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LISTENING IN EARLY CHILDHOOD:
A CLINICAL INVESTIGATION OF THE LISTENING PROCESS
IN THREE-AND FOUR-YEAR OLD CHILDREN

A THESIS PRESENTED IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN EDUCATION AT
MASSEY UNIVERSITY

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1985

ABSTRACT

The purpose of the study was to investigate some aspects of the listening process in early childhood education. The investigation was based on the premise that listening was a cognitive activity displaying cognitive-structural features similar to the development of knowledge.

The review of the literature revealed that the listening process as a cognitive activity in early childhood had not been sufficiently considered. In order to investigate the listening process a Piagetian theoretical perspective was developed. Inherent in this perspective was the relation of listening to the structuralist position as elucidated by Piaget.

Inherent in Piaget's principles was the clinical interview as the method of inquiry. As the methodology selected for the study, it was determined to be more penetrating in the discovery of underlying cognitive-structural features of listening. The clinical interviews involved 20 subjects, ten three-year olds and ten four-year olds, each encountering four different stimulus situations developed specifically for the investigation. The four interviews with each child were recorded for later transcription.

The analysis of the interview protocols, preceded by formal coding, investigated the listening process across the four stimulus situations by the central process of equilibration. The exemplification of the constructs of equilibrium which included the cognitive structures of listening facilitated the explanation of the listening process in three-and four-year old children.

The conclusions of the study relate to the corroboration of the postulates for each Piagetian theoretical construct. First, a model of the listening process was suggested involving the equilibration of cognitive structures. Second, the study indicated that the clinical interview is a useful method for the inquiry of listening in early childhood. Also, since the methodology has been utilized successfully in the investigation of listening it is suggested this procedure constitutes a useful method for the inquiry of other phenomena in early childhood education. Finally, the study indicated educational implications for the curriculum and suggested areas for further research.

PREFACE AND ACKNOWLEDGEMENTS

My involvement in the education of young children has made me increasingly aware of the importance of the act of listening in young children and of the need for research on listening. On the completion of this study, I wish to acknowledge the following people.

First, I wish to thank Professor R.S. Adams, Dean of Education, for his initial involvement in my coming to Massey University.

Second, I wish to acknowledge my supervisory committee: Dr. Donald M. McAlpine, my chief supervisor, for his support and knowledgeable guidance throughout all stages of this thesis; Dr. Alan C. Webster for his wisdom and constant encouragement; and Dr. John A. Codd for his contribution of time and his academic experience.

I also wish to thank the head teachers and preschool children for their enthusiastic participation in this study. Conversations with young children are always informative!

Dr. Richard Biggs and Dr. Peter Kay provided valuable assistance in the final preparation of this thesis.

I owe a debt of gratitude to Reverend Cecil and Mrs. Marshall and friends of St. Matthew's Parish, who welcomed us from Canada into their family and lovingly and prayerfully supported us during our stay in New Zealand.

Finally, I express my deepest appreciation to my family. My son James gave so willingly of his love and prayers and understood about missed playtimes. During his six years he has taught me much about listening. My wife Catherine has been my constant companion, encourager, and helpmeet and without whom this thesis would not have been possible.

Gordon M. Gillion
June 1985

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CHAPTER ONE

THE FOCUS OF THE STUDY

Importance of Listening

Of all the language arts, listening is both the commonest and the most mysterious (Lundsteen, 1976a: 98).

The act of listening is of the utmost importance in the daily living of all human beings. For the young child embarking on his educational journey listening holds a prime emphasis. The child within the early childhood age range depends on the skills of listening, in relation to the other language arts, more than any other age group.

The amount of time spent in actual listening varies according to the research source. Rankin (1926) discovered that listening accounted for 45% of a person's day while Wilt (1958) reported that 57.5% of the elementary school day was spent listening. Mindess & Mindess (1972) identified listening as the fourth aspect of communication involving school children for 60% of the day. Brennan (1980: 147) cited statistics from the Oregon Teaching Center (1976) (shown in Figure 1) which illumines the overall listening picture.

Figure 1

Listening/Non-listening Activities

	Time Usage	% of Working Hours
Adults	- Non-language activities	30 %
	- Listening activities	29.4
	- Speaking activities	22.5
	- Reading activities	10.3
	- Writing activities	7.8
Elementary School	- Activities involving listening	58 %
	- Non-listening activities	42
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The importance of listening can be extrapolated from the literature. Lundsteen (1979) identified listening as the first and most basic of the language skills. Lundsteen attributed the importance of listening to the influence of the mass media, the manner in which listening strongly affects the thinking and problem solving capabilities, and the fact that reactions are dependent upon the way a person learned to listen. Many authors argue the importance of listening as the main channel of classroom instruction. Malcolm Price Laboratory School (1971) reports: "When it [listening] is adequately developed, it can help the pupil to increase his awareness, gain information, find enjoyment, and develop appreciation" (p. 147).

Rubin (1975) states: "But in order for children to be able to learn in school, they must first learn to listen. Since they have spent their early childhood years in egocentric thought, they have not developed this skill" (p. 7). Margolin (1976) states: "Listening is the first component of learning to speak, read or write" (p. 110).

The fact that listening is an on-going process and a cognitive activity is evident in Foster's (1978) work on discipline. He states: "Though silence sometimes involves the absence of speech it always involves the act of listening" (p.86). The process is operational even in the absence of speech or aural stimuli.

The significance of the process of listening is outlined by Donoghue (1975). The reasons for the significance are:

1. listening is the baseline in the quadratic context of language arts,
2. progress in the other three language arts is governed by listening ability,
3. listening is a critical part of the culture,

4. listening is a rapidly expanding leisure activity based on the media,
5. in the early years instruction takes place in oral language, and
6. listening is the basis for good human relationships.

According to Devine (1982) the act of listening contributes to the vulnerability of the person. The listener is bombarded with spoken data which he has little time to criticize before its assimilation. People are the most vulnerable in the listening mode of receptive language. This is due to the fact that, in general, people have not learned to listen critically.

The importance of listening is especially evident in the area of early childhood due to the amount of time spent listening each day. The young child, with reading skills not yet developed or developed to the extent of overtaking listening skills, is more prone to direct influence through his listening and is also more dependent upon listening for information gathering. The dependency of young children on listening emphasizes its importance to them. Central to this study is the supposition that listening is a cognitive activity which involves higher processes than hearing.

State of the Literature

A discussion on the state of the literature on listening serves two purposes. First, it establishes the appropriate perspective for the review of the literature presented in Chapter Two. Second, it contributes to the focus for this study on the process of listening.

The state of the literature on listening reveals some interesting findings. Devine (1982) alerts the educator to the fact that learning theorists are not conscious of

listening. This fact was vital to the present study because it emphasized the educational gap between the importance of listening on the one hand and on the other the need to investigate the act of listening not merely as a physiological phenomenon but as a cognitive activity. The thrust of listening research should be towards the listening processes and not just descriptive, non-research-based exercises.

The review of the literature in Chapter Two revealed that although there was a quantity of literature on listening, research on the cognitive processes of listening was almost non-existent. Hence Chapter Two, the review of the literature, stands alone to present an historical perspective on the development of listening. This perspective is historical in the sense that it is an overview of the literature which succinctly emphasizes the major topics and achievements in the field of listening.

The search of the literature revealed a scarcity of research on listening in early childhood education. Thus to present the field accurately for adaptation to early childhood it was necessary to broaden the search to include children from the age of nine to university aged adults. Although achievements were noticeable in all areas of listening research, the main educational gap, the paucity of research in the area of cognitive processes, was also quite evident. The literature was divided into five categories.

The first category, listening theory, encompasses definition, causes for neglect, models of listening, components and types of listening, variables influencing listening and even the characteristics of the listener. Lundsteen (1979) presented a comprehensive model of listening

but without major explanations of the cognitive processes involved. The majority of the literature was concerned with the classification of types of listening.

In the second category, listening skills, many authors presented classifications of skills or hierarchical but often ungraded lists of skills. Only half a dozen authors referred specifically to early childhood education when considering listening skills.

Listening research was the third category. Again a scarcity of research occurred and in particular a scarcity in the realm of listening as a cognitive activity. A few studies, with interesting results are reported.

The fourth category, the interrelationships of listening and the other language arts, especially listening and reading, proved to be one of the main areas of interest in the literature. Inherent in this interest was the inquiry into the effect of listening on reading and whether one could be the indicator of success for the other. Several authors based their discussions on Lundsteen's (1976a) representation of listening compared to the other language arts, with listening and reading being labelled as the receptive language skills and writing and speaking as the expressive language skills. Spearritt (1979) investigated the interrelationships of listening and the other language arts in a longitudinal study in Australia. This was the only recent longitudinal study conducted and commenced at the grade three level.

The final category to be reported in the literature review was listening assessment and testing. This category was the most succinct of the sections. Comprehensive

investigations of the assessment of listening were conducted by Plattor, Unruh, Muir, & Loose (1979), Kennedy (1978), Faires (1980), Marchak, Michaels, Malgrew, & Nuefeld (1979), Brown, Backlund, Gurry, & Jandt (1979), and Backlund, Brown, Gurry, & Jandt (1980, 1982). The main result, from all investigations, was that not only was there a dearth of research on listening and listening assessment, but a lack of suitable assessment instruments. It was noted that an understanding of the listening process was necessary before an adequate instrument could be developed for any age level.

The literature review revealed the significance of listening as an important field for inquiry. However, several points must be emphasized. Firstly, there was a lack of research in the area of early childhood education on listening. Little distinction was made between early childhood and ages up to adulthood. Secondly, lack of research resulted in a lack of data upon which to base theory. The lack of theory was evident in the review of the literature. Thirdly, the studies reported do not have a common theoretical base but come from a variety of sources and viewpoints. Finally, the process of listening as a cognitive activity involving higher thought processes was not sufficiently investigated.

The consideration of listening as outlined justifies placing the review of the literature on listening in an historical perspective and concentrating on the educational gap uncovered during the literature search. The importance of listening and the lack of research on the cognitive-structural features of listening lead to the central focus of this investigation of listening.

Purpose

The purpose of this study was to investigate the act of listening by the process of the equilibration of its cognitive structures in three-and four-year old children. The study was based upon Piagetian principles and methods with the premise that listening was a cognitive activity displaying cognitive-structural features similar to the development of knowledge. The affirmation that the clinical method was appropriate for the investigation of the listening process is discussed in detail in Chapter Three.

The general purpose of this investigation can be categorized into two interrelated topics. First, the equilibration of cognitive structures requires that the process of listening has cognitive structures. Based upon the review of the literature, it has not been conclusively determined that listening is a cognitive process. A prerequisite to the equilibration process is the determination of the cognitive-structural features of the phenomenon, in this case listening. Second, dependent upon the first, the equilibration of the cognitive structures may be discussed in relation to listening.

The first topic, to determine the cognitive-structural features of listening in three-and four-year old children, existed with its unanswered questions. Piaget's research and theories of intelligence and cognitive development, and especially structuralism, had not considered listening but were the appropriate bases for an investigation of the cognitive processes of listening. The definite lack of research on listening in early childhood education and the lack of a strong theoretical Piagetian base established the

need and the course of action for this study on listening in early childhood education.

In order to determine the cognitive-structural features of listening based upon Piaget's concept of structuralism, listening was investigated in terms of wholeness, transformation, and self-regulation. These aspects of structure needed to be exemplified in the interview protocols to fulfil the principle that structure is known by its features.

Supplementary to the reasoning for the existence of cognitive structures of listening is its similarity to the development of knowledge. The manifestation of the cognitive-structural features of thought in listening is one way to determine that listening is a cognitive activity. This line of reasoning is included in the clinical analysis contained in Chapter Five and in the conclusions of the study in Chapter Six.

The second topic, the consideration of the equilibration of the cognitive structures, also poses questions that will be answered in this thesis. It is important to emphasize that the understanding of the process of listening will be accomplished by the consideration of the process of equilibration. The equilibration of cognitive structures occurs on three levels. A detailed description of these levels appears in Chapter Five but the explication of the principle is necessary at this point. The explication will take the form of two questions.

The first question related to the equilibration process queries the relationships of the invariant functions of assimilation and accommodation to the equilibration process. Assimilation and accommodation play a central part in the

equilibration process being responsible for the generation of structures and being active at all levels of the listening process. An understanding of the functioning of assimilation and accommodation during the clinical interviews is vital to the focus of the study.

The second question is how the equilibration process can elucidate the listening process. The answer to this second question is revealed in the interrelationship of the equilibration process with the sub-systems of listening.

Further explication of the questions and their answers is the focus of the subsequent chapters of this thesis. These chapters, which include the development of the theoretical perspective, the choice of method, the development of the stimulus situations, and the analysis of the interview data increasingly illuminate the understanding of the listening process.

Overview

This thesis is composed of six chapters. A brief outline of each is included below.

Chapter One, the introductory chapter, has presented the focus of the study. Included in this chapter was the importance of listening, the state of the literature on listening, the purpose of the investigation, and the overview.

Chapter Two comprises a review of the literature on listening. The review revealed a scarcity of research on the cognitive processes for the development of listening. As presented in Chapter One, the literature review is discussed from an historical perspective.

The aim of Chapter Three is to present the theoretical perspective and the choice of method for this study. The Piagetian theoretical perspective outlines the central constructs to be used in the analysis of the data. The preference for the clinical method of investigation is established by the discussion of the advantages of the clinical method compared to the deficiencies of other methods of inquiry.

Chapter Four is concerned with the development of the four stimulus situations used in this study as well as the specific design and format. This chapter also includes a report on the pilot study and its subsequent influences on the development of stimulus materials for the main study.

Chapter Five provides the general clinical analysis of the protocols. The understanding of the listening process is presented by the consideration of the equilibration of the cognitive structures. The interview protocols are used to exemplify the Piagetian constructs across the four stimulus situations.

Finally, Chapter Six presents a review of the study, educational implications, suggestions for further research, and conclusions. Inherent to this chapter is the final result of the clinical analysis, a model for the process of listening.

CHAPTER TWO
REVIEW OF THE LITERATURE

Introduction

The review of the literature resulted from a comprehensive search of periodicals, published texts, and the Educational Resources Information Center database. The search was expanded from an initial perspective of early childhood education to include relevant material at older age levels.

This review of the literature, which surveyed over 800 items, examined listening in five categories: (a) Theory, (b) Skills, (c) Research, (d) Interrelationships of Listening and the Other Language Arts, and (e) Assessment. This categorization of listening, as outlined above, permitted a thorough investigation of the literature on listening and revealed the comprehensiveness of the search.

Although the review of literature included research outside the field of early childhood education, the emphasis of the thesis remained in the early childhood sphere. The inclusion of literature which discussed children older than eight years of age allowed greater depth to the investigation, permitting a holistic inquiry of the listening process.

Listening Theory

The development of listening theory has only recently commenced in relation to research in the other language arts. Listening has often been designated as the forgotten language art, the neglected language art, or even as the Cinderella of

the language arts. However, it has continued to be vital to the learning and communication processes despite its lack of prominence in the research. Lundsteen (1976a) discussed listening as the primary language skill and as the first skill to appear chronologically.

Definition

A clear, succinct definition of the term listening was difficult to locate in the literature. The definition of listening was often dependent upon (a) the type of research, (b) the age level under investigation, and/or (c) the particular aspect of listening being researched at the time.

Further literature reading demonstrated a heavy emphasis on listening to a speaker. Lundsteen (1979) defined listening as "the process by which spoken language is converted to meaning in the mind" (p. 1). Malcolm Price Laboratory School (1971) defined listening as a seven-step process:

the person communicating:

- 1) has his purpose in mind and
- 2) produces oral symbols which will carry his ideas across.

the person receiving the communication:

- 3) hears the oral symbols,
- 4) recognizes and interprets them,
- 5) selects what he wants,
- 6) to comprehend or retain so that he can
- 7) respond or react (p. 147).

Lundsteen's (1979) definition and the Malcolm Price Laboratory School's seven-step process could be used in early childhood education. In order to relate listening to other sources besides the speaker, it would be necessary to change "spoken language" and "oral" in each of the definitions,

respectively, to "aural symbols".

The inclusiveness of a definition for listening was accomplished by two authors in the literature. Barker's (1971) definition was "... the selective process of attending to, hearing, understanding, and remembering aural symbols" (p. 17). Landry (1969) proposed a definition of listening which commented upon the fact that listening was not simply hearing.

Listening implies more than just hearing. It involves giving active and conscious attention to the sounds for the purpose of gaining meaning. Listening involves comprehension of meanings heard as well as the relating of these sounds to our experiences (p. 601).

Cause for Neglect

Research in the field of listening had been neglected for many years. It was only recently that an interest in the development of listening occurred in the realm of education. The causes for this neglect were varied. Landry (1969) was one of the first to label listening as neglected. He proposed that there were three basic causes for this neglect.

1. Tradition

Educators were under the false impression that listening developed naturally. It was assumed: (a) if a person had two ears he could listen and (b) if the potential within a person for reading was developed then the potential for listening would be automatically developed. The outlook on listening was one useless admonition of "pay attention" or "listen carefully". The practitioner in the classroom was not aware that 30% or less of what a person heard was being absorbed and that one of the main functions of listening was

that of resistance, a defensive mechanism to avoid the bombardment of useless information.

A second reason for neglect, under the umbrella of tradition, was that listening was difficult to measure. The difficulty of measurement, to be discussed under assessment, meant that instruction and research were hindered until the first listening tests emerged around 1959. Goss (1982) confirmed that the difficulties of measurement added to the neglect of listening.

Thirdly, the traditional view that listening was hearing inhibited investigations into listening. According to the literature listening and hearing were not the same concept. Hearing, an auditory process using the ears, was only a facet of listening.

Finally, the traditional emphasis on reading crowded out research on listening and classroom practices. As an example of domination by reading over listening, Landry found that by 1948 there were only three articles on listening in the literature compared to over 3000 articles on reading.

2. Lack of Time for Listening in the Curriculum

The second basic cause for the neglect of listening was the emphasis on the other language arts. As a result, the overcrowded curriculum did not have enough time left for the teaching of listening which, in keeping with tradition, was thought to develop naturally.

3. Lack of Practitioner Training

The absence of adequate training in the teaching of listening resulted in listening not being taught. The lack of teaching also hindered research. Buttery (1980)

reiterated that listening was a maturational skill and that there was a dearth of instructional materials and guides. Also, Buttery determined that listening was a generic skill and that it should be taught by all teachers.

Variables Influencing Listening

In an attempt to investigate the listening process and to identify some possible areas for research several authors have determined factors which affect the listening process. Stammer (1977) investigated the factors which could prohibit the hearing aspect of listening. He divided these factors into two categories. The first group, before the actual hearing process, included (a) masking - outside noise interfering with the message being transmitted, (b) auditory fatigue, (c) binaural abilities - functional aspect of hearing or not hearing well with both ears, and (d) auditory acuity - the keenness of a person's hearing. The second group included those factors contributing to the recognition and interpretation of the message. The composition of this category was: (a) auditory discrimination, (b) background - existence of or lack of a frame of reference, and (c) experiences - life experiences which aid the interpretation of the message towards meaning.

Barker (1971) presented an overview of the different variables influencing listening but without being process-orientated. Barker identified the following variables:

1. Sex
2. Age
3. Personality characteristics (e.g. insecurity)
4. Motivation and Curiosity
5. Interest and Attitudes
6. Binaural hearing
7. Listener fatigue
8. Intelligence

The research conclusions cited by Barker were not to be assumed to be conclusive. Barker's refinement of these variables led to the formulation of four categories: the characteristics, experiences, and abilities of the listener; speaker qualities; the message; and the environment.

Donoghue (1975) also offered an extensive list of variables which overlapped Barker's to some extent. She recognized: "Negatively, some of them could also be listed as possible causes for specific listening deficiencies" (p. 207). For example the impairment of hearing ability could result in an impairment of listening ability. Donoghue's contributing variables were:

1. intelligence
2. hearing sense - auditory sense
3. family -e.g. small family results in better listening scores
4. personality and social development
5. chronological age and grade level
6. cognition
7. experiential background
8. structure of program
9. television viewing
10. rate or speed of presentation
11. recognition of voices - listening (hearing threshold)
12. supportive classroom environment

Lundsteen (1976a) referred to variables as distortions in the listening - speaking situation. The possible distortions were four - fold:

1. attitude cut-off - expectation acts (usually) negatively on the selection of stimuli
2. motive attributing - e.g. speaker will repeat the message especially if it is important
3. organizational mix-up - trying to put someone else's message together
4. self-preoccupation - the formulation of own reply and not listening.

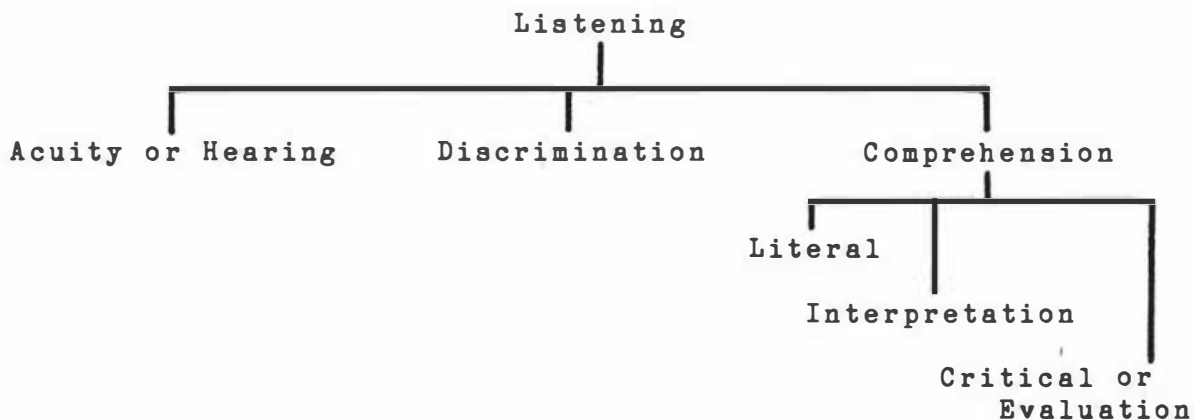
Finally, Wolvin & Coakley (1979) identified three views regarding listening. These views were variables in the sense that the listening process may be affected or may not even occur if a listener and/or speaker maintained one of these positions. First, listening does not mean agreement. Agreement was a feedback response and not an act of listening. Second, it was not necessary for a listener to overtly respond to stimuli. Third, the receiver and the sender of aural stimuli need not be present in a face-to-face situation for listening to occur.

