

## 2. METHOD

A review of the literature on the topic of preferred personality attributes and skills indicates that a certain type of person, with a certain thinking style preference or a specific type of mental preference, will consider communication pathology as a profession. The research question that will be answered is therefore: "What is the thinking style preference of the communication pathologist?"

### 2.1 Research aims

**The main aim of this study** is to describe the thinking style preference of a group of communication pathologists (undergraduate students and practising graduates) using the Herrmann Brain Dominance Instrument. In order to realise this primary aim, the following **sub-aims** were formulated:

- To determine the thinking style preference of the subjects in the study using the Herrmann Brain Dominance Instrument and to establish possible patterns of thinking style preferences pertaining to the three groups that participated in the study.
- To determine if there were any differences in the patterns of brain dominance of the speech-language pathologist versus the audiologist, versus both professions.
- To determine learning and teaching strategies relevant to the thinking style preferences of the subjects.

These sub-aims were included in order to ascertain applicable deductions relevant to the study. The necessity for a descriptive, exploratory study into the thinking style preferences of the communication pathologist was therefore indicated.

## 2.2 Research design

Erwee (1996) differentiates between three types of research designs. These include exploratory, descriptive and causal studies. Exploratory studies are designed to obtain sufficient information about a specified problem in order to facilitate the generation of hypotheses. Erwee (1996) claims that this type of study has utility by virtue of its ability to prevent preconceived notions from excluding potentially useful results. Descriptive studies, in contrast, are described as those with research designs involving knowledge of relevant variables in the research question. Causal studies are those designed either to confirm or disprove hypothesised relationships or to estimate the parameters and strengths of known relationships between variables (Erwee 1996).

The present study may be classified as a descriptive, exploratory study. Certain desired attributes and skills of the communication pathologist, identified by previous research, have been used to compile the hypothetical profile of the communication pathologist. There is also a need for an exploratory study, since the primary aim of this study is to determine the thinking style preference of the communication pathologist using the Herrmann Brain Dominance Instrument.

The independent variable in this study is the different groups that participated in the study, namely: a group of first-year undergraduate communication pathology students, a group of final-year undergraduate communication pathology students and a group of qualified professionals. These groups are considered the independent variable since the researcher was able to control and manipulate them at will (Leedy 1997). The dependent variable (Leedy 1997) is the results of the Herrmann Brain Dominance Instrument which will be measured as a result of the influence of the independent variable. Control variables in the research were the three different groups that participated in the study, the distinction made between speech-language pathologists and audiologists and the geographical area from which the subjects were chosen. By including these control variables, the results of

the Herrmann Brain Dominance Instrument could be cross-referenced to measure reliability and accountability.

All the subjects in these three groups that participate in the study will therefore receive a covering letter explaining the aim of the research project, a biographical questionnaire and the survey (the Herrmann Brain Dominance Instrument). The subjects will be asked to complete the questionnaires in their own time.

## 2.3 Subjects

Three groups of subjects were used in this study, first-year undergraduate students in communication pathology, final-year undergraduate students in communication pathology and a group of practising communication pathologists. These three groups were included since the researcher wanted to describe a possible programme of change from the novice first-year communication pathology student, to nearly competent professionals, to practising professionals.

In the section that follows, the subject selection criteria and procedures will be discussed separately in order to facilitate clarity of presentation of the data. A description of the subjects selected to participate in the study will thereafter be presented, in order to provide a complete overview of the population sample utilised in the study.

### 2.3.1 Subject selection criteria

Potential candidates were selected on the basis of adherence to specified criteria. These criteria include:

□ *Selection to the course: B. Communication Pathology:*

*This criterion was relevant to groups 1 and 2.*

This criterion was included to ensure that the participants in the study fulfilled the requirements proposed for admittance to the course, B. Communication Pathology.

- *Registration at the Health Professions Council of South Africa:*

*This criterion was relevant to group 3 of the subjects.*

Registration at the Health Professions Council of South Africa implies that the subject graduated as a communication pathologist and can be considered a competent professional.

### 2.3.2 Subject selection procedure

A convenience, non-probability sample was used during the selection procedure of subjects (Czaja & Blair 1996). According to Bailey (1987) this kind of sampling is less complicated, more cost effective and advantageous since anybody who conforms to the criteria can be used. A weakness of this type of sampling is that the survey results may be biased (Graziano & Raulin 1993). In the case of this study, only subjects from one geographical area, one tertiary academic institution and one cultural context were used. The subject selection procedure will be discussed separately for the three groups used in the study.

