are you wanting that information for that word information to -- to what type of collecting you would like to do and so both have their value. Just what you want to use them for. So moving on here we're

saying the message really that here is just that as early as 50 words we're seeing some percentages of no option words in the child's diary so right from the beginning children are coming up with words that they can't create on the CID. And that was evident. That seemed to increase the more words they got that was more obvious. So, yes, the tool was proved to be affective and a useful tool for looking at children early language development. It gave me longitudinal data that I needed to look at lexical rates and emergence of word combinations. It was representative and probably more representative of the words children were producing than other things and it actually was a positive tool for parents to use. A quick review of the literature. I'll just pass on to now and then I'll finish up. You can actually say this literature analysis in two articles that are published in detail and so follow up there if you're interested. I was looking at a range of things. I was looking at the difference between a group of children who were early and late to their device fitting. And also at hearing and children hearing and hearing loss children. I was specifically interested in the rate of acquisition of words, the type of words children were producing and word combinations appeared and we used the diary to gain this information. A click slide to show you. Some of the data that was available on lexical rate. What we're looking at here are mean cores. Now, I will tell you just briefly that when I looked at the two groups of Deaf children where there was an early diagnosis group and early fitting versus a later group, the results indicated not much difference in the lexical criteria I was looking at. In fact no significant difference. So I collated those children together in one Deaf group and compared those to the hearing group. The more detail about that will be provided in the journal articles for you to follow up with. If we look at the slide it provides you with a table and a pictorial presentation of that table. Of the children's the right -- how many days it actually took for the child to obtain 50 words from the day the first word appeared. It had nothing to do with age. It was about how long from the first time from the first word did it take to get to 50 words? How long did it take to get from 50 to 100? And then just totaling that up how long did it, it take for the child to acquire first the first 100 words when we look at it from the time of the first and the time of the date of the last 100 words and we've got the hearing children along the top and the Deaf children along the

bottom. And we're looking here sometimes it is a little difficult. These are actual the number of days because I could do that looking at the diary gives you day-by-day data. If we're looking here we get a very clear indication. It took the hearing children about 7 months from the time of the first word to get to 50 words. On average. The Deaf children it took about 8.9 months, nearly 9 months. If we skipped to the second space, 50 words it took only 1.7 months. The second 50 words acquired quite quickly and in relation to the second 50 for the Deaf children it was around 3.6 months compared to 1.7. It was quicker than the first 50 but slower than the hearing children. And so in total the hearing children took a mean of 8.7 months to acquire the first 100 words. The Deaf children took a mean of 12.6 months so the hearing group took significantly less time statistically to acquire all three of those lexical targets. If we move to the next slide. It is a little deceptive to say that the early children and the late children there was no difference. In fact there was no difference when we counted it from the date of the first word. But of course the children fitted with their device earlier. Did acquire those targets at an earlier age and that is obvious. This slide then shows us the hearing children. If we look at the age the chronological age at which the first word was acquired. When the first 100 words was acquired and when the real word combinations were emerging. They are requiring much earlier in terms of the number of days than both of the Deaf groups; however, clearly the children fitted earlier. Did acquire those targets at an earlier age. But the time it took them to achieve the 100 words and to achieve word combinations from the date of the first one was the same. So it is not to say that early diagnosis and fitting of a device is not good. In fact it is. We know that. Just to show you that clearly I'm looking at the time it takes to acquire these from the date of the first word. The slide you saw two slides ago gave you the mean scores. But what is really important I found in my research was that individual variation is a very high feature of early language development and that was shown also in the McArthur Bates research, that early period, you can see enormous ability in children. All that can be seen within normal limits and that variability can be at its greatest at this very early period. That is sort of a little bit difficult for us because it makes it hard for us to know is it a slow child slow in terms of we need to do good about it or is it

slow just within the normal range? However, here you'll see some lexical curves which gives us a bit more information, a bit more qualitative information so month by month the number of words that these children had acquired from the beginning of time from the first word to the 100th word from the top. All of those finish at the top because the children got to their 100th word. The features about this show us that yep there is a lot of individual variation in the rate of development. The steeper the curves, the more fast the child is acquiring words. There are a few features here for all but one of the children. It was evident that once past the first 10 words every subsequent month showed an increase in words. And I think the little that -- there is an exception is around about here where we have a pull. We didn't have an increase from month-to-month. That is quite I think diagnostic of that child. In fact there seems to be a device problem at that time when we investigated going back so the fact that month by month once you have got 10 words you should be seeing increments in word acquisition with children and we saw that in the hearing children and 23 out of 24 Deaf children was an important feature and that there was a pattern of development where slower acquisition and faster acquisition in that second 50 words that we're saying but it was steeper. It was faster for the hearing children. If we have a look at the lexical content for the children, just a brief descriptor here. I categorized the children's vocabularies of 100 words into four groups. Nouns, predicates, grammaticals and paralexicals and you'll see these patterns in a journal article but clearly we know what nouns are. Looking at proper nouns, onomatopoeias, verbs and adjectives, grammaticals adverbs, pronouns, prepositions, pyrolexicals involved things like social words like hello, goodbye, yes and no words. All of the frozen phrases and some of those words that express emotion like uh-oh, hurrah, oops, wow. That sort of thing. And when I categorize those into the groups for the children, I had a second person do some analysis to make sure that we had good reliability between the coders and that was achieved. What we were there looking at, all right, is the 50 and 100 word Lexicons for the hearing children. The hearing children are the first two bars. The Deaf children are the second two bars. We found that by and large an overall pattern that was similar obviously nouns are used by both groups and predominant and usually being represented on average more