The variables identified by Stammer, Barker, Donoghue, Lundsteen (1976a), and Wolvin & Coakley consisted mainly of generalities. The specific processes behind the variables were not elaborated.

Models of Listening

The consideration of the tentative models of listening aided the understanding of the development of listening. The search of the literature revealed only three tentative models.

Tutolo (1977) proposed the first model. Figure 2 comprises the constituent parts of Tutolo's model. The differentiation between the levels of comprehension is outlined in the next section on components and types of listening.

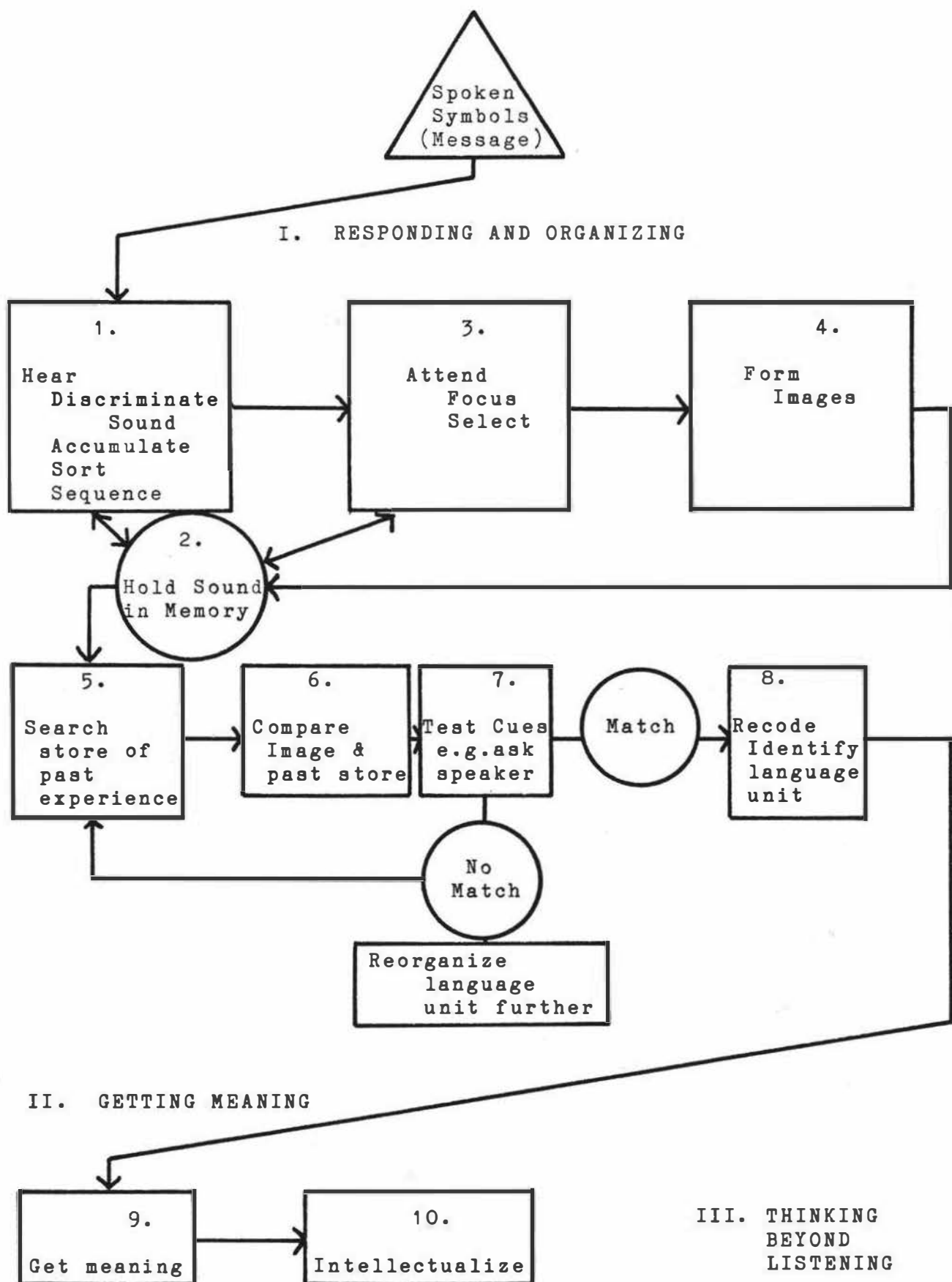
Figure 2Tutolo's Model of Listening

A simple linear model of listening was formulated by Goss (1982). The elements of the model, incorporating types and theory of listening, were signal processing (auditory perception), literal processing (assignment of meaning to message parts), and reflective processing (inferences and critical listening).

The third model was formulated in detail by Lundsteen (1979). The flowchart format, (Figure 3), was intended as an aid in the planning of curriculum and instruction.

Lundsteen's (1979) model was the most complex of the three models. The details of the flowchart provided a starting place for investigating the processes involved in listening.

Figure 3

Lundsteen's Model of Listening

Components and Types of Listening

The components of listening as defined by Barker and by Wolvin & Coakley were similar. Both referred to the complex process of listening as four separate but interrelated processes. Wolvin & Coakley's four components were as follows:

1. Receiving - physiological process of receiving aural and/or visual stimuli (p. 2)
2. Attending - focused perception of selected stimuli (p.2)
3. Assigning Meaning - the integration or understanding the aural stimuli heard and attended to
- a personal process which may be done by mental categorization (p. 3)
4. Remembering - the storage of aural stimuli in the mind for the purpose of recalling them later (p. 4).

Tutolo (1977) based his model of listening on his proposed components of listening. As indicated in his model, listening was composed of acuity or hearing - the sound waves which pass through the ear to the brain; discrimination - the cooperation of the ear and brain to determine likenesses and differences in sound, pitch, rhythm, volume, and nuance; and comprehension - comprising three cognitive levels. The cognitive levels are discussed further under types of listening. Although comprehension was a component of Tutolo's model further categorization resulted in comprehension being recognized as a type of listening.

The final assumptions regarding components of listening belonged to Lundsteen (1979). Lundsteen (1979) maintained five components of listening:

1. Previous knowledge
2. Listening material
3. Physiological activity (hearing, sensation, perception)
4. Attention or concentration
5. Highly conscious, intellectual activity at the time of listening (p. 17-18).

Lundsteen (1979) developed her components of listening further by expanding the last three components into a ten step outline for the proficient listener. The steps, which are not necessarily ordered, may overlap, circle back, or occur simultaneously. The ten steps are as follows:

1. hear
2. hold in memory
3. attend
4. form images
5. search past store of ideas
6. compare
7. test the cues
8. recode
9. get meaning
10. intellectualize beyond listening moment (p. 18).

Lundsteen (1979) utilized these components of listening and the ten steps in formulating an outline for a definition of listening and a model of listening. The comparison of Lundsteen's components with those of Barker (1971) and Wolvin & Coakley (1979) revealed similarities. The main difference, however, was that Lundsteen (1979), whose outline contained the same components, took the components and refined them into further and clearer sub-components.

In order to scale the heights to a point where the types of listening may be discussed a theorist must have considered components, definitions, and have remembered that the final goal would be that of a workable model.

Spodek (1972) classified listening into four types:

1. Marginal - e.g. background sounds
 2. Appreciative - e.g. listening to story or music
 3. Attentive - e.g. listening for directions
 4. Analytic - e.g. dissection and evaluation
- (p. 73).

Clark (1972), in formulating a hierarchical structure of comprehension skills, cited M.J. Early's list of skills for listening which were classified into (a) purposeful and accurate listening, (b) critical listening, and (c) appreciative listening. Schickedanz, York, Stewart, & White (1977) agreed with Spodek's classification of listening as "(1) Marginal, (2) Appreciative, (3) Attentive, and (4) Analytical" (p. 122), as did Buttery (1980: 183). Barbe & Myers (1971) categorized listening into three groups: "(1) Appreciative, (2) Critical, and (3) Discriminative" (p.32).

Crink & Buntley (1971) favoured a wider classification called listening situations which defined listening in terms of context rather than process:

1. Casual Listening
2. Conversational Listening
3. Background Listening
4. Appreciative Listening
5. Creative Listening
6. Exploratory Listening
7. Interrogative Listening
8. Concentrative Listening
9. Critical Listening (pp. 48-50).

Tutolo (1977) included types of listening in his model of listening described earlier. The refinement of the components of listening resulted in the different types of listening. Although he included hearing and discrimination as listening in his model it was the three levels of comprehension that he separated into types. The levels of comprehension were based on levels of cognition and included: (a) literal comprehension, (b) interpretation, and (c) critical comprehension. Tutolo (1977) expected that all three levels of comprehension could occur at one time but he stressed that the first two levels should be practised extensively.

Abstracted from Wovin & Coakley were five types of listening: (a) appreciative listening, (b) discriminative listening, (c) comprehensive listening, (d) critical listening, and (e) therapeutic listening. The first four types had been included in other classifications or were self-explanatory. However, therapeutic listening was a new category usually found in the area of counselling. It referred to the situation where the listener acted as a "sounding board" giving the speaker the opportunity to talk through a problem to his own solution.

Lundsteen (1979) preferred to discuss types of listening under the classification of a listening taxonomy. The listening taxonomy was referred to in the section on listening skills. Lundsteen has been known for her work on critical listening and has emphasized that type of listening.

The different types of listening discussed revealed that there was common ground. The longer classifications of listening types were an expansion of a basic list of types. It was evident from the literature that research was needed in the area of types and components of listening. Research on these bases would result in the ability to formulate adequate and usable models and theories of listening.

The review of the literature on the theory of listening has revealed that there is a dearth of research on listening in early childhood education. The majority of the literature thus far considered has been aimed at the intermediate to college age levels.

Listening Skills

The literature search generated several lists of skills or objectives for listening. However as ascertained in the

section on listening theory, there was a paucity of research on early childhood education. The material presented was again for intermediate age children through to adulthood. The task was to review the literature and achieve an overview of the subject area and a base for listening skills for early childhood. The literature presented the fact, when referring to skills, that listening does not occur naturally and that the development of listening skills was necessary. The teaching of these skills depended on their identification.

Categorization of Listening Skills

According to Devine (1978, 1982) a need for a definite scope and sequence for the teaching of listening skills did exist. He considered that for teaching purposes listening was best viewed as a composite of separate skills with teachers focusing on one or two skills at a time. This decision was arrived at during the controversy as to whether listening was a process of total communication in which the person listened to the communication and then worked back in their minds to the specific details or alternatively whether listeners worked from the discrete listening skills to the larger context of the message in the communication.

Malcolm Price Laboratory School (1971), Wagner (1971), Clark (1972), Valley Stream Schools (1971), and Weaver & Rutherford (1974) provided adequate lists of skills or objectives for listening. These lists were basically suited for or adaptable to the early childhood level of education.

Reid (1978) discussed base lines or skills in the form of 25 questions which could be translated into proper skill format. Duff & Clark (1976) identified 19 general listening skills in their survey of the Australian primary teachers and

ranked them in order of importance. The five most important general skills, which were taught by 90% or more of the teachers were:

1. to remember and follow directions - 98%
2. to identify rhyming words - 95%
3. to remember significant details - 95%
4. to recognize known words - 94%
5. to identify letter sounds - 91% (p. 55)

Duff and Clark found that the 19 general listening skills, overall, were taught by 79% of the primary teachers (p. 55). From their ranked list of skills they thought they could have suggested a rough hierarchy of general listening skills. They did not include such a hierarchy in their report.

Backlund, Booth, Moore, Parks, and Van Rheenen (1982) reported a list of listening skills regulated by the Massachusetts' State Board of Education. This list was an example of the general ungraded lists found in the literature:

Listening

- a) Basic Listening Skills
 1. Recognize words and phrases used by the speaker.
 2. Indicate why the speaker can or cannot be understood.
- b) Understanding What You Hear
 1. Understand spoken words and ideas.
 2. Identify and understand main ideas.
 3. Associate important details with main ideas.
 4. Understand description of events and experiences.
 5. Understand speaker's purpose.
- c) Using What You Hear
 1. Understand and respond to survival words used in emergency situations.
 2. Summarize information and draw conclusions.
 3. Recognize when words and phrases are used to convince or persuade.
 4. Follow straightforward directions.

(p.17).

Finally, Lundsteen (1979) developed a comprehensive list of 38 prerequisites for proficiency in listening. Her aim was to develop a listening taxonomy. Lundsteen suggested the following tentative hierarchy of general listening objectives which was adaptable to early childhood education:

1. Distinguishing hearing as listening
2. Demonstrates two-way responsibility
3. Selecting facts and details
4. Sequential ordering
5. Selecting main idea
6. Summarizing
7. Relating
8. Inference making

Critical Listening

A definite distinction was often made regarding the aspect of critical listening. The act of critical listening, as the highest order of listening, was often given special consideration particularly in the older age brackets. Critical listening was the ability to evaluate and/or make judgements upon the message. Giannangelo & Frazee (1975) related the critical listening act to a characteristic of the creative listener:

Critical listening involves the process of attentively comparing what is heard to some standard or cognitive evidence. Throughout this process the creative listener evaluates the statements and data to formulate critical judgements. This highly conscious effort involves a questioning and analytic attitude to arrive at a conclusion or to act upon the judgements made through creative listening (p. 42).

Lundsteen (1979) suggested a tentative learning hierarchy for critical listening. It comprised 16 steps and was cited as an example for fifth graders. The adaptation of this hierarchy to early childhood would be difficult. Devine (1978, 1982) also briefly discussed critical listening. The

majority of Devine's work was intended for the older age groups and thus a generalization to early childhood would be difficult.

Finally, Duff & Clark included critical listening skills in their survey of Australian teachers in the primary school. As for general listening skills, they produced a list of critical listening skills. Their ranked list included 21 items and revealed that Australian primary teachers did not teach critical listening skills as often as general listening skills. The three most often taught critical listening skills were (a) to detect incorrect word usage (89%), (b) to relate information to own ideas (83%), and (c) to identify mood (75%) (p. 65). They discovered that there was a sharp drop in the percentage of teachers that taught specific skills. The overall percentage of critical listening skills taught was 54% which was compared to 79% for the general listening skills. The list formulated by Duff & Clark included skills that were taught to children from Kindergarten to Grade Six. This accounted for the percentage drop as a proportion of the sample, probably the proportion that taught critical listening skills, was outside the early childhood age group. The early childhood proportion of the sample would not teach and/or could not teach some of the skills included on the critical listening list. However, since the sample did include the early grades of the primary schools, Duff and Clark's list was the most pertinent to early childhood education.

Listening Research

As in the foregoing sections on listening the review of the literature revealed a scarcity of research on listening

especially in the early childhood area. Again the bulk of the research concentrated on the intermediate to university age groups.

The dearth of research was emphasized in Duker's (1968) bibliography of listening. Only 1332 entries were included which was a modicum of research in comparison to reading. The Encyclopaedia of Educational Research (1969) revealed only one and one-quarter pages of references for listening as contrasted with eight pages of references for reading. The Second Handbook of Research on Teaching (1973) had 108 citations for reading but did not have one entry for listening. It was evident that research in listening did not have a high priority.

Vukelich (1974) found that there were four topics of investigation regarding listening:

1. factors affecting young children's listening abilities.
2. training programs designed to enhance children's performance.
3. the relationship between children's listening and other areas.
4. the efficiency of children's listening (p. 300).

Tompkins, Smith, & Friend (1984) determined that there were three areas of listening research:

1. relationship between listening and reading
2. environmental factors influencing listening comprehension, and
3. effects of training on improving listening skills (p. 2).

The relationship between listening and reading contained most of the available research and as such will be dealt with separately. The topic of factors influencing listening was discussed under listening theory. The other areas identified by Vukelich and Tompkins, Smith, & Friend, rate of

presentation and noise level, have been researched and are included in this section.

Pearson & Fielding (1982) did a research up-date in the area of listening comprehension. They concluded after their survey:

- 1) The zest for research about how to help students become more effective listeners so characteristic of the fifties and sixties seems to have been quelled in the seventies and early eighties, perhaps because the twin poles of literacy, reading and writing, have dominated our energies.
- 2) In many instances, when listening comprehension is discussed, it is discussed in relationship to reading comprehension, usually to answer the question, how and when do people become as effective at comprehending the written word as they are at comprehending the spoken word?
- 3) While listening comprehension is frequently used as an outcome measure in psycholinguistic and cognitively-oriented research studies, listening as a phenomenon is incidental to those efforts (p. 617).

Pearson & Fielding emphasized that educators know what affects listening comprehension but do not know much about listening comprehension as a process. A starting point, for Pearson & Fielding, was the understanding of the key components of the language in which the message was being transmitted to the listener. Syntax - sentence structure and semantics - word meanings and relationships among meanings would be examples of these key components.

Pearson & Fielding considered that the research of the sixties and seventies amassed considerable evidence that elementary children improve in listening comprehension through training. However, the difference between research and projection needed to be made clear. The use of reading skills but taught through the channel of listening gave us some of these results which necessitated the differentiation

between the two language arts and the respective research. Until the processes of listening are determined the results will be inconclusive.

Pearson & Fielding's conclusions regarding the teaching of listening comprehension advanced the argument for the differentiation between listening and reading and the position that the evidence is inconclusive.

- 1) listening training in skills of reading comprehension tends to improve listening comprehension.
- 2) listening comprehension is enhanced by various kinds of active verbal response on the part of students during and after listening.
- 3) listening to literature tends to improve listening comprehension.
- 4) types of instruction primarily directed towards other areas of the language arts may improve listening comprehension.
- 5) direct teaching of listening comprehension appears to help children become more conscious of their listening habits than do more incidental approaches (p. 621).

A final determination of Pearson & Fielding is pertinent to this study:

... little has been written about listening from this more active cognitive perspective, even though much of the cognitive research supporting this view has been done using listening as the mode through which information has been transmitted to subjects (p. 624).

This revealed that the area of cognitive research in the field of listening had not been investigated. It was time to investigate the cognitive processes of listening instead of using listening to investigate the cognitive processes of other subject areas.

Some specific research on the factors which affect

listening has been attempted in recent years. Bradtmueller (1978) investigated speed listening and reading. The speech of the speaker was compressed and then presented to the listener. Compressed speech which is the technical term for speed listening speeds up the rate of presentation but without any distortions. Bradtmueller's main finding was that the teachers and students of intermediate grades were enthusiastic about compressed speech in the classroom. He also revealed that there was a significant difference between the speed of reading and the speed of listening.

Leeper & Thomas (1978) also investigated listening rates. They had discovered that earlier studies were conducted using mostly older children and adults. The purpose of the study was to determine the preferred listening rate for young children. The 20 subjects had a mean age of seven years and nine months. The procedure involved the children listening to one sentence which could be presented at nine different rates from 100 words per minute to 300 words per minute. The results indicated that the children preferred a listening rate of 200 words per minute. The older children and adults, from previous studies, preferred a listening rate of 175 words per minute.

Bonvillian, Raeburn, & Horan (1979) studied the effect of speech rate on children's ability to imitate sentences. Their subjects were twelve preschool children with a mean age of three years and nine months. The investigation used three different rates of speech - one, two, and three words per second. The hypothesis was that the rate closest to the child's own (2 wps) would result in the most successful imitation. There were fewer errors at two words per second but it was only marginally significant. The discussion

revealed that the rate of presentation was dependent upon two factors - the time available for processing and the memory load.

Larson & Petersen (1978) sought to determine if noise limited the learning of young listeners. The experiment compared children between the ages of five and one-half years and six and one-half years with adults between the ages of 20 and 26 years. Varying amounts of noise were introduced with the speech. The results were three-fold:

- 1) Young children had significantly more difficulty than adults when listening with background noises.
- 2) There was great variability in children's responses due to even low noise.
- 3) Five and six year old children should be protected from noise to develop optimum listening and learning skills (p. 2).

Another more recent area of research investigated the affect of specific activities on listening. Silvern (1980) investigated the different effects of play, pictures, and repetition as mediators of aural prose learning. The experiment did not produce any significant results. The showing of pictures as the story was being read produced the highest number of correct responses. Silvern, Williamson, & Waters (1983) did a similar experiment with play as the mediator of comprehension. This experiment produced similar results to Silvern (1980) with the picture condition being the most facilitative mediator.

Travis & White (1979) investigated the recall of five-year olds under four conditions. The conditions were listening only, listening and enacting the story with a puppet, listening and watching the enacting done by the

experimenter, and listening with eyes closed. Listening while enacting the story with the puppet resulted in the highest success in the recall of the story.

The final activity-based research was conducted by Whyte (1980) and investigated: a) the child's ability to extract main ideas from a story, b) how much recall occurred, c) if recall was related to the central theme, d) if the recall of the story was in a logical sequence, and e) from what part of the story they remembered more ideas. The subjects ranged in age from four years nine months to six years five months. Whyte's main result was that the skills of integration, transformation and synthesis were available to children from four years of age and that educators should perhaps give more attention to these skills in preschools.

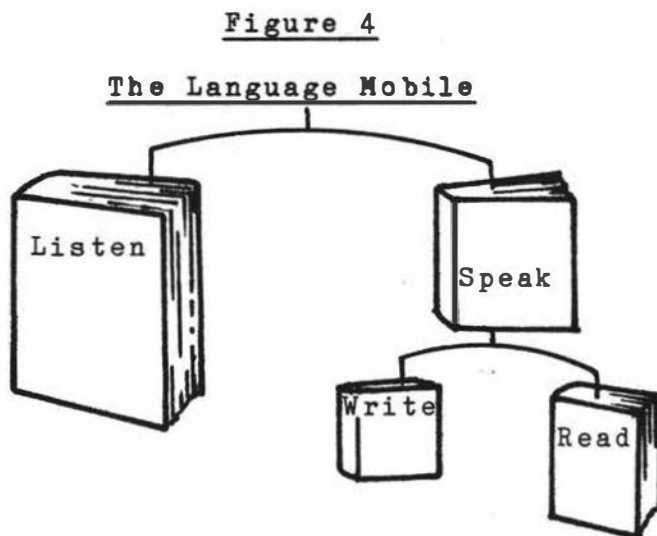
Lundsteen (1976a) reviewed the research on teacher behaviours as influences on pupil behaviour during listening instruction. She proposed that the teacher acquired desirable behaviours, passed them on to the students who in turn employed them. Lundsteen suggested many behaviours which included, for example, teacher behaviour with materials and content and reinforcement.