- Group 1 (first-year undergraduate students in communication pathology):

The first-year class at the Department of Communication Pathology at the University of Pretoria completed the Herrmann Brain Dominance Instrument as a part of the Academic Development Program. This information was gathered at the beginning of the year 2000.

- Group 2 (final-year undergraduate students in communication pathology):

The class of final-year students in communication pathology at the Department of Communication Pathology at the University of Pretoria were selected to participate in the study since information was needed regarding the development of brain dominance during the completion of the course, B. Communication Pathology. The researcher asked permission from the Head of the Department of Communication Pathology at the University of Pretoria to use the fourth-year students in the study.

□ Group 3 (graduate communication pathologists):

Two groups of graduate communication pathologists were identified, namely private practitioners and personnel at a tertiary academic institution. These two groups were selected since most communication pathologists in private practice and in the academic environment would have had the opportunity to specialise in one of the two available professions (speech-language pathology and audiology), as opposed to those employed in the public sector who would probably have to be active in both. Private practices were identified and the researcher then contacted the different owners and made an appointment to explain the study and its purpose to the participants. The Head of the Department of Communication Pathology at the University of Pretoria was contacted and permission was asked for personnel of the Department of Communication Pathology to participate in the study.

### 2.3.3 Description of the subjects who participated in the study

The Herrmann Brain Dominance Instrument, with the accompanying covering letter and biographical questionnaire, were given to 120 participants. This method of drop-off administration was chosen since there are no monetary costs other than the duplication of the material, participants can complete the questionnaire at their leisure, there is greater anonymity in the responses and interviewer bias is reduced (McBurney 1994). Of the 120 questionnaires, 91 were returned and all of these were accepted. This return rate of 76% is considered very high (McBurney 1994) and may indicate that the subjects who participated in the study were interested in the study and its results. The final group of subjects and their relevant characteristics are presented in Table 3.

**Table 3: Description of subjects and relevant characteristics.**

Groups:	Group 1 (First-year students in communication pathology):	Group 2 (Final-year students in communication pathology):	Group 3 (Graduate professionals):
Number of subjects:	42	23	26

<b>Criteria for selection:</b>	Enrolled students for the course, B. Communication Pathology.	Enrolled students for the course, B. Communication Pathology.	Registered at the Health Professions Council of South Africa.
<b>Time as graduate professional:</b>	N = 42	N = 23	N = 26
<input type="checkbox"/> 0 – 5 years	-	-	7
<input type="checkbox"/> 5 – 10 years	-	-	5
<input type="checkbox"/> 10 years and more	-	-	14
<b>Preferred profession:</b>	N = 37*	N = 23	N = 26
<input type="checkbox"/> Speech-language pathologist	9	-	8
<input type="checkbox"/> Audiologist	3	4	12
<input type="checkbox"/> Both	25	19	6

\*Frequency missing = 5 (no response)

## 2.4 Apparatus and material

### 2.4.1 Apparatus and material used to identify possible candidates for the study

This section is only relevant to the subjects in group three, since groups one and two were readily available to the researcher. The Private Practitioners' List 2000–2001 of the South African Speech-Language-Hearing Association was consulted to identify possible candidates for the study. These candidates were then randomly selected and contacted.

### 2.4.2 Apparatus and material used to collect data

#### 2.4.2.1 The covering letter

Since human subjects were used in the research, ethical standards were of critical importance (Leedy 1997). A covering letter (Appendix A) was therefore included to ensure that subjects experienced feelings of fairness, honesty, openness of intent, respect for their integrity and privacy as well as an informed willingness to voluntarily participate in the research activity (Leedy 1997).

#### 2.4.2.2 The biographical questionnaire

A brief biographical questionnaire (Appendix B) was included since information was needed to determine if there were any differences in the patterns of brain dominance of the speech-language pathologist and audiologist, to describe any changes in the mental preferences from the novice first-year communication pathology student to final-year students to practising professionals, and to determine learning and teaching strategies relevant to the thinking style preferences of the subjects participating in the study.

Questions that formed part of this questionnaire were:

- How long have you been a practising speech-language pathologist and/or audiologist?

Options given:

0 – 5 years, 5 – 10 years and 10 years or more.

- As what do you consider yourself?

Options given:

Speech-language pathologist, audiologist or both.