than 50% of the Lexicon of the child for both the 50 and 100 words over half of the words are nouns and that was an important characteristic to see the similarity between the groups however there were some differences and those were statistic. Statistically significant. So the proportion of nouns produced by the hearing group was more than the Deaf group. And the proportion of predicates was significantly less. If we move to the next slide if we have a look at that noun category that was made up of proper nouns, common nouns and onomatopoeic, we find again all three categories are represented for the hearing and the Deaf but there was a statistical difference between the proportion of common nouns and onomatopoeia. Proper nouns were similar. So the hearing group used statistically more common nouns but less onomatopoeia. When we look at the predicates -- no. I think -- let's have a look down here. We're looking at the grammaticals. We find a different statistical analysis here. That was largely undertaken because we really didn't have equal distribution across all of those categories. Some of them were really used in fact so we were required to use a different analysis and the way in which we did this was to look at the number of participants who used particular categories and what we found here was that the number of participants who used adverbs only verses lots of different word types and we found that the hearing group used more word types than did the Deaf group. And also that pronouns and I think it was prepositions were used proportionately more by the hearing group. So lots of data in those things that you can follow up with. Word combinations we probably need to move on here also. Quite quickly. The message with word combinations was an important one. The time period, the number of days it took to acquire -- to require single words to require the first word combinations was less for the hearing children. I looked at it in terms of the number of days it took from the first word and also the number of words in the vocabulary. So how many words did we need in single words before we started to see word combinations appearing? And importantly we found that it didn't make a difference between the hearing or Deaf groups. A number of words in the Lexicon was very similar. Sixty-one versus kind was not statistically significant so around about 60 and 70 words is when the word combination started to appear in both groups of children. But the time from the period of -- from the first word to when the word

combinations and was early after the hearing group than the Deaf group. That was an important result that we found. So in summary, children with hearing loss were acquiring words more slowly around about three to four months slower than the children with normal hearing. Second words, second 50 words acquired also more fast in the hearing group and some content differences between the groups in terms of the types of words and lastly that the hearing group worked faster in their acquisition of word combinations in time but the same number of words was acquired or needed in the Lexicon for both groups. Similarities are between the differences. Very similar patterns in terms of rate. A slow start and an acceleration. Overall nouns are very common and followed by paralexicals and grammaticals in the smallest of both groups. Word combinations seem to emerge after 50 words and often before 100 words for both groups but variability was a feature amongst all of these parameters. With the Di-EL technique I'm suggesting have a go really. See how it goes with you learn as you go. You don't feel you need to learn everything at the start because children acquire things quite slowly and you can learn as you go with that. Reinforce parents as you go along. Reinforce the technique as you go along with parents and begin with the tutorial seeing mostly on those early word single word sort of things rather than the word combinations. Andrew, I believe it is your turn.

>> Donna Sorkin: Hi, this is Donna Sorkin. We're going to just skip over the Chinese experience because we are over time. Andrew is really encouraging you to correspond with him directly if you want to know more about how he adapted this program for his work in China and it is quite interesting. So we do have some upcoming sessions. I want to encourage you those of you who are on to go ahead and type any questions that you have for Pauline and Andrew now and just remind you we have some early intervention workshops coming up. You can find those in the slides. And we have given you Pauline and Andrew's e-mails so you can follow up with questions and as always please let me know if you have any issues or ideas and to get a certificate of participation send us your feedback form. So let's see, in terms of questions we've got one here asking about the comparison between normally hearing children and children with profound hearing loss and the research that Pauline shared with you really was right to that point so I don't think that we need to

spend any more time on that. I'm trying to see what else is there. I don't see any more questions. Correct me if I'm wrong, Anna, am I missing something? I think that was the only question that I saw. Okay. I think in that case we'll say goodbye. We are over time by about 10 minutes. Huge thank you to Pauline for getting up so early to share her work and her research with us and thanks to Andrew for arranging all of this and just a reminder to everybody that the product is available on the website at Cochlear in Australia. We gave you the link at the beginning of this talk so you can go back and take a look at that and as always thank you so much for joining us at HOPE Online.

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