Tompkins, Smith, & Friend probed elementary and middle school students' metacognitive knowledge about listening in four areas: definition of listening, purposes for listening, listening strategies they reported using, and their awareness of listening instruction they had received. They also desired to make a comparison of children's metacognitive knowledge of reading and writing with their knowledge about listening. The subjects for the inquiry included children from Kindergarten to Grade Eight. The children were asked ten questions based on the four areas determined beforehand.

The main purpose identified for listening was for information and learning. They concluded that the cognitive component of listening and the developmental trends of listening required further research.

Interrelationships of Listening and the Other Language Arts

The illustration thus far has been that listening, as a separate language art, has not been investigated thoroughly and often had been referred to in relation to one of the other language arts. The main interrelationship has been with reading but secondary relationships did exist between writing and speaking. Chronologically, children listen before they speak, speak before they read, and read before they write. The relative proportions of the different language arts as determined by Lundsteen (1976a: 75) are illustrated as a language mobile in Figure 4.



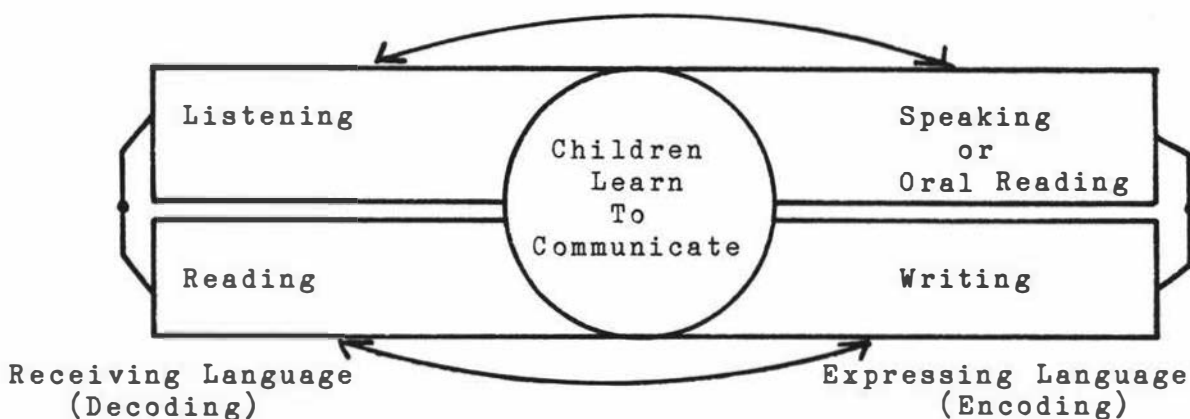
Lundsteen (1976a) concluded that there were conflicting studies regarding the interrelationships of listening and the other language arts. However, to wait for a definitive answer may result in lost educational time.

The overall picture of listening compared to the other

language arts was aptly illustrated, Figure 5, by Lundsteen (1976a: 97).

Figure 5

Listening Compared to the Other Language Arts



Most of the interrelational research was based on Lundsteen's (1976a) representation of listening as compared to the other language arts. The illustration was a framework for researchers as reference for formulating their ideas on listening.

General Overview

Spearritt (1979) investigated the relationships among the four communication skills during the primary school years (Grade Three to Grade Six, Australia) to determine the extent of the relationship. He asked four specific questions which could be applied to any of the general overview studies as well as to specific studies.

- 1) Can the four communication skills of reading, writing, listening, and speaking be empirically identified as separate skills or are they merely different manifestations of a child's general level of language performance?

- 2) To what extent are the four communication skills reading, writing, listening, and speaking, related among children in Grade Three in primary school?
- 3) How do the relationships among the four communication skills develop as children move through the primary school from Grade Three to Grade Six?
- 4) Does the pattern of relationships among the four skills develop differently for boys and girls from independent schools, from government schools in middle class areas, and from government schools in lower class areas? (pp. 2-3).

Spearritt's longitudinal study of the relationship resulted in answers to all four questions. The abstracted results, pertinent to this section were: (a) writing and speaking were distinguishable from Grade Three to Grade Six for boys and girls, (b) reading and listening were also distinguishable for Grade Three to Grade Five girls but Grade Six girls and all grades of boys had a broader receptive skill, (c) reading and listening were strongly related at the Grade Three level, and (d) the communication skills, with the exceptions as noted for listening and reading, tended to remain distinguishable through the grades under investigation.

Jolly (1980) reported that the research in the field revealed mixed results regarding the interrelationships of listening and the other language arts. The common factors between the receptive skills and the expressive skills were noted.

Auten (1983) placed the interrelationships in a total perspective. Auten states:

The global, complex skills of reading, writing, speaking, and listening work together in a language system that helps us categorize, abstract, define, and store experiences (p. 584).

Hammill & McNutt (1980) reviewed the literature in order to present a synthesis of the research on the relationships of listening, speaking, and writing to reading. Listening was denoted as oral receptive language, speaking as oral expressive language, writing as written expressive language, and reading as written receptive language. The results reported were not conclusive. Oral expressive language had a low relationship with reading while oral receptive language had a stronger relationship. Contextual listening had a greater relationship to reading but the differences were not statistically significant. Written language was regarded as having the highest relationship.

General Comparisons/Listening, Reading, Writing, Speaking

The immediate thought when comparing listening with the other language arts was to compare listening with reading. The other skills of writing and speaking were almost forgotten.

Lundsteen (1976a) discussed the similarities between listening and reading. Listening resembled reading in four factors:

- 1) acts of receiving
 - 2) analogous features
 - 3) vocabulary
 - 4) common skills of thinking and understanding
- (p. 86).

Devine (1978) agreed with Lundsteen (1976a) recognizing the intake processes of communication and the higher mental processes. Devine also indicated the similarities and differences of the skills of reading and listening. Ragan & Shephard (1977) and Devine especially noted the differences in the situational and time contexts.

Lundsteen (1976a) was the only author to make a comparison of listening and writing. Listening was recognized as the most distant from writing and thus the least alike. This could also explain the lack of material in the literature. There was, however, a common vocabulary for listening, writing, speaking, and reading, as illustrated in Figure 6.

Figure 6
Overlapping Language Vocabularies



Comparative Studies - Listening and Reading

The purpose of the section on comparative studies was to determine to what extent reading and listening were related in usage and in comprehension skills. Six authors had investigated this area.

Many (1965) determined that up to the mental age of ten, children learned more and remembered more through listening rather than reading. Sticht, Beck, Hanke, Kleiman, & James (1974), as cited in Pearson & Fielding, reviewed 31 studies which compared listening and reading. The findings indicated that in the elementary grades (1-6) children favoured the listening mode. These discoveries indicated the priority listening must be given in the early years.

Elgart (1978) was interested in the elimination of problems of intersubject variations and the differences in the degree of difficulty of reading material. She investigated oral reading, silent reading, and listening as channels of comprehension using material designed to be of equal difficulty. Her results indicated that oral reading was significantly more effective than silent reading and that there was not a significant difference between silent reading and listening.

Haugh (1979) examined the listening and reading comprehension of first graders. There was not a significant correlation between listening and reading comprehension.

Wilkinson (1980) sought to determine if a child's grade in school was related to the difference between the child's understanding when reading and when listening. He also investigated the nature of the material. Wilkinson's results indicated that there was a significant 3-way interaction among mode, grade, and question. These results were in agreement with Many and Sticht, Beck, Hanke, Kleiman, & James (1974) with the exception of the new variable of the nature of the material.

The final study to be reported was Johnson (1982). Her purpose was to compare the efficiency of information processing by success in literal recall in listening and reading. Her subjects were seven-to nine-year olds. The results revealed that the boys had very poor recall after silent reading but their success increased for the modes of listening and oral reading. The girls were fairly even across all three modes.

The Effect of Listening Training on Reading Comprehension

The availability of significant research on the effect of listening training on reading comprehension was limited. The three studies reviewed in this section are from outside the early childhood area. Specific early childhood studies were not available.

Hoffman (1978) investigated the effect of a listening training using fourth graders. She produced a result that indicated that reading comprehension improved significantly by instruction in a listening comprehension skills program.

Lemons & Moore (1982) also used fourth graders in their study on the effects of listening training on the development of reading skills. Their analysis revealed that training in listening did result in improved reading ability.

Schell (1982) investigated a different approach to the question. His inquiry, through a review of the research, questioned the procedure of determining the potential level of reading via listening comprehension as had been the practice for some researchers over the years.

Schell's conclusions stated that there were two false assumptions regarding listening and reading. The first was that listening and reading are approximately equal early in a child's schooling. The second false assumption was that listening and reading grow at approximately equal rates. Reading, Schell concluded, started below listening, grew faster, and eventually surpassed listening. Schell, in summary, noted the danger of over-referring students for remedial help if their reading potential was evaluated via listening comprehension.

The review of the literature on the interrelationships

of listening and the other language arts revealed that there was once again a scarcity of research on listening. This was notable in the situation for early childhood education where, of all the studies reviewed, only two were specifically for early childhood.

Listening Assessment

The material on the assessment of listening was readily divided into two categories. The first category consisted of major studies on listening assessment. The second category contained abstractions from general articles on listening which included assessment as a sub-section. Listening assessment, formal or informal, was a valuable aid to the understanding of the processes of listening.

Kennedy (1978) investigated the testing of listening comprehension. He discussed several views or approaches to the comprehension process and the factors which affected comprehension. He noted that any single variable could affect the reception of a message and therefore it would be desirable to devise instruments to take into account the different variables.

Kennedy discussed the current practices in the assessment of listening, the skills that needed to be tested and the methodology. According to Kennedy, the restrictive testing situations tended to be unrealistic. Kennedy reviewed several published tests but made mention of only one early childhood test, which received a poor review, for comparing listening and reading comprehension.

Brown, Backlund, Gurry, & Jandt (1979) investigated the assessment of basic speaking and listening skills for the Massachusetts Department of Education. The goal was to

assist in the development of assessment procedures in listening and speaking for elementary and secondary schools. This initial study resulted in further publications: Backlund, Brown, Gurry, & Jandt (1980); Backlund, Brown, Gurry, & Jandt (1982); and Backlund, Booth, Moore, Parks, & Van Rheenen (1982).

As a background and a base for the assessment of listening and speaking the relationship among listening, speaking, reading, and writing was investigated. Backlund, Brown, Gurry, & Jandt (1980) cautioned that there was not necessarily a transfer of skills between the four language arts and that in the assessment of the skills it was necessary to consider the same caution. Also in the assessment, an account must be made of the significant differences between the oral and written language skills. These included time, medium, and relationship (e.g. face-to-face).

Backlund, Brown, Gurry, & Jandt (1980) determined 15 criteria for evaluating listening and speaking assessment instruments and procedures.

Content Specifications

- 1) Stimulus materials should require students to demonstrate skill as speaker or listener.
- 2) Assessment instruments and procedures should clearly distinguish speaking and listening performance from reading and writing ability.
- 3) Instruments and procedures should not discriminate on the basis of race, sex, religion, or national origin.
- 4) Assessment should confirm the presence or absence of skills.
- 5) Assessment should emphasize application of speaking and listening skills in familiar situations.
- 6) Assessment should allow for optional communication settings rather than limit students to one setting.
- 7) Assessment should involve situations that allow for a range of responses.

Technical Specifications

- 8) Assessment should demonstrate that outcomes are more than just chance evidence - reliability.
- 9) Assessment should provide results that are consistent with other evidence that might be available - concurrent validity.
- 10) Assessment should correspond as closely as possible with the given speaking and listening skills identified - content validity.
- 11) Assessment procedures should be standardized and detailed enough so that individual responses will not be dependent on administrator's skill.
- 12) Assessment procedures should be as free as possible of such negative outcomes as undue stress or anxiety.
- 13) Assessment procedures should be practical in terms of cost and time.
- 14) Assessment should involve simple equipment such as most school districts have on hand.
- 15) Assessment should be suitable for the largest population (pp. 624-626).

Backlund, Brown, Gurry, & Jandt (1982) developed the criteria into an abstract form and rating scale. Using the form and rating scale they reviewed 71 instruments used in the testing of listening and speaking. They were unable to recommend any instrument for state approval at any age. They did, however, make recommendations for the features of a listening test.

- 1) Stimulus materials should be taped (video or audio) to overcome dependency on reading skills and tests.
- 2) The stimulus materials should call for a simple and minimal response.
- 3) Stimulus materials - both the messages and the test questions - should be short.
- 4) The stimulus materials should be interesting.
- 5) The vocabulary used in stimulus materials should be controlled (p. 16).

Plattor, Unruh, Muir, & Loose (1979) conducted a similar study for the Ministry of Education in Alberta, Canada. The purpose of their study was the development of criterion-referenced tests to assess Alberta students' achievement at the Grade 3, 6, 9, and 12 levels. It was noted that of the

four tests developed only one was for early childhood education.

Their review of testing instruments revealed, corroborated by Backlund, Brown, Gurry, & Jandt (1982), that no usable tests existed for listening and speaking. Thus all items on the developed tests were constructed by the research team. The team constructed pilot, field, and final test instruments in speaking and listening. The final test instrument, for Grade Three, comprised 14 test objectives and 35 test items.

Faires (1980) conducted a study into the development of listening tests. He found that the major factors for the lack of quality listening research were a lack of knowledge about the process itself and the lack of a reliable and valid listening test. He discovered that the majority of listening tests were designed for Grade Four through to the college level. The one test for early childhood was considered to merit continued exploration as an assessment instrument.

Faires' conclusions to his study were:

- 1) There is a great need for more quality listening research.
- 2) There is a great need for satisfactorily validated and reliable listening tests for all grades and age levels.
- 3) Listening research usually contains non-valid and unreliable instruments for the assessment of listening ability contaminating the research results.
- 4) Many assessments of listening ability are measured with paper and pencil tests and require some reading ability which also contaminates listening results.
- 5) More must be known about the listening process itself before adequate assessments can be constructed and validated.
- 6) Listening research studies must be replicated and significant variables must receive further attention.
- 7) Listening variables must be more carefully defined (pp. 18-19).

The final major study in the assessment of listening was Rubin, Daly, McCroskey, & Mead (1982). Their purpose was to present a critique of instruments available for the evaluation of listening. The number of instruments located was 45 compared with 71 for Backlund, Brown, Gurry, & Jandt (1982). They did not discover a suitable instrument for the evaluation of listening in early childhood.

The second category of material on listening assessment, which abstracted information from the general articles on listening, tended to reinforce the concepts formulated by the major studies on listening assessment. Included in this category were Duff & Clark who found an inverse relationship between the formality of the assessment approach and the frequency of usage; Devine (1982) who offered suggestions for appraisals but did not mention early childhood education; and Lundsteen (1979) who included the purpose of listening tests and a rationale for testing.

The outcome of the research completed on the assessment of listening in early childhood as well as in the older age groups confirmed a paucity of suitable assessment instruments. Stressed was the need to understand the process of listening itself before an instrument could be developed for any age level. The understanding of the process of listening itself was of the utmost priority.

CHAPTER THREE

THEORETICAL PERSPECTIVE AND CHOICE OF METHOD

Introduction

In order to investigate the listening process a theoretical and methodological perspective must be developed. The aim of this chapter is to present a Piagetian theoretical perspective and an explication of the choice of method deemed appropriate for this present study on listening as a cognitive activity.

Piaget's work has been the foundation stone for many scholarly works which can be classified into two categories. The first category refers to writings by those authors who approach the Piagetian theories from a theoretical perspective. This category includes Flavell (1963), Elkind & Flavell (1969), Furth (1969), Inhelder & Chipman (1976), Gruber & Voneche (1977), Boden (1979), Butterworth (1981), Vuyk (1981), and Modgil & Modgil (1982).

The writings of the second classification are directed towards a more practical application of Piaget's work. The implications for education, theory and practice, and Piaget especially for teachers, are included in this group. This does not mean that these works are not theoretical but that the theory is specifically orientated towards understanding for practice. Included in this category are Furth (1970), Athey & Rubadeau (1970), Furth & Wachs (1974), McNally (1974), Campbell (1976), Wadsworth (1978), Cowan (1978), Brown & Desforges (1979), Sturm & Jorg (1981), and Sigel, Brodzinsky & Golinkoff (1981). The combination of these two classifications and Piaget's writings will form the basis for the content of this chapter and will facilitate the

development of the theoretical and methodological perspective for this study.

The presentation of the theoretical perspective for the study of the act of listening is discussed in terms of Piaget's stages of cognitive development and his structuralist viewpoints. Choice of method comprises an introduction, a comparison of methodologies, rationale for the clinical method, interpretation of the protocols, discussion regarding reliability and validity, and finally summary and implications.

Foremost is an emphasis, as cited in Chapter Two, that the literature does not contain an adequate discussion of listening in terms of cognition. The Piagetian theoretical perspective developed in this chapter will be utilized in the investigation of listening as a cognitive activity in three- and four-year old children.

Theoretical Perspective

Piaget's Stages of Cognitive Development

The stages of cognitive development are not the central concept in Piaget's theory of development but are descriptions of the structures which emerge in the child as he progresses through life and is constantly interacting with his environment. The processes of assimilation, accommodation, and equilibration, to be discussed below, are constantly changing the cognitive structures within the child.

Piaget outlines five different criteria or characteristics for stages in Tanner & Inhelder (1960). The definition of a stage requires:

1. that there be an invariant sequence to the stages;
2. that each stage consist of a 'structure d'ensemble' [structure of the whole] that characterizes the total aspects of a stage;
3. that stages be integrated into the following stage;
4. that each stage supply the foundation for the following stage; and
5. that each new stage constitute the culmination of what is prepared in the preceding stage.

Pinard & Laurendeau (1969) designated the following names to the five criteria for stages as outlined by Piaget: hierarchization, structuring, integration, consolidation, and equilibration (p. 124).

A thorough account of Piaget's theory of cognitive development would be lengthy and not relevant here. The emphasis for this study, using three-and four-year olds, is mainly on the preoperational stage and the preconceptual and intuitive thought processes of the young child.

Figure 7 presents Piaget's stages of cognitive development. This basic format provides a reference for the presentation of the pertinent features of the preoperational stage.

Figure 7

Stages of Cognitive Development

<u>Stage</u>	<u>Approximate Age</u>
1. Sensorimotor	Birth to two years
2. Preoperational	Two to seven years
(a) Preconceptual	Two to four years
(b) Intuitive	Four to seven years
3. Concrete Operational	Seven to eleven years
4. Formal Operations	Eleven to fifteen years

1. Preoperational Stage

This period involves two sub-stages of thought. The preconceptual period sees the commencement of the development of language and the ability to carry out actions "in his mind". The child, for example, will search for his toy, which he knows in his mind should exist, under a cover or chair.

The intuitive thought period sees the child growing in his ability to conceptualize. His thought, language, and actions are egocentric displaying only one viewpoint - his. The child still is not capable of decentration, conservation or reversibility of thought. Prelogical thought and solutions are evidence of this period. (For a further elaboration see p. 49a...ff.)

2. Summary of Stages

Major changes are evident in each stage of cognitive development. During the Sensorimotor Stage the child develops from reflex activity only to internal representation and solution of problems via sensorimotor actions. The preoperational child advances from sensorimotor representations to prelogical thought and solutions. During the Concrete Operations Stage the child is able to comprehend concepts such as conservation, seriation, and classification as related to a concrete system with reversibility of thought attained. Finally, during the Formal Operations Stage the cognitive structures mature and the development advances from logical solutions of concrete problems to logical solutions of all classes of problems.

However, absolutes in the stages of cognitive development are not possible. Each person, interacting with his environment, develops individually as the processes of

Preoperational Stage - A Review

In a review of Piaget's stages of cognitive development it is important to maintain the appropriate perspective. As stated previously, the stages of cognitive development are not the central concept in Piaget's theory of development but are descriptions of the structures which emerge in the child as he progresses through life and is constantly interacting with his environment. Modgil & Modgil (1983) corroborate this viewpoint.

It is perhaps appropriate to suggest that the Piagetian stage concept has received imbalanced attention, to the detriment of other factors in Piagetian theory (p. 5).

The discussion of the preoperational stage of development must be considered noting the above statement. Piaget (1972/1973) considered the preoperational stage of development the one on which he had the least amount of information. As will be discussed in Chapter Six, Piaget perceives the lack of information as stemming from the child's inability to maintain conversation at such a young age. The validity of Piaget's statement is confirmed by Cowan (1978) : "The Preconceptual substage of Preoperations is an underresearched developmental period by Piaget and, until very recently, by almost everyone else" (p. 113).

The purpose of this review is to present the pertinent features of the preoperational stage of development in order to focus this study on the selected age group. The literature was reviewed to synthesize the information into a useful tool for reference when interacting with the young children during the clinical interviews.

The imbalance of attention on Piaget's stage theory as

noted by Modgil & Modgil (1983) was reflected in the literature on the preoperational stage. Piaget's perception of the lack of information and Cowan's statement on the lack of research was augmented by Modgil & Modgil (1976): "The preoperational stage has received less attention than the sensorimotor stage" (p. 39). Not only has there been a dearth of research on this period of development but it was observed that the sensorimotor stage received greater attention. This was also evident with the upper level stages of Piaget's stage theory each receiving more attention than the preoperational stage. The research on the sensorimotor stage, with the child from birth to two years, depended upon observational studies. The research on the concrete operational stage and the formal operations stage can abstract information by the successful implementation of the clinical interview. However, few studies have revealed that the child four-years old and younger could maintain a conversation in the clinical interview situation that allowed pertinent information to be abstracted regarding the period of development. The present study will utilize the clinical interview with both sub-stages of the preoperational period and the results will be reported in Chapters Five and Six.

The preoperational period is mainly a transition stage from a predominately autistic and egocentric period of the child's development to conceptual thought which is more apparent at the end of the preoperational period. Cohen (1983) recognized that the preoperational child deals with more complex situations that demand a growing distance between himself and the world. The rate of speed of his manipulations of his environment are increased. The increase in speed and complexity are fundamental in enabling the child

to move through the stages from sensorimotor to preoperational. The period which is characterized by symbolic activity sees the child develop symbolization and language. The child in his thinking does not use logical operations but is perceptually oriented. As will be emphasized later, the child cannot think from the particular to the general (inductive) or from the general to the particular (deductive) but thinks from the particular to the particular (transductive).