#### 2.4.2.3 The Herrmann Brain Dominance Instrument

*General information regarding the Herrmann Brain Dominance Instrument:*

The Herrmann Brain Dominance Instrument (Appendix C) is one of the most powerful and flexible diagnostic tools available (<http://www.thinkingnetwork.com.au/hbdi/>). It is a diagnostic survey made up of 120 questions and the answers to these questions indicate a person's "brain dominance", i.e. the degree to which he/she prefers a particular way of thinking and therefore behaving.

The HBDI is the result of extensive development and modification taking into account the results of continuing brain research, and the instrument is now in its 18<sup>th</sup> version. The instrument was internally and externally validated in 1980, 1981, and 1982 and since 1983 the validation process has continued (Herrmann, 1995). The results of the scoring are free of value judgement and cultural bias, an essential feature in the South African context, and are adaptable to growth and

change since they are not restricted to one application (<http://www.thinkingnetwork.com.au.hbdi/>). According to Herrmann International, the HBDI can also be used to depict the composition of groups and thus show what is special about a certain group.

*Presenting the results of the HBDI:*

The scoring protocol results in a quantified measure of an individual's preference for each mental quadrant, which is then charted on a circular grid to make a personalised visual metaphor (Herrmann 1995). The graphic representation is supplemented in a four-digit numerical code that assigns a number to each quadrant (from quadrant A to D), indicating the strength of preference for that quadrant, for example 2-1-1-3.

- The number 1 stands for a score of 67 or more points on any one preference and is considered a primary preference. A score of over one hundred represents a very strong preference for the specific quadrant's modes of thinking.
- The number 2 represent a score of 34 to 66, and is considered a secondary preference and indicates neither preference nor avoidance.
- The number 3 designates a score of 0 to 33. A tertiary preference or a possible avoidance of an area is thus indicated. This means that although an individual has developed good skills for operating in this quadrant, the use of this quadrant could be demanding or even enervating (Herrmann 1995).

The results of the HBDI are presented in a full-colour, personal profile, with an accompanying interpretation booklet that explains the profile (<http://www.thinkingnetwork.com.au.hbdi/>) and can be used as a developmental tool.

#### 2.4.3 Apparatus and material for the analysis and processing of data

The biographical information obtained in the questionnaire was analysed and processed using a Pentium computer with the Microsoft Excel Program.



The completed HBDI survey forms were sent to the database at the Herrmann International headquarters in Lake Lure, Northern Carolina in the United States of America where the information was processed. A scored profile package for each of the three groups that participated in the study was compiled.

## 2.5 Data collection procedure

The data collection procedure will be discussed separately for the three groups that participated.

### □ Group 1:

The first-year students of the Department of Communication Pathology were asked to complete the Herrmann Brain Dominance Instrument as a compulsory part of the selection procedures at the beginning of the year 2000. No time constraint was set and the students could complete it in their own time.

### □ Group 2:

The final-year students were given information pertaining to the Herrmann Brain Dominance Instrument and emphasis was placed on the fact that the instrument is not a test and does not measure cognitive abilities. The subjects received the biographical questionnaire and the Herrmann Brain Dominance Instrument and were asked to complete it in their own time. When they had finished, they were asked to give it to the class representative with whom the researcher had consulted beforehand.

### □ Group 3:

Graduate professional communication pathologists were contacted at their workplaces where they received the Herrmann Brain Dominance Instrument along with the covering letter and the biographical questionnaire. No time constraints were given for the completion of the questionnaires.

## 2.6 Data analysis and processing

The results obtained from the biographical questionnaire and the HBDI were integrated for each individual subject. Raw data were keyed into the computer and the SAS program (Statistical Analysis System) was used to analyse this data into frequency tables. The frequency, percentage and the cumulative percentage were calculated for each of the variables. The Friedman two-way analysis of variance test was also done in order to determine if there was a significant difference between the results obtained for each quadrant ( $p \leq 0.05$ ). The processed data was interpreted according to the sub-aims of the study:

- *To determine the thinking style preference of the subjects in the study and establish possible patterns of brain dominance pertaining to the three groups that participated in the study.*

The data of the different group profiles of group 1 (first-year students), group 2 (fourth-year students) and group 3 (graduate professionals) were obtained and specific tendencies were identified.

- *To determine if there were any differences in the patterns of brain dominance of the speech-language pathologist and audiologist.*

The group profiles of groups 1, 2 and 3 were divided into subjects who indicated that they considered themselves to be speech-language pathologists only, audiologists only, or both.

- *To determine learning and teaching strategies relevant to the thinking style preferences of the subjects.*

The group profiles for groups 1 and 2 were analysed and processed to determine if certain learning and teaching styles would be more relevant and successful during the education and training of communication pathology students.