The primary achievement of the preoperational child is the emergence of the 'semiotic function' (McNally: 1974, Modgil & Modgil: 1976, Ginsburg & Opper: 1979, and Vuyk: 1981). The semiotic function refers to the child's ability to make a mental symbol, a word, or an object represent something that is not present. This is known as the general phenomenon of signification or making one thing stand for or signify another. The first thing (e.g. mental image) is denoted as the signifier and the second thing (e.g. absent toy) as the significate. The ability to differentiate between the signifiers and the significates is the key development in this period.

Piaget considered that there were five identifiable 'representative' patterns which appear almost simultaneously. They are listed in order of complexity:

1. deferred imitation,
2. symbolic play,
3. the drawing of the graphic image,
4. the mental image, and
5. verbal evocation.

During the preconceptual substage of the preoperational period the semiotic function is manifested in the following activities (Ginsburg & Opper 1979):

1. the use of mental symbols - formation and meaning,
2. symbolic play, and
3. language and reasoning.

Ginsburg & Opper's classification of the representative patterns concurs with Piaget's listing with the exception of the drawing of the graphic image. The graphic image, by their definition, would be classified under another category of development.

The use of mental symbols is evidenced in deferred imitation and the search for a hidden object. Mental symbols enable the child to transcend or escape the constraints of time and space. The child's symbols are provided by internal imitation or accommodation. The child gives meaning to the symbols and words and assimilates them to his schemes of action.

Symbolic play represents a large part of the child's activity. Through the use of symbolic play the child is able to assimilate the external world with few accommodations and thus make an adjustment to reality. Utilizing this scheme of action he can act out conflict situations for a successful conclusion.

The third activity relates to the development of language in the young child. One of the first developments in the preoperational period is the ability to use words to represent past events not just events in the present. However, at the preconceptual substage the child's words often resemble symbols and are personal and idiosyncratic.

In the development of the child's language three types of reasonings become available:

1. simple memory - the child applies a previous experience to a current situation,
2. reasoning to achieve goal - however thought distorts reality in accordance with desire,
3. transductive - from particular to particular.

The language and thought of the preoperational child develops noticeably from the sensorimotor stage. Language quickly becomes established in the pre-concepts substage. Words utilized at this stage are personal and often do not involve any socially or culturally shared meaning. As the child's expression of his thinking through language is an integral and necessary part of the clinical interview a review of the differences between verbal behaviour, as evident in the preoperational stage, and sensorimotor behaviour, as observed in the sensorimotor stage is pertinent to this discussion. Three main differences are referred to by Piaget in his writings:

1. verbal patterns, capable of representing a chain of actions are more rapid than sensorimotor patterns,
2. language enables the child's thought to range time and space and not be restricted to the present,
3. thought, as expressed by language, can have the simultaneous representation of all structural elements.

In the preconceptual substage the child's first verbal patterns ^{are} not true representations but rather verbalisms symbolically closer to an image than a concept. The use of a class word, for example, does not mean he understands the class. Preconceptual thinking results from an equilibrium between assimilation and accommodation. As the child progresses to the intuitive thought substage he still, on the whole, does not possess any concepts.

During the intuitive thought substage the child extends

and develops the progress made during the preconceptual substage. Although the child is still rather limited in his achievements he is able to give reasons for his actions and beliefs. The child's thinking still remains egocentric and his weaknesses illustrate that the child is routed in prelogic. However, the passage through the preoperational stage now brings the child to the threshold of operations and the next developmental stage.

Summary

The main features of the child's cognitive development during the preoperational stage are summarized by Cowan (1978). For the purposes of this section they have been organized into the corresponding substages. As is often the case when discussing Piagetian stages, the child's development in the early intuitive substage is expressed in terms of what he is not able to achieve.

Preconceptual Substage (two to three years)

1. nonverbal and verbal classifications: fluctuating, private, one-attribute-at-a-time groupings,
2. reasoning: transductive - from particular to particular,
3. Conservation: inability to conserve quantities, number, length, or time
4. Symbolic play: integral part of cognitive activity

Early Intuitive Substage (four and five years)

The child is not able to achieve the following concepts:

1. class inclusion,
2. one dimensional seriation,
3. one-to-one number correspondence,
4. conservation of number, quantity and length,
5. measurement,
6. horizontal and vertical coordinates, and
7. complete separation of time from spatial cues.

The early intuitive child is, however, able to form stable classes.

Late Intuitive Substage (six and seven years)

The child has new achievements in the following concepts:

1. all-some class inclusion,
2. one dimensional seriation,
3. one-to-one correspondence,
4. vacillation between dimensions in conservation of number, quantity, and length,
5. beginning measurement,
6. beginning conception of horizontal and vertical,
7. separation of spatial and temporal clues.

The child does not attempt tasks with two-way classification, seriation, conservation, time, and space.

The summary of Piaget's stages of cognitive development in the next section will position the preoperational stage within the total perspective. The emphasis of the present study is the preoperational stage of development. The foregoing review of the pertinent features of the stage will enhance the understanding of the child's responses during the clinical interviews and the subsequent analysis.

assimilation, accommodation, and equilibration occur to form the structural aspects of his thinking processes. Thus the cognitive activity of the child is a necessity.

According to Piaget, as the child progresses through the cognitive-developmental stages of his life, he acquires knowledge and matures in his thinking processes. The relevance of this growing process to the study of listening flows naturally. We must determine and then explicate the growth of the listening process in relation to the experience and growth of the individual. In the cognitive development of the young child, listening can be viewed as one part of the complex process of cognitive activity. It is postulated in this thesis that a similarity exists between the cognitive-developmental features of knowledge and of listening.

Piaget's Structuralistic Perspective

The theoretical perspective for the investigation of the listening process will be advanced by the consideration of Piaget's structuralist perspective. In the deliberation of listening as a cognitive activity, cognitive-structural features hold a fundamental position. The general hypothesis is that listening shares similar cognitive-structural features as the development of knowledge and therefore may be considered as a cognitive activity. The further development of the theoretical perspective by discussion of these cognitive-structural features is conducive to this argument. The cognitive-structural features are instrumental in the analysis of the interview protocols in Chapter Five and as one of the means of analysis, the features are dissertated further in Chapter Five.

1. Assimilation, Accommodation, and Equilibration

Prior to the discussion of Piaget's structuralism in general, it is necessary to outline the concepts of assimilation, accommodation, and equilibration. These three concepts, inherent in Piaget's cognitive-developmental theory, play an integral part in structuralism.

Assimilation is the incorporation of new stimulus events or experiences, from an interaction with the environment, into an existing system of cognitive structures. Assimilation is responsible for the growth of the schemata.

If a stimulus event cannot be assimilated then two options are available - either total rejection of the event or accommodation. Accommodation is the agent for change in the schemata or cognitive structures. Accommodation involves the changing of the cognitive structure in order that assimilation ultimately becomes possible. When a balance exists between assimilation and accommodation, resulting in an adjustment to the social and physical environments, the process of equilibration has occurred.

Piaget (1975/1977, 1974/1980) discussed the process of equilibration in relation to the three levels of assimilation and accommodation. The three levels of assimilation and accommodation have three corresponding levels of equilibrium (see Figure 8). The consideration of the equilibration of cognitive structures is critical to the understanding of the development of knowledge and will be demonstrated to be the main consideration in the process of listening.

Figure 8

Levels of Equilibrium

1. Equilibrium between the internal elements of the system - the assimilation of the object to the subject's scheme of action and the accommodation of the scheme of action to the object.
2. Equilibrium between the interactions between sub-systems - the reciprocal assimilation and accommodation.
3. Equilibrium between differentiations and integrations between the sub-systems and the total system - the relations uniting the sub-systems and the total system.

Further discussion on assimilation and accommodation and equilibration in relation to their functions in the analysis of the interview protocols is presented in Chapter Five. However, the implicit nature of these three processes to Piaget's structuralism is important.

2. Characteristics of Structures

Piaget (1968/1971) defined structure as a system of transformations which was enriched or preserved by the interplay of its own transformational laws. Further to this definition is the clarification that the idea of structure involved three key ideas: (a) the idea of wholeness, (b) the idea of transformation, and (c) the idea of self-regulation.

Before discussing the individual ideas of structure a differentiation between the two types of structure - open and closed is needed. Briefly, Piaget considered the characteristics of closed structures or logico-mathematical structures to be non-temporal transformations, closure and "perfect" regulations. On the other hand the characteristics of open structures are considered to be temporal transformations, openness to the environment, and autoregulation by anticipation and feedback. Vuyk (1981) elaborates further on the openness and closedness of

structures and the pursuant difficulties of differentiation. The open structure classification evident in linguistics, sociology, and psychology is pertinent to the study of listening. Piaget, from a biological base, initially took the notion of structures as "open" but when investigating mathematics and logico-mathematical structures which are "closed" he reversed his position. Further considerations once again saw Piaget taking the position that structures were "open" but with the qualification that the system, even though open, would always strive for closure.

2a. The Idea of Wholeness

Wholeness differentiates the structure from the elements which define it. The elements are acknowledged but are subordinate to the laws of composition which relate them. It is in terms of these laws that the structure as a whole or as a system is defined. Implicit to the idea of wholeness is that of meaning. Meaning can be considered to be mapped within the structure. The meaning, with the laws of composition or relation, is found in the relationships of the elements within the structure.

2b. The Idea of Transformation

The second characteristic of structure, transformation, is used in Piaget's definition of structure, however the 'idea of transformation' refers to the sets of rules or the operations which change the state of the structure. The transformations are of two kinds. The first is a transformation where the operation changes the state of the object. The second refers to the transformation of an operation or to an operation on operations. Central to the idea of transformation is the need to investigate the relation between transformation and formation or

transformation and origin. Piaget searched for an understanding of the genesis of knowledge. The idea of transformation, as a key component of structure, is partially responsible for advances in this area.

2c. The Idea of Self-Regulation

The features of self-regulation are self-maintenance and closure. Self-maintenance is the active involvement of a person at his own level of competence. Closure means completeness and being closed to modification to safeguard the meaning within the structure. Properties of conservation and stability of boundaries indicate the self-regulatory aspect of structure. The striving of structure for "closedness" obviates the possible objection that Piaget considered structures to be "open". Even though Piaget was primarily concerned with mathematical or logical structures, he indicated that self-regulation in linguistic, sociological and psychological structures and so on will unfold in time regardless of the fact that transformations in these fields are not operational in the strictest sense, due to a partial lack of reversibility inherent in operations on mathematical structures. "Transformation laws of this kind [non-mathematical structures] depend upon the interplay of anticipation and correction" (Piaget 1968/1971: 16) unlike mathematical structures where an operation is the "perfect" regulation, excluding errors before they are made.

3. Procedures

Vuyk (1981) discusses a more recent aspect of the structuralist perspective. The term "procedure" has been used by Inhelder & Piaget (1979) (English translation not available) and cited by Vuyk to describe "the mechanisms used, step by step, by the subject in order to attain a

specific cognitive goal" (p. 58). Procedures are limitless due to multiplication and diversification according to the number of different goals and the paths by which they can be attained. The process followed sees the procedures being implemented one after the other, attaining sub-goals until the final goal is reached. The multiplication of procedures, the use of old procedures, the adjustment of old procedures, the searching for new procedures, and the diversity of the procedures enlarge the power of the subject.

Procedures are closely related to logico-mathematical structures to the point that Piaget and Inhelder suggest that procedures and structures are mechanisms which form the opposite poles of the attainment of cognitive goals. However, the field of inquiry into which listening falls is psychological, meaning that the structures are open and temporal. The notion that procedures are also open and temporal possibly infers that the differentiation of the characteristics of logico-mathematical structures and procedures may be an attempt at the uniting of open and closed structures or the uniting of logico-mathematical and psychological structures.

4. Importance of the Structuralist Perspective

The structuralist perspective can be considered a method of inquiry making possible the discovery of inter-relationships among observed behavioural phenomena. Codd (1980) depicted structuralism and its importance as a method of inquiry as follows:

It is a perspective which, when applied in the realm of social science, prescribes certain operations or ways of working on data such that the structural components and underlying relationships within the phenomena, whether comprised of [sic] kinship relations, language, myths,

thoughts or dreams, whether manifested at the level of individual behaviour, social institutions or cultural systems, can be mapped and understood in formal and symbolic terms. The structures so revealed provide a set of categories and abstract rules in terms of which the observed phenomena can be interpreted and understood (p. 24).

Piaget's structuralistic perspective is important to this study. Listening, as a cognitive activity, needs to be placed in a structuralistic perspective. The ideas of wholeness, transformation, and self-regulation must be evidenced in listening not only for the process but for the identification of structures which become the explanatory force for any discussion of listening processes.

5. Genetic Epistemology and Listening

Piaget's genetic epistemology, a science of studying the conditions that make the development of knowledge possible (Vuyk 1981: 3) or the theory of cognitive development, and the study of the processes of listening need to be united theoretically. The aspects of function, structure, and content and their relation to listening as a cognitive activity is being investigated in this thesis.

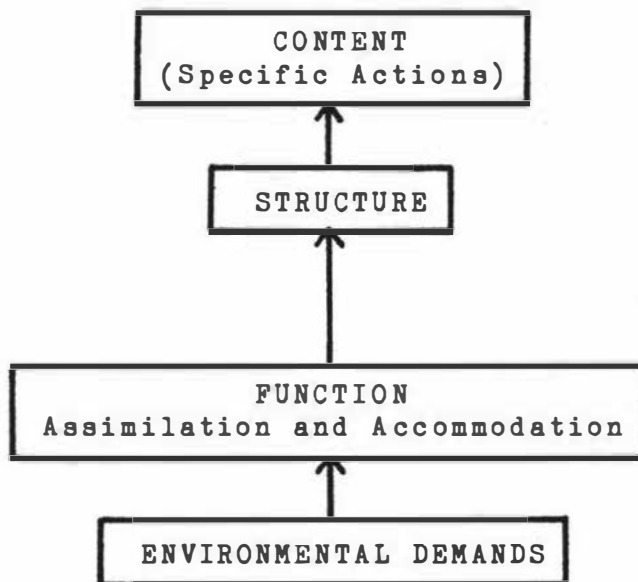
The term function refers to the processes which remain stable and continual throughout cognitive development at any particular stage. The main functions are, as previously described, assimilation and accommodation and their equilibration. Content refers to the observable behaviours or specific actions that reflect intellectual activity. Structure, as the base of intellectual development, refers to the inferred organizational properties, the laws of composition, with the inherent concepts of wholeness, transformation and self-regulation.

The importance of structure is noted by Flavell (1963).

He stated that a detailed theory of intellectual development was impossible without the concept of structure which was the bridge process between the invariants of function and the variants of content exhibited in specific actions. Codd (1980: 145) illustrated the relationships of the concepts of cognition (Figure 9).

Figure 9

Model of Active Cognition



The starting point for any cognitive development is the demands placed upon the subject by the environment whether social or physical. The subject's responses to these environmental demands through the functions of assimilation and/or accommodation and their increasing equilibration finally lead to their eventual internalization and the formation of structures.

The cognitive structures as formed through transformations caused by the interaction of the subject and his environments do not belong to the subject's consciousness but to his operational behaviour or purposive actions.

Piaget states that structures are not observable but are located at levels reached only by reflective abstraction. Structures are the qualifying features of the subject acting upon or experiencing the phenomenon in question.

To explain cognitive processes and structures it is necessary to observe the structures in relationship to content and function. It is the structure which determines what actions as seen in the content are possible for the subject at his particular stage of development. The holistic structuralist perspective with its view of the integration of observable elements of the phenomenon into understandable patterns makes possible interpretive frameworks based upon the manifestation of thought as evidenced in the subject's actions. The actions, the protocols of the clinical interview, provide for an analysis of the cognitive processes of listening.

6. Summary/Implications

Piaget described structuralism, not as a doctrine nor as a philosophy, but essentially as a method. It is a method of inquiry which integrates other methods of investigation. The 'power' of the method lies in the discovery of structures resulting in the discovery of the phenomena, in this case listening itself.

The theoretical perspective discussed in this chapter has, in fact, given a preview of the analysis contained in Chapter Five. If listening is to be considered a cognitive activity then it must possess cognitive-structural features similar to those for the development of knowledge. The process of the equilibration of the cognitive structures of listening, in order to contribute to the understanding of the listening process, presupposes structures. The evidence for

the cognitive-structural features of listening must first be determined by an examination of the content of listening, the interview protocols. Thus the theoretical perspective, as outlined, is the illuminatory factor in this study of the listening process.

Choice of Method

Introduction

The method chosen for this study of listening as a cognitive activity was the clinical interview. The clinical interview was used extensively by Piaget and his collaborators. Piaget utilized his clinical interview method in the study of language and thought (1926/1926), physical causality (1927/1930), number (1941/1952), moral judgment (1932/1965), time (1927/1969), consciousness (1974/1976), and success and understanding (1974/1978) to name but a few.

It was important to establish that the preferred method was the one which would produce the best possible answers to the research questions identified in Chapter One. Once the relationship was verified, the research questions and the choice of method could be utilized in the formation of the theoretical frameworks. It is important to note that the clinical method employed by Piaget is flexible and has the ability to cover a wide content area.

Comparison of Test Method, Pure Observation, and Clinical Method

The methodology for investigating the research problem was selected from among three distinct methods. Other researchers (e.g. Cowan 1978) have expanded Piaget's (1926/1929) classification of choices into four or more

approaches but the basic choice still remains between the test method (experimental), pure observation or the clinical method. As noted above, Piaget utilized the clinical method for many years in investigating many areas of the child's cognition. The justification of the clinical method as the most advantageous method for the investigation of listening as a cognitive activity is the primary concern of this section.

1. The Test (Experimental) Method

The test method is designed so as to ensure that the research question and the conditions of the experiment or test are maintained in the same format for each subject. The data from the test are then qualitatively and quantitatively analysed statistically to produce the results and derive the conclusions.

The test method is particularly useful for diagnosis, for example, a standardized test of reading achievement. Also, the statistics generated by an experimental design provide useful information for generalizations in the field of inquiry.

Piaget (1926/1929) saw two defects of the test method of investigation. The first was the insufficient analysis of the results. The main drawback is the lack of context due to the stereotyped conditions of the testing or experimental situation. The mental context is important because it includes the child's spontaneous interests and also the primitive reactions of the child. Also, the "sterile" conditions of the test method could inhibit the child's performance, he being removed from his familiar surroundings. The clinical method, as used in this study of listening, obviates this concern as the child was interviewed in

familiar surroundings in his preschool.

The second defect is the misrepresentation of the natural mental inclination of the child again due to the rigidity of the test method. The clinical method is not rigid and evolves around the responses of the child such that a more accurate picture of the child's mental inclination is attained. Thus the investigation of listening using the clinical method can overcome both defects of the test method.

2. Pure Observation

Pure observation, or natural or direct observation, is the second method under consideration. The researcher is an unobtrusive observer and collects his data without direct interaction with the subjects. The significance of pure observation is that pure observation is the main starting point for the formulation of a research problem and the development of an appropriate research design.

Pure observation also has its shortcomings. The method is tedious and is unable to guarantee the quality of the results because the quantity of data is limited due to the difficulty of observing a number of children under the same or similar conditions. Secondly, Piaget considered the child's intellectual egocentricity an obstacle to the revelation of a child's thought processes. The communication of the whole of the child's thought is neither attempted by the child nor is it within the child's capabilities. Compounding the difficulties in pure observation is the quandary of distinguishing between the child's play and his beliefs.

3. The Clinical Method

The clinical method is a technique for analysing the qualities of the thought processes, in this case the young

child's thought processes, that involves a question or a problem to be solved by the subject and some interaction with him regarding the process and reasoning involved in the solution of the problem or question.

According to Beard (1969) the clinical method is a means of seeking reasons for children's beliefs and opinions. The interview involves conversations with each child and each one differs according to the replies given by the child. The value of this method is that there is neither right nor wrong associated with the reply. Thus the quality of thinking can be assessed in each case, regardless of the child's response.

Piaget, himself did not elaborate deeply upon his clinical method. The most detailed explanation of his method was contained in The Child's Conception of the World (1926/1929). Piaget (1926/1929) claimed that the clinical interview unites "what is most expedient in the methods of test (experimentation) and of direct observation whilst avoiding their respective disadvantages" (p. 7). Piaget likened the clinical method to the experimental method in the sense that there is a problem and hypotheses, and that the hypotheses are controlled by testing them against the reactions of the child within the interview situation. The similarities to pure observation are that the practitioner allows himself to be led while always in control and takes into account the mental context of the child and thus he is not a victim of systematic error.

The purpose of the clinical interview is to seek empirical evidence to verify or refute theoretical conjunctions made by the researcher. The underlying theoretical frameworks are important to the success of the clinical interview. However, Piaget (1926/1929) cautioned:

... the clinical examination is also dependent on direct observation, in the sense that the good practitioner lets himself be led, though always in control, and takes account of the whole of the mental context, instead of being the victim of 'systematic error' as so often happens to the pure experimenter (p. 8).

Two main points arise from the above caution. First, the interviewer must always be aware that during the interview there is a possibility that questioning may lead in an alternative direction from the original because of the volatile mind of the young child. Second, the consideration of the mental context will enable the researcher not only to be attuned to alternative lines of questioning but also when interpreting the data to compose a fuller picture of the child's thinking process.

Codd (1982) interpreted the clinical interview as a focus on what a child can do in a specific situation or context. The considerations taken into account are not only overt behaviour and its environment, but more importantly the total mental context in which behaviour can be interpreted, not merely as a response, but as an action. This interpretation of the clinical method supports the investigation of listening as a cognitive activity involving higher processes of thinking within a total mental context.

Thus a simplified picture of the procedure for a clinical interview can be outlined in step format:

1. The theoretical framework is pre-determined.
2. Stimulus situation is organized.
3. The stimulus situation is presented to the subject.
4. Subject responds to the task and on the basis of the response the interviewer will ask a question, pose a variation of the problem, or alter the stimulus situation to delve deeper than the initial response.

5. The interviewer will continue one-to-one with the child and the question-response-question-response sequence will continue with the necessary alterations to the stimulus situation until the interview has reached its end.
6. Each alteration or modification to the original stimulus situation has to be made in light of the theoretical framework or working hypothesis.
7. Not all subjects will receive the same interview due to the modifications but the initial or starting situation will be identical for each subject.

The specific format for the clinical interview used to investigate the process of listening is presented in Chapter Four. The development of the stimulus situations and the design and format of this particular study are the topic of the next chapter.

The necessary skill of the interviewer was stated by Piaget (1926/1929):

The skill of the practitioner consists not in making him [the subject] answer questions but in making him talk freely and thus encouraging the flow of his spontaneous tendencies instead of diverting it into the artificial channels of set question and answer. It consists of placing every symptom in its mental context rather than abstracting it from its context (p. 4).

Rationale for Clinical Method

The consideration of the equilibration of the cognitive structures of listening requires a methodology which would be conducive to the theoretical perspective developed in the earlier section of this chapter. The method would need to be able to demonstrate the cognitive-structural features of listening, also to be used to discuss the three levels of equilibration, and to be able to identify listening as a cognitive activity with similar features to the development of knowledge.

The pure observation and experimental approaches have

exhibited deficiencies in their ability to delve beneath the child's surface responses and to reveal the thought processes of the young child necessary to fulfil the requirements of the selected methodology. The advantages of the clinical method and the observed success of Piaget's many studies resulted in the choice of the clinical method for the study of listening as a cognitive activity.

Advantages and cautions go hand-in-hand within the clinical method. Piaget (1926/1929) warned:

It is so hard not to talk too much when questioning a child, especially for a pedagogue! It is so hard not to be suggestive! (p. 9).

With younger children, such as the three-and four-year olds used in this study, it is easier to avoid the temptation to be suggestive. This is due to the limited time a young child's attention can be maintained. The interviewer must be cognizant of this length of time and must adjust his probes accordingly to obtain the optimum information from the child.

Another factor of the balance of suggestive and non-suggestive probes is the area under investigation. Suggestion may be more of a pitfall in the investigation of a mathematical concept than for the investigation of success.

Codd (1979) suggested that the obvious non-suggestive probes such as "Why?" needed to be augmented with more 'selective' probes which would direct the child's responses towards the theoretical frameworks developed before the interviews. The hypothesis was pre-determined and the clinical interview sought to confirm the hypothesis. Piaget considered that the interviewer who did not seek to confirm a hypothesis certainly did not discover anything in his investigation. Flexibility is vital as the child's responses

may result in the formulation of new hypotheses which need to be investigated during the interview. The danger is to be too suggestive with the result that the responses are too often in the suggested conviction category and less apt to be pertinent to the study.

The advantages of the clinical method are numerous:

1. More penetrating than the written response or multiple choice method,
2. More suitable for a wider age range,
3. Enables interviewer to identify "stock response" which was learned in the classroom but does not really reflect the child's deeper understanding,
4. More flexible and allows a wider differentiation of response, reveals obscurities, proceeds to explore them and then give an accurate picture or pattern of the child's understanding of the concept,
5. The responses can be interpreted within their mental context, and
6. The interview questions can reveal the underlying structures where direct observations or test method would have difficulty going further than the cognitive functions and' cognitive content.

Such advantages and cautions are inherent in the appeal of the clinical method. The balance of both will result in a method which will maximize the data and produce insights into the child's cognitive processing especially when the researcher is firm in the belief of the necessity of interpreting every answer within its mental context.

Interpretation of Protocols

It must be noted that the clinical interview is not a pedagogical technique used to teach a child but is used instead to ascertain what the child knows. Piaget used selected excerpts from the protocols including his own interpretations and explanations to precede, follow, or accompany the protocols. The protocols are the primary or raw data used in the attempt to illustratively substantiate

the theoretical assumptions made beforehand by the researcher. The interviewer must delve beneath the actual responses, the statements of the child to determine how the concept is held and the process involved. A caution is to recognize verbalism, language without learning, on the behalf of the subjects.

Flavell (1963) identified the prime purpose of the clinical interview. He stated:

One must identify those structural characteristics which many children of the same age possess which can thereby define a meaningful stage or level
(p. 29).

Piaget (1926/1929) identified five types of reactions which were revealed by the clinical interview. These are important when interpreting the individual protocols.

1. **Answer at random**
... when the child appears uninterested
... it [sic] replies at random and whatever first comes into its [sic] head
(p. 10).
2. **Romancing**
... when the child, without further reflection, replies to the question by inventing an answer in which he does not really believe (p. 10).
3. **Suggested conviction**
... when the child makes an effort to reply to the question but either the question is suggestive or the child is simply trying to satisfy the examiner without attempting to think for himself (p. 10).
4. **Liberated conviction**
... when the child replies after reflection, drawing the answer from the stores of his own mind, without suggestion, although the question is new to him (p. 11).
5. **Spontaneous conviction**
... when the child has no need of reasoning to answer the question, but can give an answer forthwith because already formulated or capable of being formulated
(p. 11).

Reactions number one and two are examples of verbalism which were cautioned above. In the interpretation of the protocols the answers in the liberated conviction and spontaneous conviction categories are most valuable. Of the two, however, liberated conviction is the more important. When a child invents a solution during the clinical situation or answers using the liberated conviction reaction, the response implies previously formed schemes, tendencies of mind and intellectual habits as Piaget (1926/1929) stated of the liberated conviction type of answer:

...neither spontaneous nor suggested, it is the result of reasoning, performed to order, but by means of original material (previous knowledge, mental images, motor schemas [sic], syncretic associations, etc.) and original logical instruments (method of reasoning, natural tendencies of mind, intellectual) (p. 11).

The search in the interpretation of the protocols is directed towards the liberated conviction response. A successful search will confirm or reject the initial theoretical framework and identify the cognitive processes and structures which exist in the phenomenon being investigated.

The interpretation of the protocols is an important step in the process of the clinical method. The result of many interviews will be the formulation of the explanations and descriptions of the phenomenon. Piaget in his writings, from many pages of notes, in every case recorded only a few lines of text with his accompanying comments.

Piaget (1926/1929) again cautioned the practitioner, this time in the realm of interpretation:

...schematise cases, not by summarising them, (which would be to misrepresent them), but by taking from reports of conversation only those passages which have a direct interest (p. 8).

Reliability and Validity

Piaget's clinical method is not without criticism. Brown & Desforges (1979) considered the clinical method suited to exploration but a poor foundation on which to rest a theory. Included in their reasoning were: (a) no opportunity to eliminate alternative accounts for success or difficulties, (b) records of responses are selective, and (c) reporting is selective and genuine replication is almost impossible.

Boden (1979) also indicated difficulties with Piaget's methodology. She noted that Piaget has been criticized for a lack of statistics and a controlled experimental design. Also, similar to the criticisms of Brown & Desforges, she observed Piaget's failure to account for alternative theoretical explanations.

However, being cognizant of these criticisms, the study of the act of listening in this thesis was designed to account for the possibility of replication both in format and analysis. This is discussed further in Chapter Six. Also, the validity of the clinical method, different from empirical validity, as traced below, furthers the argument for the choice of the clinical method of inquiry.

The clinical method, by nature, is holistic. Diesing (1971) described the clinical method as follows:

The holist uses evidence to build up a many-sided, complex picture of his subject matter. He accomplishes this by using several kinds of evidence each providing a partial or limited description that supplements other partial descriptions
(p. 147).

The descriptions or data as evidenced in the interviews form the bases for an explanation of the phenomenon. The

advantages of the holistic approach stem from the fact that it presents a many-sided complex picture of the phenomenon under investigation. Thus it allows for the interrelation of the evidence supplied by the primary data - the interview protocols. The holistic clinical method permits the persistent probing and observations based upon the working hypothesis to result in an understanding of the phenomenon. The holistic approach envisions possible explanations, understanding of the complexities of the phenomenon, models, and eventually even theories of cognitive development.

The criticisms of the clinical method not having scientific rigour are answered by the explanation of its reliability and validity. Diesing sums up the question on reliability, validity, and the use of the pattern model in the clinical interview:

One should not expect a clinical, holistic theory to be hierarchical-deductive, to contain rigid formal definitions, or to yield predictions and deductive explanations. Its task rather is to provide revealing classifications of cases and to sensitize one to what is happening in a case (p. 258).

Reliability/Validity in Relation to the Deductive Model

Reliability and validity, although important to the experimental approach and as answers to criticisms of the clinical method, distract the holist from the purpose of his investigation. The holist is concerned with the interactions between himself and the subject as a source of understanding. Diesing summarizes the relationships as follows:

The holist is interested neither in reliability nor in validity in this sense. Reliability implies the ideal of an impersonal, automatic investigator; but in case studies, the personality of the investigator and his relations to the people he is studying are an essential source of understanding. Validity in all

its officially (American Psychological Association) approved senses is in the relationship between a test response, profile, or pattern and some real attribute or quality; but to the holist such isolated data are nearly meaningless because they have not context (p. 146).

Diesing differentiated between reliability and validity as used by the psychometrician and the clinical researcher. Thus, a measure of inter-scorer reliability is not appropriate for the clinical method. However, the interpretations of the interview protocols must be, in some sense, valid. The functional term suggested by Diesing is dependability.

The dependability of a source of evidence is the extent to which its output can be taken at face value relative to other sources of evidence, in the process of interpreting manifold evidence. None of the evidence used by clinicians and participant observers is absolutely dependable; none is ever free from the need for cross-checking and reinterpretation (p. 149).

Codd (1982) discusses the validity of the clinical interview in terms of 'contextual validity' which is a different kind of validity from that experienced in an experimental situation. Diesing's dependability is Codd's contextual validity. Each piece of evidence is interpreted in the context of several different kinds of evidence that become available from a careful appraisal of the total situation. Thus, the validity is achieved when the whole model is especially suited to the phenomenon being studied.

Codd's contextual validity and Diesing's dependability are dependent upon the mastery of the clinical interview technique. Piaget (1926/1929) commenting on this point stated:

And above all, it is so hard to find the middle course between systematization due to preconceived ideas and incoherence due to the absence of a directing hypothesis. The good [interviewer] must, in fact, unite two often incompatible qualities; he must know how to observe, that is to say, let the child talk freely, without ever checking or side-tracking his utterance, and at the same time he must be constantly alert for something definitive; at every moment he must have some working hypothesis, some theory, true or false, which he is seeking to check (p. 9).

Inherent in this mastery of technique and maintaining dependability is the interviewer's decision to continue or stop the interview at any stage. He must determine the value of continuing after each response from the child. He must determine if further questioning will reveal any further understanding of the child's thought processes. There is the need to maintain a high level of rapport with the subject and to maintain the subject's attention or motivation to the task. The factors to be considered in the decision to continue are (a) the subject as a person, (b) individual differences in attention, (c) perseverance, and (d) verbal responsiveness.

Summary/Implications

Codd (1980) integrated the clinical interview as acceptable methodology and the problem of investigating a phenomenon as a cognitive activity.

In Piaget's theory, the clinical interview, is a deliberate and selective sampling of human action and, because action is a manifestation of thought, the interview data provides the raw material for a structural analysis of human cognition (p. 26).

The fact that structures are not observable but are located at levels reached only by reflective abstraction invalidates the test (experimental) method and the method of

pure observation. The disadvantages of the relative methods and the advantages of the clinical method justifies the choice of the clinical method for the investigation of listening.

The theoretical perspective and the methodology have been connected to the initial problem of this present research. This interrelationship will be reflected in the analysis of interview protocols contained in Chapter Five.

CHAPTER FOUR

DEVELOPMENT OF STIMULUS SITUATIONS AND DESIGN AND FORMAT

Introduction

The purpose of this chapter is explicated in four sections. In the first section the identification and rationale for the selection of the four listening situations used in the development of the stimulus situations is discussed.

The development of the stimulus situations and their corresponding materials is outlined in the second section. The development is explained in terms of applicability of listening situations as determined by Gillion (1980). The responses of the subjects to the stimulus materials, developed for use in the interview situations, were the bases for the analysis of the listening process.

In the third section a brief report is included on the pilot study conducted prior to the main study. The influential effects of the pilot study on the main clinical investigation are reported.

Finally, the design and format of the main study are outlined in full. The formative effects of the three previous sections are evidenced in the design and format of the investigation.

Determination of Listening Situations

The review of the literature indicated that although the classification of listening had been a subject of interest, a definitive typology had not been determined. Spodek (1972) had classified listening into four categories: (1) marginal, (2) appreciative, (3) attentive, and (4) analytic (p. 73).

Spodek's classification received support from several sources. Schickedanz, York, Stewart, & White's (1977) classification was identical. Barbe & Meyers (1971) had earlier classified listening into three types similar to Spodek's with the exception that Spodek included marginal listening.

Gillion (1980) investigated the applicability of Spodek's four types of listening in the kindergarten. The survey of kindergarten teachers indicated that all four types of listening were applicable at the kindergarten level.

Attentive listening was selected by 100% of the teachers in the sample. This result was congruent to the listening skill section where 100% of the respondents identified "listening to follow directions" as the most important skill for an effective listening program.

Further to these results 87% of the sample were unable to suggest further types of listening. The 13% who attempted alternative suggestions were able to be reclassified in line with Spodek's classification system.

Although Spodek's classification was by no means definitive it did enable all listening experiences that the young child would encounter to be classified. The classification suggested by Spodek also empowers researchers to categorize listening, in this case into stimulus situations as an organizational system for the application of Piagetian constructs, for more thorough investigations.

The definitions of Spodek's four types of listening are outlined in the discussion on the development of the stimulus situations and their corresponding materials. Further to Spodek's classification are suggested components of each of the types with the exception of marginal listening which is

interrelated with the other three types.

It is imperative to propound the usage of the four types or situations of listening. As stated, the classification empowers the clinician to design an organizational system consisting of the four separate stimulus situations. The stimulus situations can be developed around the four listening types. The organization of the stimulus situations in this manner has a tactical advantage. The consideration of the child as a person during the clinical interview, as discussed in the choice of method, is enhanced by the ability to investigate the phenomenon of listening in four situations. The need for rapport with the child and the child's attention span or exhaustion level are considered by utilizing four listening situations.

The clinical analysis of the interview protocols is also enhanced by the utilization of different listening situations as the four stimulus situations can be analysed separately. The interview protocols can be examined across the four listening situations for evidence of the Piagetian constructs selected for the investigation of listening. Included in this investigation are egocentrism, assimilation, accommodation, the three levels of equilibrium, together with structure and its inherent ideas of wholeness, transformation, and self-regulation.

The corroboration of the literature and the survey results with Spodek's classification indicates the suitability of Spodek's four listening types as the starting points for the development of the stimulus situations. The usability of the selected listening types to develop the stimulus situations and materials was instrumental in the subsequent analysis of listening as a cognitive activity.

The Development of Stimulus Situations and Materials

Introduction

The development of the stimulus situations and materials was based upon Spodek's four types of listening as outlined previously. The four-fold categorization was utilized as an organizational system for applying the Piagetian constructs as identified in the theoretical perspective for the clinical investigation of listening. The interview protocols would be increased four-fold as each child would encounter each of the four stimulus situations. Also, four stimulus situations would allow listening to be clinically investigated in a manner that did not exhaust the children. The investigation of the listening process in all aspects would have been extremely taxing on three-and four-year old children.

The development of each stimulus situation and its corresponding materials is outlined to include the following points: (a) the listening type and inherent functions on which the particular stimulus situation was based, (b) the basic task or material, (c) the reasons for the selection of the particular task, (d) details of the particular stimulus situation, and (e) comments regarding final implementation of the stimulus situation.

Stimulus Situation 1 - Marginal Listening

Marginal listening is the awareness of sounds on the fringe of consciousness. Marginal listening is not utilized when associating skills and activities. This casual listening may have been the commencement of a child's listening experience. Schickedanz, York, Stewart, & White (1977) stated: "Children may have begun by listening

marginally, appreciatively, or attentively..." (p. 123). Any listening activity, therefore, may have started as a marginal listening activity for the child. The theoretical framework for this stimulus situation will, by necessity, need to encompass marginal listening within the whole scope of listening.

The first stimulus situation will be the reading of Giles Reed's (1982a) book Dick Turnip on cassette tape with a variety of background noises. The actual process of recording the story and the background noise will be discussed below.

The reading of a book with background noise was selected for this first stimulus situation on the following bases:

1. the effect of marginal listening on the other listening situations (appreciative, attentive, and analytic) can be assessed,
2. the story on the tape is a popular story and the background noises will be recognizable by the subjects,
3. the listening situation is one which the pre-school child has experienced,
4. the stimulus situation is a good example, by definition, of marginal listening, and
5. the technology used readily allows several variables to be controlled by the interviewer.

Briefly, the technology gave the interviewer control over several variables. The recording of the story was done on one sound track of the recorder and the background noise on a second sound track. The two sound tracks were then put together to make one cassette tape. There were separate volume controls for each track. Thus the level and/or amount of background noise could be regulated by the interviewer. The level of the background noise was constant for each of the children and at no time was the volume of the background

noise greater than that of the reading.

The tape was played to all subjects with the background noise control constant so that the only variance was the pitch of the individual noises. The interview commenced along the same lines as for Stimulus Situation 4 with corresponding initial questions and probes. The details of Stimulus Situation 4, and thus Stimulus Situation 1, are discussed below. Additional probes were developed to determine at what point marginal listening affected analytic listening, appreciative listening, or attentive listening. The interviewer aimed to determine the functions and structures and changes in their makeup.

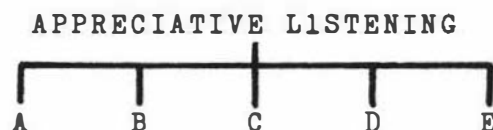
The cognitive-structural features of the other listening situations needed to be carefully investigated. The degree of dominance over the other listening situations also needed to be determined in order to thoroughly investigate marginal listening in Stimulus Situation 1.

Stimulus Situation 2 - Appreciative Listening

Appreciative listening is listening to develop appreciation, leading to aesthetic satisfaction. The identifiable functions within appreciative listening are restricted to five for the three- and four-year old age groups (Gillion, 1980). The functions of appreciative listening are represented in Figure 10.

Figure 10

Appreciative Listening



- A - listens for reflection and relaxation
- B - listens to appreciate literature/music
- C - listens to visualize in order to build imaginatively on what is heard
- D - derives meaning from intonation, mood, oral clues
- E - recognizes descriptive terms (literature)/expressive passages (music)

The second stimulus situation was centred on Beethoven's Symphony No. 6 in F (Pastoral) Op. 68 as played by the Royal Philharmonic Orchestra conducted by Sir Charles Groves. Considering the vastness of classical music the decision to use this selection of music was by no means the only possibility. However, the selection of the music and the design of the stimulus situation was based on the following reasons:

1. the arrangement and reproduction of this selection are of high quality,
2. by observation and experience, young children enjoy musical activities,
3. classical music may be unknown to some subjects and thus they may be attracted by the novelty,
4. classical music is often used in children's shows (e.g. cartoons) making them familiar with classical music unaware to themselves,
5. Symphony No. 6 is diverse enough to allow the investigation of several functions, and
6. Symphony No. 6 is particularly musically descriptive which is desirable for this stimulus task.

The specific stimulus task was to listen to the music and to draw a picture using the music as motivation or subject matter. The interview commenced at the completion of the picture. At the request of the child the music could be played more than once. This situation could arise if the child needed further time to complete his drawing or if the child experienced difficulty in deciding the subject of his drawing. The initial questions were "Why did you draw a ...?" and "What made you think of a ...?"

After a suitable questioning period regarding the subject's picture a portion of the musical selection would be

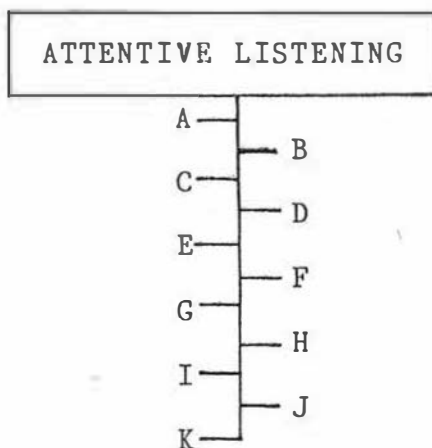
replayed to counter-balance the primary effect of the initial playing of the tape. The initial questions, at this point, would be, "What did this part of the music make you think of?" and "Why?"

Stimulus Situation 3 - Attentive Listening

Attentive listening is listening with care and with a view to action. Although not all functions within attentive listening require action the majority do have this outcome. At this stage in the study all functions will be considered as action outcome functions. Hence, the functions of attentive listening are illustrated below (Figure 11).

Figure 11

Attentive Listening



- A - listens to follow directions
- B - identifies and locates voices of peers and others
- C - listens to gain information
- D - locates the source of a sound
- E - responds to verbal questions and statements
- F - reproduces sounds (words, instruments, animals)
- G - listens to become sensitive to and respond to rhythmic patterns
- H - develops a music consciousness by listening to tempo, pitch, and mood and then responds and creates
- I - increases attention span
- J - detects key words
- K - listens to improve the voice

Figure 11 is a non-definitive compilation of the functions of attentive listening. The compilation of the functions above was expedient to the development of the third stimulus situation. The functions included in Figure 11 are not all-inclusive and the entire list, which provides a reference for the functions pertinent to this study, will not be investigated in this situation.

The third stimulus situation was composed of three activities or tasks within the realm of attentive listening. The three tasks occurred within the same interview. The tasks were as follows:

1. Body Movements - a directional activity,
2. Sound Reproduction - repeat patterns using a drum (etc.), and
3. Story Scramble - to unscramble a story which should be relatively familiar (e.g. "Coming to School").

The selection of these activities for the third stimulus situation was based on the following reasons:

1. Tasks 1 to 3 are all activities which have a high probability of occurring in most preschool situations.
2. The tasks investigated functions which are related to several other functions in the attentive listening area (see Figure 12).
3. The duration of the tasks was suitable (short time span) for three- and four-year olds.

The first task in this stimulus situation, to investigate the ability to follow directions, was that of body movements as in the childhood game of "Simon Says" with the exception that the interviewer did not utilize the visual element. The task was completely oral once the task had been satisfactorily explained to the subject. The interview section commenced with the question, "Why did you put your hands on your head?" which led to further questioning on the function and its related processes.

The sound reproduction stimulus task investigated Function F - reproduces sounds (words, instruments, animals). The obvious related function is Function G. However, Functions A, H, and I are also related to Function F.

The task had the subject and the interviewer interacting with toy drums. The interviewer beat a pattern or rhythm on his drum and then requested the subject to repeat or imitate the pattern. The interview questions for this task were interspersed with requests for pattern repetition. The questions of "what" was heard and "how" the listening occurred were the initial probes. "How did you know what pattern to beat on your drum?", "What did you hear?", and "Why do you think your pattern is the same as mine?" are sample probes for this task.

The final stimulus task, Story Scramble, was derived from Function I - increases attention span. This function and the ability to follow directions are probably the two most frequently required functions in the preschool situation.

The interrelationships between Function I and other functions within attentive listening were dependent upon the task. With the task being "Story Scramble", the related functions were A, C, and J. Function J was included for the first time and added a new dimension to the investigation. The task is progressive in nature.

Once the subject had accomplished the task, success not a requirement, the interview commenced. The initial question was "How did you know ... came first?" and further questions were limited according to subject responses and attention span for listening.

The preceding discussion leads to two further diagrammatical representations. The first, Figure 12, indicates the initial function for each task and the related functions. Figure 12 also illustrates the frequency of investigation for each function. Table 1 shows the frequency of each function in a more orderly manner after the analysis of the stimulus materials for the third stimulus situation.

Figure 12

Attentive Listening: Functions for Individual Tasks

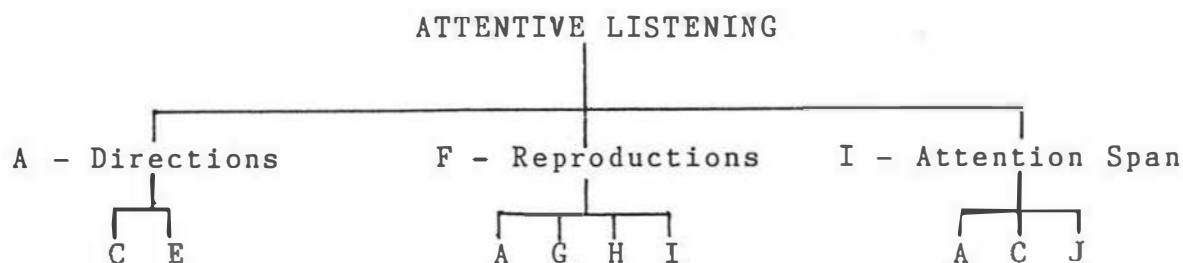


Table 1

Frequency Per Function for Investigation of Attentive Listening

Function	Frequency	Function	Frequency
A	3	G	1
B	0	H	1
C	2	I	2
D	0	J	1
E	1	K	0
F	1		

The frequency table indicates that only Functions B, D, and K were not investigated in the clinical interview for the three stimulus tasks. B, D, and K were all related to sound discrimination which is often researched.

Stimulus Situation 4 - Analytic Listening

Analytic listening is listening in order to analyse - to develop the ability to separate or to break up the whole into

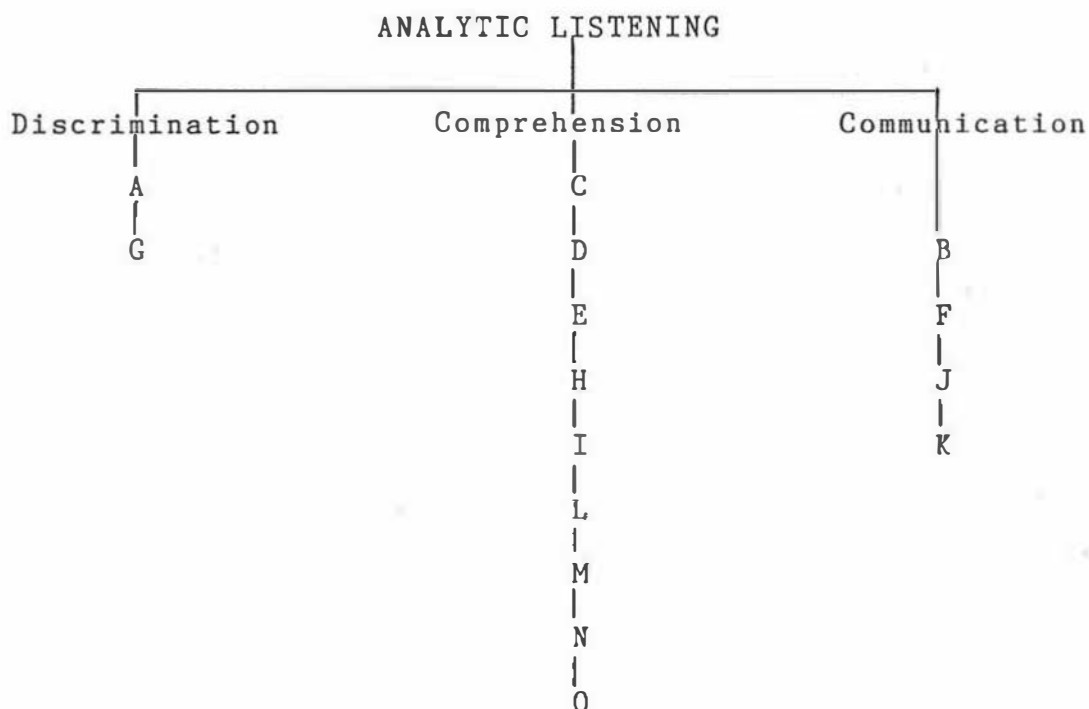
its component parts. Analytic listening also involves the discrimination between sounds which are similar and involves the comprehension of the communicated message.

For the purpose of this study the analytic listening situation may be divided into three sub-categories by definition. Within each sub-category are several identifiable functions. The area of analytic listening is represented in Figure 13.

Figure 13 is a non-definitive compilation of the functions of analytic listening. The compilation of the above functions, as for the third stimulus situation, was expedient to the development of this stimulus situation. The functions included in Figure 13 are not all-inclusive and the entire list, which provides a reference for the functions pertinent to this study, will not be investigated in this situation. The selected functions are discussed below.

Figure 13

Analytic Listening



- A - recognizes words that rhyme
- B - listens to enlarge vocabulary
- C - listens with comprehension
- D - listens to give sequence of events
- E - listens for significant details
- F - understands and follows oral discussions
- G - listens to detect likenesses and differences in beginning, medial, and final sounds
- H - listens to come to conclusion or to predict outcome
- I - distinguishes fact from fancy
- J - listens to improve sentence structure
- K - raises pertinent questions in discussions
- L - listens to identify main idea
- M - listens to summarize information
- N - listens to evaluate arguments and make judgments
- O - listens to differentiate between fact and opinion

The fourth stimulus situation was the reading of Giles Reed's (1982b) book Rozzy Raspberry. The selection of this book was based on the following reasons:

1. popular among preschool children,
2. based on the fable of "The Boy Who Cried Wolf" in itself popular,
3. the listening vocabulary is appropriate for the intended age group,
4. subject matter lends itself to the aspects of analytic listening in the areas of comprehension and communication,
5. the length of the story is suitable for three- and four-year olds,
6. within the areas of comprehension and communication the story can be investigated on several levels, and
7. the interest appeal of the narrative is high enough so as to enable the reader to conceal the pictures thus excluding any visual variables.

Prior to further theoretical discussion the procedure and initial questions will be outlined. The functions which were the basis of the investigation must be identified first.

The comprehension sub-category was the starting point for Stimulus Situation 4. The interview questions revolved around functions C,D,E,H,I and L. With the exception of

Function H - listens to come to conclusion or to predict outcome - the questioning occurred at the end of the reading.

Function H was investigated at the pivotal point in the story before the conclusion became apparent. The initial questions were: "Do you think Rozzy's friends will help her find her door key?" and "What do you think will happen to Rozzy at the end of the story?" These questions were asked to reveal the child's ability to come to a conclusion or to predict an outcome.

As stated, Functions C,D,E,I, and L were investigated at the conclusion of the story. The initial probes for Stimulus Situation 4 were as follows:

Function C - Where did Rozzy Raspberry live?

Function D - Tell me which happened first. Did Rozzy fool Adam Avocado with the jack-in-the-box or did she fool Nurse Plum with the arrow in her hat first?

Function E - What did Nurse Plum give Rozzy to make her feel better?

Function I - Do you think that the story of Rozzy Raspberry is true?

Function L - Who was this story about? (commencement of sequence for main idea).

These questions were just the initial probes for Stimulus Situation 4. Within each function was a grouping of questions aimed at the revelation of the listening process.

Pilot Study

Introduction

A pilot study was conducted prior to the main clinical investigation of listening as a cognitive activity. The pilot study was a vital step in the determination of the structures of listening as it served the following purposes:

1. to provide an opportunity to practise the clinical method,
2. to investigate the effectiveness/suitability of the clinical interview for determining the cognitive structures of listening,
3. to revise the four stimulus situations and their corresponding stimulus materials, and
4. to make a preliminary exploration and determination of the cognitive structures of listening.

The five subjects for the pilot study, three girls and two boys, were selected from a local kindergarten. The ages ranged from 3 years 8 months to 4 years 9 months. Background data, which included the results of the Peabody Picture Vocabulary Test (PPVT) and a brief family and school history were obtained.

The procedure for the main study was very similar to the pilot study, with respect to the establishment of rapport and the conducting of the individual interviews, and is outlined in detail in the following section on the design and format of the main study. The timeline for the pilot study dictated that the five interviews for each child be conducted with shorter intervals between sessions. This was the only main procedural difference between the pilot study and the main study.

The pilot study fulfilled its first two purposes adequately. The researcher had an opportunity to practise the clinical method and was able to determine that the clinical investigation of listening was viable. The primary data, the interview protocols, indicated that the stimulus materials evoked responses which would justify the continuation of the study. The establishment of the evidence for continuation and the preliminary determination of cognitive-structural features of listening resulted in the main thrust of the pilot study - the refinement of the stimulus materials.

Results of the Pilot Study

The results of the pilot study are reported in two ways. First, a general analysis of the four stimulus materials is presented in order to demonstrate that the stimulus materials were appropriate for the study of the listening process and to show that the responses, the observable behaviours of the underlying structures, warranted further investigation. Second, the refinements of the stimulus materials prior to the main study are discussed as a result of the general analysis.

1. General Analysis of the Pilot Study

1.1 Stimulus Situation 1 - Marginal Listening

Stimulus Situation 1 was the playing of the recording of Reed's (1982a) book Dick Turnip with background noises. The interview, as stated previously, had the same initial format as Stimulus Situation 4 thus allowing comparisons.

At different times during the interview the children were observed as being intrigued by the background noises. The effect of the noises on the listening of the subjects was determined in three ways: a) by the actual interview situation, b) by comparison with Stimulus Situation 4, and c) by checking for success on a question when a background noise was evident.

The analysis of this stimulus situation proved that the stimulus material was viable and that the subjects were able to respond within the functions investigated during the pilot study. The inclusion of the first stimulus situation in the main study was confirmed.

1.2 Stimulus Situation 2 - Appreciative Listening

Stimulus Situation 2 involved the child listening to Beethoven's Symphony No. 6 in F (Pastoral) Op. 68 and drawing a picture which was elicited by the music. On the completion of the picture the interview commenced.

The pictorial responses to the music were varied and included a picture of a family outside, Cinderella dancing with a man under a light, and an office building. One child requested that the selection of music be replayed while he finished his picture.

The ability of the children to describe their pictures also varied. Most were able to give a basic description but to explain why or how their pictures had evolved evaded two of the children. Heather (4/8) and Elizabeth (3/8), in particular, gave the most detailed descriptions involving loudness/softness, feelings, and colours. Ryan (4/5) and Paul (3/11) visualized their pictures but could not explain them. Ryan put it down to magic while Paul, with encouraging probes, talked of mental pictures.

The analysis of the five protocols revealed that each child exhibited, to some degree, each of the five functions of appreciative listening. The degree to which each child exhibited a function resulted in a revision of interview questions or in a preliminary notion that a particular function was not able to be developed at a certain age. However, the protocols for Stimulus Situation 2 - Appreciative Listening - justified its inclusion in the main study.

1.3 Stimulus Situation 3 - Attentive Listening

Initially, Stimulus Situation 3 involved four short tasks: body movements, sound reproductions, story scramble, and interview the interviewer. Of the four stimulus situations, the third situation underwent more spontaneous and planned revision. The 'interview the interviewer' task was deleted because a) it was considered too difficult and b) with three other tasks the interview was considered too long and beyond the child's attention span. The deletion of this task did not limit the investigation as the functions being investigated were included one or more times in the other three tasks.

All subjects were able to attend to the body movements task. The reasoning behind their actions was adequate for this age.

The sound reproduction tasks revealed a dominance of language for both age groups. Their responses to the various questions revealed that their understanding of "how" and "why" was greater for the language-orientated task.

The results for the Story Scramble Task revealed that the three-year olds could not achieve any success. The four-year olds could attend to the task but they all had sequencing difficulties.

The evaluation of Stimulus Situation 3 - Appreciative Listening - indicated that this stimulus material merited inclusion in the main study. The children's responses to various questions involved all the functions expected and allowed for further revision which enhanced this third stimulus situation.

1.4 Stimulus Situation 4 - Analytic Listening

The reading of Rozzy Raspberry (Reed, 1982b) was the basis for the fourth stimulus situation. The interview, with the exception of the prediction and the conclusion functions, was conducted at the end of the reading. The interview was divided into five separate sections corresponding to different functions. The child was not aware of the different sections.

The interviews resulted in varying degrees of success for each of the five children across each function. The "how" and "why" questions revealed that the three year olds, even though they could answer, for instance, a comprehension question, could not always explain how they arrived at a particular answer. This was due partly to age differentiation and partly to the questioning technique.

The clinical investigation of this stimulus situation did aid in the determination of cognitive processes in listening. The relation of Stimulus Situations 1 and 4 was important due to the similarities of the stimulus materials.

2. Revision of the Stimulus Materials

The clinical investigation of listening in the pilot study prompted several revisions in the stimulus materials. The revisions to the stimulus materials were necessary to ensure a viable, effective and rewarding investigation of the listening process in three-and four-year old children. The pertinent revisions are discussed below.

In Stimulus Situation 2 - Appreciative Listening - the main revisions revolved around the initial playing of the recording and the playback section. It was deemed necessary

to select a part of the recording from the middle or the end section of the tape to counter-balance the primary effect of the initial playing of the tape. Also, the initial questions following the playing of the recording, both initial and playback, needed to correspond to each other. This allowed comparison of the two listening experiences. Exercising caution to avoid the danger of verbalism, more questioning on tones and loudness and softness were included in the revised stimulus material.

The revision of the third stimulus material resulted in four changes. First, one task was eliminated for the reasons stated above. Second, more directions were needed for the body movements task. This allowed further probes in this task. The dominance of the language section prompted more "why" questions when investigating sound reproduction via drum patterns. Finally, further questioning was included in the Story Scramble Task to aid in the understanding of the thinking processes in young children.

The main revisions of Stimulus Situations 1 and 4 were comparable. First, it was necessary to ensure that the format and initial questions of each were homogeneous. A question on the main idea of the story in Stimulus Situation 1 had to be queried in Stimulus Situation 4 and so on. The section on main idea had to be investigated in a step format as the three- and four-year old child experienced difficulty with main idea as a whole concept. The "why" probes of 'sequence in time' needed to be expanded in order to reveal the reason for the difficulty and the processes used in determining the sequence.

Stimulus Situation 1 had three revisions which were also reminders of the expected responses. Questions had to be

asked from points in the story where background noises were evident, to investigate their effects on the listener and an analysis conducted. A comparative analysis of Stimulus Situation 1 and 4 was necessary. Finally, Stimulus Situation 1 needed to investigate the relationships with the other stimulus situations and required distinct sections to accomplish this goal.

Conclusions from the Pilot Study

The pilot study was a worth-while endeavour. It not only achieved its purpose but the resulting revisions facilitated the development of a viable and disciplined clinical investigation procedure for the study of the cognitive processes of listening in three-and four-year old children.

Design and Format of the Main Study

Sample Selection

The sample was selected from all the students attending Riverdale Kindergarten, Palmerston North, and the Palmerston North Montessori Preschool. The sample consisted of 20 preschool children, ten males and ten females. The sample was selected on the basis of ten three-year old and ten four-year old subjects from within the two school environments. The three-year olds ranged from 3/6 to 3/11 and the four-year olds ranged from 4/1 to 4/11.

The aim of the selection was to obtain a sample within Piaget's preoperational stage of cognitive development, as discussed in Chapter Three. The sample comprised ten children at the preconceptual sub-stage and ten children at

the intuitive sub-stage of the preoperational stage. The sample was maximized by each child participating in all four stimulus situations. This resulted in a total of 80 interviews for use in the analysis of the listening process.

The selection of the sample was confirmed, as representative of the preschool, by the head teacher of each preschool. The subjects within the sample were retained throughout the study. Table 2 indicates the population and sample sizes as well as the children's ages and schools. The numbers of each sex are also indicated.

Table 2

Population and Sample Totals by Age, School, and Sex

Population Totals		Sample Totals				
		3-year olds		4-year olds		
		M	F	M	F	
Riverdale Kindergarten	68	3	4	4	1	12
Montessori Preschool	44	1	2	2	3	8
	112	4	6	6	4	20

Sample Background Data

The background data for the study was limited to a) the Peabody Picture Vocabulary Test (1965) (PPVT) and b) a brief family and school history. The PPVT was administered during the first interview situation to measure each child's

receptive language. The family and school history was mainly determined in discussion with the head teachers. The PPVT was also used to help establish initial rapport with each subject. The results of the PPVT are contained in Table 3.

Table 3
Results of PPVT

Subject	Chronological Age	Raw Score	I.Q.	%ile	Mental Age
Ania	3/8	49	121	92	4/11
Hayden	3/10	38	94	32	3/8
Marya	3/10	47	107	66	4/8
Emma	4/6	63	130	99+	7/6
Gillian	4/1	52	114	88	5/5
Nadia	4/4	45	104	38	4/5
Sam	4/11	51	101	51	5/2
Simon	4/5	44	97	35	4/3
Caroline	3/10	49	110	77	4/11
Dana	3/10	48	109	71	4/10
James	3/8	42	110	70	4/0
Nicola	3/11	62	129	99	7/3
Ross	3/8	48	119	89	4/10
Selena	3/6	32	94	41	3/3
Tristan	3/10	50	111	82	5/1
Bernard	4/10	55	109	71	5/11
Blake	4/10	42	85	12	4/0
Helen	4/6	45	99	38	4/5
Jevon	4/10	49	98	38	4/11
Richard	4/7	52	111	80	5/5

Stimulus Materials

The development of the stimulus materials used in each of the four stimulus situations was discussed in detail earlier in this chapter. The stimulus situations corresponded to the four listening situations as identified in the review of the literature and as explicated previously.

Procedure

The procedure will be outlined in step format with the appropriate comments accompanying each step. The procedure was quite disciplined maintaining coherence in the study. The discipline also aided the ease of analysis.

1. A pilot study was designed and conducted at a local kindergarten in Palmerston North. The purposes and the results of the pilot study were reported in the previous section. The main feature of the pilot study was the refinement of the stimulus materials in accordance with the findings of the pilot study.

2. The sample was selected from the two preschools, as outlined, and formal permission obtained.

3. Once the sample had been selected the order of presentation of the stimulus situations was determined by a randomization of the subjects and the stimulus situations using random number tables.

4. Several days were spent at each preschool in order to establish rapport with the subjects in their own environment. The necessity of establishing rapport with the subjects was vital in encouraging them to respond freely in the interview situation.

5. Interview One

This was the first formal contact with each subject. The interviewer introduced the research, talked about the repeated times together, and asked the initial background questions.

The subject was introduced to the use of the tape recorders and was allowed to experiment with them in order that in Interviews Two to Five the child was not distracted

by them. The child talked and sang into the tape recorder and heard the replay at the conclusion of the activity.

The PPVT was administered to the subject during this interview time. The PPVT, to measure receptive language, was also recorded on the tape recorder. The PPVT and the experimenting with the tape recorders helped to establish good rapport with all subjects.

All the interviews took place in a private, quiet room at each preschool. The rooms were equipped with tables and chairs and a means of inhibiting outside interference. (Teacher on supervision outside door.)

6. Interviews Two to Five

The four stimulus situations, as outlined in the section on stimulus materials, were utilized during Interviews Two to Five. The interviews varied in duration from four minutes to twenty-five minutes. The average duration was approximately 15 minutes.

7. All interviews were recorded on the tape recorder. The interviewer also maintained written notes to supplement the tape recordings.

Analysis and Interpretation

1. The tape recordings and supplementary notes were transcribed and coded. The recordings were stored for future reference.

2. The interview protocols were analysed and interpreted. The protocols were initially treated as case studies.

3. The general clinical analysis of the study was conducted across the four listening situations for evidence of Piagetian constructs selected for this study. Chapter

Five will include further discussion of the selected constructs of assimilation, accommodation, equilibrium, egocentrism, and the cognitive-structural features of listening.

Limitations of the Study

The first limitation of the study was the time schedule. In order to maintain the child's interest, the interviews had to be conducted within a limited time period yet without causing the child to become fatigued. Also, since attendance at preschool is not compulsory, occasional absences of the child required the interviewer to be flexible so that the random order of the stimulus situations could be maintained across the four interviews of each child.

A further limitation was the number of protocols. The sample of 20 children generated 80 interviews which amassed over 700 pages of interview protocols. However, more interviews may have elicited further information on the listening process. This does not invalidate the study as Piaget and others were known to have as few as one or two children in a study of a phenomenon.

CHAPTER FIVE

EQUILIBRIUM - A MODEL FOR THE LISTENING PROCESS

Introduction

The analysis encapsulated in this chapter investigates the listening process across the four stimulus situations as outlined in Chapter Four. The understanding of the listening process will be illuminated by the discussion of the equilibration of the cognitive structures intrinsic to the process.

Piaget (1976) elucidated that the progressive equilibrium between the invariant functions of assimilation and accommodation was the fundamental process in cognitive development. Equilibrium in cognitive development, as outlined briefly in Chapter Three, consisted of three kinds, which for the purpose of this investigation were classified as levels because of their hierarchical nature. Piaget (1974/1980, 1975/1977, 1977) developed these levels of equilibrium which were further clarified by Vuyk (1981).

Levels of Equilibrium

1. Equilibrium between the internal elements of the system - the assimilation of the object to the subject's scheme of action and the accommodation of the scheme of action to the object.
2. Equilibrium between the interactions between sub-systems - the reciprocal assimilation and accommodation.
3. Equilibrium between differentiations and integrations between the sub-systems and the total system - the relations uniting the sub-systems and the total system.

The three levels of equilibrium are composed of two distinct forms which are at the core of cognitive operations. Piaget (1972/1973) identified these as (a) systems whose

conditions of equilibrium are permanent and (b) systems with forms of momentary equilibrium. The first form entails the concept of reversibility and usually begins at the level of concrete operations. The second form is characterized by the displacements of equilibrium and semi-reversibility. The first form comprises "closed" logico-mathematical structures while the second form contains "open" structures as evident in the social sciences.

Piaget considered that the key to the understanding of cognitive development was to be found in the interconnection of the three levels of equilibrium. The delineation of the three levels of equilibrium, central to this thesis, resulted in the identification of theoretical constructs and the means of analysis. An analysis of the listening process by the equilibration of its cognitive structures requires that the data of the study, the interview protocols, be examined in terms of:

1. assimilation and accommodation, as the means of achieving equilibrium,
2. the cognitive-structural features of the listening process, and
3. the levels of equilibrium themselves.

The explanation of listening as a cognitive activity will be achieved by consideration of the central process of equilibration. The interview protocols will exemplify the theoretical Piagetian constructs across the four stimulus situations utilized to investigate the listening process. The exemplification of these constructs, the features of equilibrium which include the cognitive structure of listening, will facilitate the explanation of the act of listening in three-and four-year old children.

The exemplification of the constructs across the four

stimulus situations will be examined in three general categories. First, assimilation and accommodation in conjunction with the first level of equilibrium will be illuminated. The elements of the systems, without direct reference to the inherent cognitive structures, can be used alone at this stage. Second, the identification of the cognitive structure of the listening process as evidenced by the features of wholeness, transformation, and self-regulation will be discerned. Included in the section on the cognitive-structural features of listening is the discussion of egocentrism as a core concept for the explanation of cognitive development. Understanding the explanation of the cognitive-structural features of listening will lead to the second level of equilibrium being comprehended.

The third level of equilibrium would be the final step in the explanation of the act of listening. The illumination of the relationships of the sub-systems of listening to the total system of listening is only possible after the achievement of the first two levels of equilibrium. The differentiation and integration of the sub-systems was not investigated because the cognitive-developmental stage of three-and four-year old children demanded that the functional categories or the listening situations be imposed on the design of the study enabling identification of cognitive-structural features. Thus the differentiation of the sub-systems was precluded by the researcher. At this stage a model of the listening process could be proposed.

Data Presentation

As outlined in Chapter Four the investigation of listening as a cognitive activity amassed a great quantity of

data. The 80 clinical interviews generated over 700 pages of interview protocols representing some 20 hours of actual tape recordings. The recordings were stored for future reference. The supplementary material collected but not included in the tape recordings or transcripts included Peabody Picture Vocabulary Tests, interview notes, and background information.

The Piagetian theoretical perspective and the choice of the clinical method for this investigation determined the presentation of the interview data. Throughout this chapter the exemplification of the constructs will be accompanied by an indication of the number of children who demonstrated a particular construct. This indication is presented for each of the four stimulus situations.

Assimilation

Assimilation, the incorporation of new stimulus events or experiences into an existing system of cognitive structures following an interaction with the environment, is responsible for the growth of the schemata. Vuyk (1981) identified two types or levels of assimilation. The first is a physiological level involving the organism's intake of substances or energies to conserve the system. The second is a behavioural level with the integration of objects into schemes of action. The two levels are often integrated as in the search for food. Physiological assimilation proceeds by simple repetitions while behavioural assimilation involves the memory which contributes to the extension of assimilations.

Piaget (1972/1973) presented assimilation in three non-dissociable forms:

1. functional or reproductive assimilation - the repetition of actions leading to consolidation,
2. recognitive assimilation - discrimination of the assimilable objects in a given scheme, and
3. generalizable assimilation - the extension of the field of a scheme.

The examination of the protocols across the categories of listening will validate the assimilation process as a construct for the listening process. It is postulated that the assimilatory schemes within the four stimulus situations will augment themselves by the incorporation of elements that are exterior to the scheme in action and compatible to its nature.

Stimulus Situation 1 - Marginal Listening

The first stimulus situation, involving the children in the listening of a story accompanied by background noises, yielded many examples to illustrate the process of assimilation. All of the 20 children in the sample exhibited forms of assimilation. The discernment and subsequent confirmation of patterns of responses permitted selected protocols to be used as illustrative devices.

In this stimulus situation the children were confronted with the task of distinguishing between fact and fancy as projected from the story. Being asked to determine if the story were true presented them with the choice of assimilating the story in toto as fact or fancy.

Bernard (4/10)

- I - Why would you say they (marrows) couldn't be policemen?
 B - Because they're pumpkins and they can't walk and they've got no eyes.
 I - Alright.
 B - No mouth and no nose.
 I - Good for you Bernard.
 B - No arms.

Nicola (3/11)

- I - Can marrows be policemen?
 N - No.
 I - Why not?
 N - Because they're - because they're really - but they can't really be, turnips and pumpkins. They're - they're - they're - they are only - they are made today, ahh - vegetable turnips.
 I - Vegetable turnips, and vegetable turnips can't be policemen?
 N - No.
 I - Or robbers or anything?
 N - No. Not policemen and not robbers.

Both of the protocols indicate that the children, in assimilating the story, first determined if the elements of the story led them to believe that the story was fact or fancy. Both children decided that the elements were indeed fancy and could thus assimilate the story as such.

These protocols illustrated that Bernard and Nicola assimilated the story by the use of conceptualization as discussed by Piaget (1974/1976). They both had developed the concept of policeman as people with vegetables unable to fit into human roles due to lack of appropriate physical characteristics. Nicola realized that turnips were vegetables and as such could not be policemen or robbers. Bernard clearly stated that pumpkins did not comply with his concept of policemen because they did not have walking capabilities and lacked eyes, mouth, nose, and arms. The assimilation of the fancy of the story, then, was possible through conceptualization.

Stimulus Situation 2 - Appreciative Listening

The appreciative listening situation yielded examples from all 20 of the children. A high number of responses demonstrating assimilation was common to all the stimulus situations.

Recognitive assimilation is characterized by the child being able to discriminate those objects which are assimilable to his scheme at that point in time. In an encounter with his environment, Tristan was presented with the task of drawing to music. His effort, after listening to the music, resulted in a picture of a cat and dog.

Tristan (3/11)

- I - Why did you draw a cat and a dog?
 T - Cause - cause I did.
 I - Did the music make you think of a cat and a dog?
 T - Yeah.
 I - How did the music make you think of a cat and a dog?
 T - Cause the dog came on and then the cat did.

In order to draw the cat and the dog Tristan had to discriminate the assimilable portion of the music - that of the cat and dog. Tristan recognized that the cat and the dog 'came on' the music as he was listening. His response, specifically relating the drawing to the music, indicated the assimilation had occurred. An egocentric response, on the other hand, would not have included a reference to the music. The remainder of the music, evidenced by his picture and during the conversation, was not assimilated by Tristan.

Richard, illustrative of the four-year olds, also exhibited recognitive assimilation during this stimulus situation.

Richard (4/7)

- I - Did the music make you think of any animals?
 R - No.
 I - No?
 R - Only a bird.
 I - A bird?
 R - Mmm. (yes)
 I - Why did it make you think of a bird?
 R - Um. Cause I thought it was a bird.
 I - Mmm?
 R - Making it go.

When questioned regarding animals Richard's initial response was negative. This was partly due to a lack of differentiation between the animal and bird classes. However, on contemplation, he decided to relate his thoughts about the bird. On listening to the music Richard was able to discriminate the part of the selection of music that he thought was the bird. The music was also responsible for the flight of the bird, as Richard distinguished that the music was 'making it go'.

The final protocol for the second stimulus situation is an example of generalizable assimilation which extends the field of the scheme utilized by the subject (Piaget 1972/1973).

James (3/9)

I - Did you enjoy that music?

J - Yup.

I - Yup. Why did you enjoy it?

J - Um. Cause I drew a potato man.

James was asked to comment on his listening in terms of his enjoyment of the music. He responded that he did enjoy the music and also offered his reason as the drawing he had done to accompany the music. The field of the scheme, listening to determine enjoyment of music, was extended by assimilation (Piaget 1972/1973) as illustrated in this protocol. His encounter with this stimulus situation presented him with another selection of music he could enjoy.

Stimulus Situation 3 - Attentive Listening

Assimilation was demonstrated by all 20 children in the third stimulus situation. Tristan exhibited functional assimilation in the following protocol as illustrative of the ability to follow directions.

Tristan (3/11)

- I - Why did you put your hands on your head?
 T - Why?
 I - Why did you?
 T - Because I had to.
 I - Why did you have to?
 T - Because you said.

Tristan was able to assimilate the task of putting his hands on his head because he had repeatedly followed directions and had formed the concept of obeying the directions given to him. The repetitive nature of following instructions resulting in consolidation justifies Tristan's response as functional assimilation.

The second protocol to be considered in this stimulus situation is an example of cognitive assimilation.

Bernard (4/10)

- I - Did you hear something that made you move?
 B - Yup.
 I - Did you hear somebody that made you move?
 B - You.
 I - You heard me! Oh. And what did you hear that made you move then?
 B - Your voice!
 I - My voice! So how did you know to put your hands on your head?
 B - You said.

Bernard was queried about what had made him move his hands during the task of following directions. He revealed, upon questioning, that it was the researcher that had made him move his hands. Left at that point in the interview Bernard's protocol would have been similar to Tristan's functional assimilation response. However, further questioning ascertained that Bernard was able to discriminate that it was the voice of the researcher that actually made him move his hands while participating in the stimulus

situation. The discrimination of the voice distinguishes
 recognitive assimilation from functional assimilation.

Stimulus Situation 4 - Analytic Listening

Two final examples of assimilation, extracted from the
 fourth stimulus situation, illustrated "generalizable
 assimilation". Assimilation was exhibited by 18 of the 20
 three-and four-year old children in Stimulus Situation 4.

Bernard (4/10)

- I - Where did Rozzy live?
 B - In the punnet.
 I - In the punnet. How did you know she lived
 in a punnet?
 I - Cause - in the story.

In this example, Bernard was able to extend the field of
 his scheme. His scheme involved knowing where he lived and
 probably where other people close to him lived, for example
 his grandmother. In order to assimilate the element of the
 story indicating where Rozzy lived he merely extended his
 scheme of "where people live" to include where he had heard
 Rozzy lived while listening to the story.

Caroline exemplifies recognitive assimilation in the
 fourth listening situation. She needed to remember from
 listening to the story where Rozzy Raspberry had lived.

Caroline (3/11)

- I - Where did Rozzy Raspberry live?
 C - Um. I think in a kind of house.
 I - What kind of house do you think she
 lived in?
 C - She lived in a kind of Raspberry, Straw-
 berry one.

In listening to the story Caroline had assimilated many
 details of that story. One of the details she had absorbed

was the kind of place that Rozzy lived in. From all the details she had assimilated she needed to extract from the previously assimilated details the answer to the question that was demanding that she reply. In other words, the question required that she discriminate from among the details she held in memory to respond. Caroline, even though her response was not exact, did distinguish that the house Rozzy lived in was one especially for raspberries and strawberries. From her scheme of remembering the story Caroline was able to discriminate the object, in this instance the house for raspberries, required to respond to the demand from her environment.

Summary

The illustrative protocols corroborated the assimilatory process in listening. The children were able to listen to the story and assimilate the various elements as they encountered the environmental demands of the stimulus situations.

The process of assimilation as a primary construct in the development of listening was pivotal to the analysis of the protocols. The presence of assimilation, as a central concept of the equilibration of cognitive structures, was imperative to the discussion of the research data. The establishment of assimilation paves the way for the discussion of accommodation, cognitive structure, and equilibrium.

Accommodation and Equilibrium Level One

The non-dissociable characteristics of accommodation and the first level of equilibrium facilitate a combined

exemplification of these constructs. The nature of accommodation and the first level of equilibrium dictates that the first level of equilibrium be established once accommodation has occurred. Unlike assimilation, which can function alone, accommodation and equilibration are interdependent.

Accommodation is the changing of a scheme of action to allow the assimilation of elements of the environmental demands previously unassimilable. Objects in the environment which cannot be assimilated must either result in accommodation of the scheme or they must be rejected. As for assimilation, accommodation comprises two types, physiological and behavioural. The behavioural accommodation which results in the enrichment of the earlier schemes (Vuyk 1981) also may lead to new sub-structures by differentiation.

The first level of equilibrium involves the internal elements of the system. Flavell (1963) observed that the first level was the process of bringing assimilation and accommodation into a balanced coordination. At this level, assimilation of the object to the scheme of action and the accommodation of the scheme of action to the object are reciprocal and necessary processes. The accommodation of the scheme of action instigates the equilibration process of the first order.

The examination of the protocols for evidence of accommodation and the first level of equilibrium will consider two postulates. The first states that accommodation of the assimilatory schemes in each of the four listening situations results in the changing of the schemes of action but without the abandonment of the original schemes. The original structures are enriched by the accommodation. The

second postulate is that the initiation of the accommodation process instigates the equilibration process, of the first level, for each of the listening situations.

The protocols to illustrate the occurrence of the processes of accommodation and the first level of equilibration will be identical. The subject, unable to assimilate the object in his environment, will need to accommodate his scheme of action resulting in the eventual assimilation of the object which in turn results in the equilibration of the internal elements of the system.

Stimulus Situation 1 - Marginal Listening

The first stimulus situation investigated for evidence of accommodation and the first level of equilibrium yielded responses from 14 of the children. The first protocol exhibits the accommodation of the scheme of action and the resulting equilibrium in two short statements by Hayden. The processes do not usually occur as rapidly as in Hayden's thinking as will be demonstrated in the second stimulus situation.

Hayden (3/10)

I - What was the very last thing that happened in the story?

H - A fire engine went home.

I - The fire engine went home. Why do you think that was the last thing that happened in the story?

H - That's because that's what I heard.

An understanding of the stimulus situation is necessary for the interpretation of this protocol. The story was being read while a variety of background noises was audible. Hayden was aware of the noises while listening to the story. When Hayden was requested to comment on the sequence of the story he could not, despite his rather immediate response.

Hayden's response indicated that his scheme for sequencing a series of events was not able to assimilate this particular demand but that accommodation occurred instantly resulting in an enriched scheme that incorporated the recognition of the noises into the narrative scheme. The demand could not have been satisfied by generalizable assimilation - the extension of the field of the scheme (Piaget 1972/1973) as an extended scheme would only result in a response to a request for the sequence of the story or to a request regarding the background noises. A response which illustrated the sequencing question being answered from background noise information, could only be possible by the integral union of the two as evidenced by the accommodation of the scheme. By incorporating the noises into the story Hayden had a scheme he could utilize to satisfy the environmental demand. The assimilation of the demand for sequencing information was evidenced by his answer. The fire engine going home was actually the last background noise, a siren, that was heard at the conclusion of the story. The equilibration of assimilation and accommodation was complete at the time Hayden was able to respond to the question.

A further example of accommodation and the resulting first level of equilibrium is taken from the same sequencing task as the previous example. Simon is asked to relate to the interviewer the last thing that happened in the story.

Simon (4/5)

- I - What was the very last thing that happened in the story?
 S - I don't know.
 I - You don't know. Did they rob somebody at the end of the story?
 S - They called the policeman at the end of the story.

- I - They what the policeman at the end of the story?
 S - They called the policeman at the end of the story. Dick Turnip and his gang had to be put in jail.

Simon's accommodation of his scheme to answer is different from Hayden's as the accommodation was instigated by a probe from the interviewer. Similar to Hayden, Simon could not respond to the question with the scheme available to him for sequencing. Hayden stated bluntly that he could not reply to the initial question. The probe "Did they rob somebody at the end of the story?" caused Simon to change his scheme to incorporate the background noises. He inferred, from the siren at the end of the story, that the policemen were called to put Dick Turnip and his gang in jail. At this point the accommodation of his scheme was evident as the background noise was responsible for his answer. As for Hayden, generalizable assimilation was an inadequate process and the accommodation of the scheme was necessary for Simon to satisfy the environmental demand. Equilibration had occurred and Simon was satisfied, evidenced by his response, that his altered cognitive scheme was operational.

Stimulus Situation 2 - Appreciative Listening

The protocol below, illustrative of the ten children in the three-and four-year old age group who responded in this category, confirms both postulates cited for accommodation and the first level of equilibrium. The initial questioning of Dana revealed that she was unable to assimilate the elements of loud and slow.

Dana (3/10)

- I - Was the music loud all the time?
 D - Ahh nope. It's slow.

- I - It was slow. Was it loud though?
 D - Nope.
 I - No. It was soft?
 D - Um... yup.
 I - Soft and slow? How did you know the difference between when it was loud and soft and when it was fast and slow?
 D - I don't know.
 I - If I hit the table could you tell me whether it was loud or soft? (hits table softly)
 D - Soft.
 I - Now do me loud.
 D - (hits table loud and fast)
 I - Do me slow.
 D - (hits table softly)
 I - Do me fast.
 D - (hits table loud and fast)
 I - So fast and loud go together, do they?
 D - (nods yes)
 I - And soft and slow go together?
 D - (nods yes)

Her scheme comprised only fast and slow. The accommodation of that scheme commenced when she was able to indicate that she thought the music was soft and slow. Further questioning of Dana (e.g. Dana banging the table softly upon a request for slowness) confirmed that the accommodation of her scheme was complete. She had assimilated the loudness of the music into a revised scheme that included both the loudness and the speed of the music. The structure of the scheme, though indicating the juxtaposition of loudness and speed, was operational for Dana's needs.

The second protocol selected as illustrative of the responses of the children regarding accommodation and equilibration reveals the accommodation of a scheme to another scheme that had been used previously.

Blake (4/10)

- I - Was there a part of the music that you liked the best?
 B - Yup.
 I - Which part was that?
 B - I don't know.

- I - Was it the part where you heard the battle ship or ...
 B - The baddie ship.
 I - The baddie ship?
 B - Yup.
 I - Why did you like that part the best?
 B - I don't know.

Blake was able to decide if he had a preference for a particular part of the musical selection. He could not, however, extend his scheme (generalizable assimilation) to identify that part. The probe selected by the interviewer was based upon previous responses from Blake during the stimulus situation but was not a direct verbalization. The probe effectively caused Blake to change his scheme to one he had used before where he had described the music using terms from a popular film. This ability to talk about the music in those terms, differentiating Blake's response from an 'answer at random' response, allowed Blake to identify the part of the music he liked the best. The 'baddie ship' symbolized his preference.

Stimulus Situation 3 - Attentive Listening

The third stimulus situation further exemplifies accommodation and equilibrium. Seven three-year old children and four four-year old children exhibited these constructs in the third stimulus situation.

Nicola was required to sequence five statements but indicated that she was not able to and did not want to attempt this task. It was necessary to determine if her inability was because she could not remember the five details she had listened to or if her scheme of action was inappropriate. The following protocol illustrates that Nicola's scheme of action was not suitable for the assimilation of sequencing requirements.

Nicola (3/11)

- I - Can you tell me that story the way it really should happen, not mixed up?
 N - Ahh... not really.
 I - Could you try for me please?
 N - No.
 I - What do you think would happen first?
 N - Get dressed at home.
 I - Get dressed at home. And then what would happen?
 N - Going to Kindergarten without getting dressed at Kindergarten.
 I - Mmm...hmm. And then what would happen?
 N - You would get cold.

Nicola had a scheme of action for listening to and remembering details. This was evidenced by the fact that she was able to relate the facts back to the interviewer. The relation of the facts reveal that Nicola's listening scheme had been changed to enable her to properly sequence the events of the story but one step at a time. The balanced coordination of the assimilation and accommodation processes was achieved once Nicola had successfully responded to the demands of the situation.

Accommodation and equilibration are exemplified in the following protocol provided by the conversation with Helen during the third stimulus situation.

Helen (4/6)

- I - Were some of the times I hit my drum too hard for you to copy?
 H - Yes. They were too hard.
 I - They were too hard sometimes? Why do you think they were too hard?
 H - Umm. (pause)
 I - Were they too long?
 H - (nods yes)
 I - They were too long and that made it hard for you?
 H - (pause)
 I - Were the short ones easier?
 H - Yes.

Helen, similar to several children, was able to respond to the initial probe but was unable to continue the conversation as indicated by the pause in the interview

protocol. Helen's change of scheme was dependent upon the interviewer continuing to ask her simple questions which she could respond to with one word answers. Her scheme to comment on the reproduction of sound task did not include degree of difficulty. She then relied on a 'question - one word answer' scheme. The questions selected by the researcher coincided with this new scheme and equilibration was apparent.

Stimulus Situation 4 - Analytic Listening

The final illustration of accommodation and the accompanying level of equilibrium is Tristan's response to a question regarding the details of a story. In this stimulus situation 11 of the 20 children provided responses illustrating accommodation and equilibration.

Tristan (3/11)

- I - What did Nurse Plum give Rozzy to make her feel better?
 T - Umm... I don't know.
 I - You don't know. Did she give her some medicine, some milk and sweets, or apple and juice.
 T - Juice and milk.
 I - Juice and milk?
 T - And some sweets.
 I - And some sweets. How did you know that was what she gave her?
 T - Cause I - cause I see'd it on the big TV.

Tristan's initial response of "I don't know" indicated to the interviewer that his scheme of action was insufficient to answer the query about Nurse Plum's actions. The selected probe involving three choices resulted in a response, although incorrect, that revealed the cognitive process involved in Tristan's listening. Tristan revealed that his listening was coupled with an inner visualization process. What he heard was visualized in his mind as if he had seen it "on the big TV". In order to respond to the question it had

to be referred to this visual scheme which was the result of the accommodation process upon the original inadequate scheme of action. The original question was then assimilated and an answer was generated.

This final manifestation of accommodation and equilibration for the fourth stimulus situation reveals an enrichment of a scheme which results in the assimilation of additional information.

Emma (4/6)

- I - What was Rozzy's first trick?
 E - She looked into the basket.
 I - She looked into the basket. And what was her first trick she took out of her basket?
 E - A jack-in-the-box.
 I - A jack-in-the-box. Why do you think the jack-in-the-box was the first trick she took out?
 E - Because she took it out first.
 I - She took it out first. How do you know she took that one out first?
 E - Because of the story.

Although Emma responds to the question promptly, her reply indicates that her scheme for the comprehension of the story could not meet the demand for an answer. An investigation of the interview protocol confirms that Emma altered her scheme. The altered scheme depended upon the details of the story and the sequence of events to answer the initial probe. Emma needed to think in terms of detail and sequence - "She looked into the basket." and "She took it out first." in able to respond. Her responses, not an assimilatory process of merely extending the scheme, indicated behavioural accommodation which resulted in the enrichment of the earlier scheme (Vuyk, 1981). Following the accommodation of the original scheme assimilation of the environmental demands was possible, thus indicating the equilibrium between the internal elements.

Summary

The protocols supported the two postulates stated at the beginning of this section. In each case the assimilation process was only possible after the accommodation of the scheme of action. The original schemes of action were never abandoned by the child but in the process of accommodation were enriched. The first level of equilibrium was evident in all four cases because an imbalance would have resulted in an inadequate assimilation of the elements of the environment.

It is necessary to investigate the features involved in the second level of the equilibration process in order to progress in the discussion of the hypothesis that the listening process can be explained by consideration of the equilibration of its cognitive structures. Inherent in this discussion is the concept of structure. The discernment of the existing cognitive structures of listening, vital to this discussion, is the subject of the next section.

The Cognitive-Structural Features of Listening

Piaget (1968/1971) defined structure as a system of transformations which was enriched or preserved by the interplay of its own transformational laws. The concept of structure involves the idea of wholeness, the idea of transformation, and the idea of self-regulation. These three central ideas or features of structure will be discussed below by an examination of the interview protocols.

The basic tenets of structuralism are adequately summarized by Tomlinson-Keasey (1982) as being threefold. The first tenet is the conviction that there is a pattern or organization underlying the mental functioning of structures.

The second tenet is the notion that structures have a generality and cohesiveness that extends beyond a specific instance in time. Finally, the third tenet states that there is a belief that structure can be discovered through orderly analysis. The orderly analysis of the following protocols resulted in the discernment of the cognitive-structural features of listening.

Cognitive structures delimit the child's capacity for action by defining what actions are intellectually possible for the child at his stage of development. The actions of the child, in response to the environmental demands of the stimulus situations exhibit the structural features by which the cognitive structures may be known. The exemplification of these features of structure eventually result in their utilization in the equilibration process by which the listening can be explained.

The fourfold categorization of listening has been utilized, thus far, as an organizational system for applying the Piagetian constructs over the listening process. The four stimulus situations will be utilized, in this section, to exemplify the features of structure as discussed above. This is in accordance with both Furth (1970) and Flavell & Wohlwill (1969) who consider the 'structures d'ensemble' to be a family of structures.

These introductory remarks on structuralism lead to one major postulate prior to the discussion of the individual features of structure. It is postulated that the four listening situations will each exhibit the cognitive-structural features of wholeness, transformation, and self-regulation.

Prior to the discussion of the features of structure,

but as an integral part, it is necessary to discuss egocentrism as a core concept for explaining aspects of a child's cognitive development (Neale, 1970). Piaget (1976) recognized the importance of egocentrism to cognitive development and in some works changed his terminology to centration to avoid the pejorative connotations placed upon it by some authors. As a child's beginning thoughts are egocentric much can be revealed by an examination of this construct regarding the child's cognitive structures and his listening process.

Egocentrism

The concept of egocentrism is important to the study of the listening process because it describes a cognitive state of the child within which he perceives the world from his own singular viewpoint. A synthesis of the writings of Piaget (1926/1926), Vygotsky (1962), Sigel (1969), Elkind (1974, 1979), Brown & Desforges (1979), and Cohen (1983) resulted in the following description of egocentrism. The child perceives everything from his own perspective with an inability to differentiate between his own perspective and viewpoints and those of others. Egocentrism is a mental limitation which restricts the ability to decentre and thus inhibits the development of cognitive structures especially during the preoperational period of early childhood. Egocentrism, enveloping centration, depicts the child centring on one aspect of the phenomenon to the exclusion of other aspects. It was these characteristics of egocentrism that prompted Sigel & Cocking (1977) and other authors to view egocentrism as a very important consideration in the understanding of a child's cognitive behaviour.

Piaget (1926/1926) characterized egocentrism further in the following four points. First, the child's mind leaps from a basic premise to a conclusion in a single bound. Second, the child attaches little value to questioning his beliefs as his vision of the whole brings rapid security to his belief. Third, the child makes use of his own personal schemes of analogy. Fourth, visual schemes play an important part in his thought processes and can take the place of proof.

The implications of egocentrism for the study of the process of listening are important. Neale (1970) considered that children were unable to communicate fully because egocentrism prevented them from taking a role of listener. Ginsburg & Opper (1979) proposed that a listener distorts what he hears, elaborates upon it and is satisfied that he has understood the message. Brown & Desforges indicated that interpersonal communication was limited due to continued egocentrism of action which was carried on from the sensorimotor stage of development.

The concept of egocentrism will aid the understanding of the child's development of cognitive structures. The child's listening will be influenced by egocentrism and thus valuable information will be obtained about his cognitive processes. The role of egocentrism will also be pivotal to understanding the idea of transformation as the child exhibits an increasing ability to decentre as an identifying feature of transformation.

As an aid to the understanding of the child's cognitive development, the protocols from the four stimulus situations will be examined for evidence of egocentrism. As the analysis of listening is constantly advanced the selected

protocols are illustrative of egocentrism as discerned in each stimulus situation. It is postulated that egocentrism is operative across the four categories of listening and affects the child's cognitive development of listening.

Stimulus Situation 1 - Marginal Listening

Egocentrism evoked many examples which could have been selected for this stimulus situation. All of the children in the sample illustrated their egocentric thinking on several occasions.

The following two protocols exhibit egocentrism at its basic level. The first child needed to differentiate between two aspects of the situation and state his reason for his choice. He emphatically and egocentrically stated that his reason was "Cause I like them!"

Tristan (3/10)

- I - Did you listen to the story more or to the noises more?
 T - Noises.
 I - Why did you listen to the noises more?
 T - Cause I like them!

Helen's task was to decide upon her enjoyment of the story. She replies in the affirmative because she considered herself successful in the situation.

Helen (4/7)

- I - Did you enjoy the story?
 H - Yup.
 I - Why did you enjoy it?
 H - Because I knew all the things.

Piaget considered that an egocentric characteristic of a child would be to believe that he had understood everything in a given situation. Helen, though incorrect in her

assumption, believed strongly that she had known all the things (questions and answers) in this first stimulus situation.

Stimulus Situation 2 - Appreciative Listening

All of the children had examples of egocentrism in this situation. Caroline's protocol exemplifies a child's egocentrism. Her response related specifically to herself.

Caroline (3/11)

- I - Was the loud music happy or sad?
 C - Sad. It made me be angry - was the loud-Baaa!!! - like that sometimes as bad as a car.
 I - Why did that loud music make you feel kind of angry?
 C - Cause it just did.
 I - What about the soft music? Was it happy?
 C - Happy.
 I - Why was it happy?
 C - Cause I liked it.

She held sad and angry in juxtaposition. Juxtaposition is an aspect of egocentrism. Further, Caroline's only reason for the soft music being happy was her own egocentric position of her partiality to the music.

Simon's responses in the following protocol were based upon his egocentric thought processes.

Simon (4/5)

- I - Was the loud music happy or sad?
 S - Sad.
 I - Why was it sad?
 S - Cause I don't like loud music.
 I - Was the soft music happy or sad?
 S - Happy.
 I - Why was it happy?
 S - Every time soft music comes up it's happy.

Simon's only criterion for the loud music being sad was that he did not like loud music. His reply was based upon

how the music made him feel regardless of the characteristics of the music. Although not explicitly stated it can be inferred from Simon's response that the soft music is denoted as happy because Simon will like it.

Stimulus Situation 3 - Attentive Listening

The third stimulus situation continues the trend of egocentrism displayed in the first two situations with all the children illustrating egocentric thought. The first protocol exhibits three characteristics of egocentrism.

Simon (4/5)

- I - How did you know what pattern to hit on your drum?
 S - Cause I know how to hit drums - cause I watched the drum thing.
 I - You watched the drum thing. Did you try to make yours sound just like mine?
 S - Yes. Cause I can make any sound.
 I - Where did you hear the hitting on the drum?
 S - On Solid Gold.

First, Simon holds hitting the drums in juxtaposition to the watching of Solid Gold on television. He believes that his ability to reproduce the patterns on the drum is dependent upon watching drums being played on the television program. Second, Simon views his success entirely from his own vantage point. He measures his ability on the drum with his own measuring stick. He does seek confirmation of success but is assured within himself that he is correct. Finally, Simon exhibits one last characteristic elucidated by Piaget in that he believes that he completely understands everything and is able to do everything requested by the interviewer.

Ania's personal point of reference, illustrated in the

second protocol, is characteristic of egocentrism. The protocol, however, is important because it parallels Piaget's illustration of the first stage of thought. He observed that the young child considered that thinking was done with the mouth. Ania relates to the interviewer that her listening was with "the mouth".

Ania (3/9)

- I - Where did you hear the words?
 A - Out of your mouth.
 I - Out of my mouth. They came out of my mouth and where did they go after they came out of my mouth?
 A - Into my mouth.

The similarity between Piaget's first stage of thought being "thinking with the mouth" and Ania's revelation that listening occurred "with the mouth" is interesting. It suggests that listening as a cognitive activity resembles the development of thought.

Stimulus Situation 4 - Analytic Listening

The final situation, of which the following protocols are illustrative, completed the trend of egocentrism in the listening. In this situation 19 children exhibited egocentric thought. The limiting nature of egocentrism is evident in Dana's response.

Dana (3/10)

- I - Did Rozzy lose her key first or did she trick Tiny and Button Mushroom first?
 D - Lost her key first.
 I - She lost her key first. How do you know she lost her key first?
 D - Cause.
 I - Did you hear anything that made you think that?
 D - Because my - my - I've got a talking house.
 I - Oh, you have a talking house.
 D - Cause my talking house told me.

Once Dana had answered the initial question she had to turn to another scheme of action. The scheme was one of make-believe, as evidenced by the talking house. Dana believed that she had understood and correctly answered the initial probe. To maintain this egocentric belief she did not question her response but switched to the alternative scheme of action which was probably naturally elicited by the make-believe story she had heard.

The second protocol exemplifying egocentrism is the final example of this construct. The following excerpt illustrates Nadia's egocentric thinking which was evidenced throughout the stimulus situations by her and the other children.

Nadia (4/4)

- I - Did Rozzy lose her key first or did she trick Tiny and Button Mushroom first?
 N - (pause)
 I - Which one did she do? (first)
 N - Her key first.
 I - She lost her key first. How do you know she lost her key was the thing that happened first?
 N - (pause)
 I - How did you know that, Nadia?
 N - (pause)
 I - How did you know that?
 N - I just know.

Nadia exhibited her egocentric thought in two ways. First, when she was required to make a choice on the sequence of events she did not offer a reason for her selection. She emphatically stated, "I just know". She was under the impression she had understood the question and had answered correctly. Egocentrism (Piaget 1926/1926) induced her to believe she had understood everything. Second, Nadia's final response indicated that she was finished with this particular

question. Her egocentric thought was evident as she was not prepared to question her own thinking on her initiative or allow the interviewer to aid her by further questioning.

Summary

The trend of egocentrism, operative in listening, was traced throughout the four listening situations. The many characteristics outlined by Piaget and other authors were exhibited in the protocols. The effect of egocentrism was indeed seen as a limiting factor in the child's listening. A decrease in egocentrism, as will be illustrated in the section on transformation, is important for the development of the cognitive structures of listening. The features of structure - wholeness, transformation, and self-regulation - will be examined in the following sections.

Wholeness

Wholeness, the first feature by which the structure of a phenomenon may be known, differentiates the structure from the elements which define it. The elements of the structure are subordinate to the laws of composition which relate them. Inherent in the idea of wholeness is meaning. Meaning must be mapped within the structure. Wholeness is the principle which indicates that meaning has been mapped within a particular cognitive structure (Piaget 1968/1971, Cocking, 1981).

The holistic nature of structure is evidenced by the dynamic interrelation of its parts. Phillips (1982) recognized that, in a holistic sense, each structure is a system because the interaction of the elements are such that the whole is more than the sum of its parts. The synthesis

of the various elements that have been discriminated within the system results in meaning for the structure.

A simple illustration of this concept was given by Cocking (1981). The search for structure resembles a murder mystery. The elements of the mystery are the butler, the rich heiress, and a stabbing. Each element has meaning in its own right. However, the structure and solution of the mystery are only discovered when the elements are integrated to reveal that the rich heiress used a dagger to stab the butler.

To exemplify wholeness, the examination of the protocols of the four stimulus situations must reveal that a dynamic interrelation of the elements of the structure does exist. Meaning must be mapped throughout the system, relationships within the system must be established, and hitherto separate elements of the system must be connected or associated.

Operationally, if the elements of a stimulus situation can be shown to interrelate dynamically in a non-additive manner the feature of wholeness will be illustrated. It is postulated that for each listening situation the elements of structure (the functions of the stimulus situation) will be dynamically interrelated (non-additively), such that the structure will be differentiated from the elements which define it.

Stimulus Situation 1 - Marginal Listening

The selected protocols from the marginal listening situation are representative of the responses of the 14 three- and four-year old children in the study who exhibited the feature of wholeness. The environmental demand for information about the story was illustrative of the dynamic

interrelation of two functions within this situation.

Sam (4/11)

- I - Did he (Dick Turnip) live in a kettle, a boot, or a funnel?
 S - Boot.
 I - In a boot. How did you know he lived in a boot?
 S - Because he just did.
 I - Did you hear something that made you think he (Dick Turnip) lived in a boot, today?
 S - (nods yes)
 I - What did you hear?
 S - I heard music and Dick Turnip lived in a boot.

When asked where Dick Turnip lived Sam indicated that he had heard music, the background noise, and that Dick lived in a boot. The interplay was evident that, for Sam, it was necessary to incorporate his marginal listening (hearing the background noise) with the analytic request. He could not separate the two functions. This response also exemplifies the second of three levels of equilibrium. As equilibration is indicative of self-regulation it is evident that the wholeness of this situation is supported by the further interrelation of the features of cognitive structure.

The second example of the cognitive-structural feature of wholeness is contained in the interview protocol from the youngest child in the study. Her response, limited by her stage of cognitive development and her verbal skills (Tompkins, Friend, & Smith, 1984), nevertheless resulted in a pertinent example of wholeness.

Selena (3/6)

- I - What did Emma, Sally and Olive put into the sweets they made especially for Dick Turnip and his gang?
 S - (pause)
 I - Did they put soap powder, or peanut butter, or vinegar?
 S - Vinegar!

- I - Vinegar! Why do you think they put
vinegar in?
S - Cause they're naughty.
I - Because the Turnips were naughty?
S - (nods yes)

The request of Selena was to determine the contents of the sweets that were made for Dick Turnip and his gang. Although Selena could not immediately respond the alternatives offered provided her with a means of arriving at an answer to the question. The request for details, an analytic task, required that Selena listen attentively on two occasions. First, Selena needed to listen attentively to the choices presented to her. Second, in order to respond to the second probe regarding the reason for the vinegar in the sweets Selena must have listened attentively to conclude that the irregular content of the sweets was the result of the Turnips' naughty behaviour. The interrelation of the analytic request with attentive listening to produce her response illustrated the cognitive-structural feature of wholeness.

Stimulus Situation 2 - Appreciative Listening

In the second listening situation 14 children demonstrated the cognitive-structural feature of wholeness. The next protocol illustrates the impossibility for Ania to respond to the probe without an interplay of functions within the stimulus situation. The initial probe questioned Ania on her enjoyment of the music which is a listening for enjoyment task.

Ania (3/8)

- I - Was there a part of that music that you
liked the best?
A - Yes.
I - Which part was that?
A - The soft one. The soft bit of music.

- I - The soft part of the music. Why did you like the soft part of the music better, Ania?
 A - Because I didn't like the loud one because it hurts my ears.
 I - Because it hurts your ears.
 A - Makes me sick.

Ania's affirmative reply as a function of enjoyment needed to be augmented by the function of listening for descriptive terms. In order to explain her enjoyment of the music she needed to describe the music as 'soft' which could only be accomplished if she had listened to the music and recognized the degree of loudness. The interplay of the two functions resulted in a response that adequately expressed the wholeness of her cognitive structure.

The second protocol in this stimulus situation, this time extracted from a four-year old, again illustrated the idea of wholeness as associated with structure.

Emma (4/6)

- I - Can you tell me all about your picture?
 E - The turtle is trying to sneak in the house.
 I - Why did you draw somebody's house?
 E - He wanted to go and visit his friends and play with them.
 I - Did the music make you think of drawing the turtle visiting his friends?
 E - Yeah.
 I - How did the music make you think of a turtle?
 E - Because it sounded like a turtle.

In this case the child was requested, initially, to listen in order to visualize, culminating in a drawing. Emma had drawn a picture of a turtle going to visit some friends. She acknowledged that the music was the motivation for her picture. However, she could discuss her picture only if she too drew upon the descriptive terms she had heard while listening to the music. Also evident in Emma's response was imagery, an aspect of description.

Stimulus Situation 3 - Attentive Listening

The threefold design of the third stimulus situation resulted in wholeness being operational in three areas. Within these areas eight children exhibited the feature of wholeness. As illustrative of the children in the study two protocols were chosen to support the construct of wholeness.

Caroline (3/11)

- I - Did you think that your drum sounded the same as my drum?
 C - No.
 I - You didn't? Why not?
 C - Cause it sounded like this - (hits drum).
 I - Do you think when I went - when I hit my drum (hits drum) - and you hit your drum (hits drum) - do you think that sounded the same?
 C - But you went - (hits drum three times) - and I went - (hits drum two times - like that!

Wholeness was evident from this protocol in a number of ways. The elements of the system all concerned the reproduction of sound on the drum. The relationships of these elements were evident in the discussion with Caroline. She was asked to discuss the idea of sameness. In order to respond to her satisfaction she needed first to consider the differentiation of patterns. As well, she exhibited progression through a process or cycle of evaluation and analysis.

The second interview protocol was also selected from the reproduction of sound task using drums.

Sam (4/11)

- I - How did you know what pattern to hit on your drum?
 S - Cause you hit it first.
 I - Cause I hit it first?
 What did you hear?
 S - Umm. You - the sound that you make on your drum.
 I - The sound that I made on my drum. That's good. How did you hear that sound?

- S - Cause the drum made it.
 I - I'm sorry.
 S - Because the drum made the sound.
 I - Because the drum made the sound and you heard it?
 Where did you hear the pattern?
 S - (pause)
 I - Where did you hear it?
 S - In the drum.
 I - In the drum?
 How did you hear it?
 S - Because it was in the drum.
 I - Because it was in the drum.
 What did you use to hear it?
 S - The drum.
 I - What did you use to hear it with?
 S - Ears.
 I - Your ears?
 S - I told you that!
 I - Can you tell me how those ears work?
 S - The ears because they have special things in them and they work.
 I - And they work. How do those special things work - do you know?
 S - They just work and work and work.

This lengthy excerpt from the interview with Sam exemplifies the aspect of wholeness by the interplay of several factors. Within this protocol Sam discusses how he listened attentively to the sound that the interviewer's drum made to repeat the pattern, how the drum made the sound he heard as a response to how he heard the noise, the specific location of the noise as being 'in the drum', plus a physiological explanation of the working of the ears as the means of hearing. These factors resulted in the wholeness of Sam's response. They did not add up to his response but interacted such that meaning ran throughout the listening process such that omission of one factor would have altered the meaning of Sam's response.

Stimulus Situation 4 - Analytic Listening

The dynamic interrelation of the elements of the system, evident in the interviews of 13 of the 20 children, was simply but powerfully illustrated in the final two protocols on wholeness.

Rose (3/8)

- I - Tell me what happened first. Did Rozzy fool Adam Advocado with the jack-in-the-box or did she fool Nurse Plum with the arrow in her hat?
- R - (pause)
- I - Which one did she do first?
- R - Um... Pop!
- I - The one that went pop! How did you remember that?
- R - I just knowed it.
- I - You just knew it. Where did you hear it?
- R - The jack-in-the-box.

The initial task of sequencing was synthesized with listening for details as evidenced by Rose's response of "Pop!" for his answer to the question. He was unable to respond until in his mind he had associated sequence with detail. For Ross the meaning was mapped within the structure.

Similarly, Blake required that the initial listening for details task be synthesized with listening comprehension before he could respond accurately to the question.

Blake (4/10)

- I - What trick did she play on Nurse Plum?
- B - Jumped ... leaped - leaped out of bed.
- I - What did she do when she leaped out of bed?
- B - Ummm. Flung her hat out in the air.
- I - Ahh good. And was there something special about that hat?
- B - No. Had an arrow in it!
- I - How did you know all that?
- B - Cause I just did.

Blake exhibited his comprehension of the story as he related to the interviewer his understanding of how Rozzy had leaped out of bed and flung her hat in the air. This process eventually led Blake to the detail he was searching for - the arrow in the hat. The interplay of listening comprehension

and listening for details, the wholeness of the structure of listening, had determined Blake's response.

Summary

The evidence for the idea of wholeness, as supplied by the illustrative protocols, supported the postulate proposed at the beginning of this section. The interrelation of the various elements or functions of each listening situation corroborated the existence of their structure.

The representative patterns established in conversation with three-and four-year old children demonstrated that cognitive structure could be partially known through the feature of wholeness. The idea of transformation as the second feature of structure will be investigated in the next section.

Transformation

Transformation, the second characteristic of structure, refers to sets of rules or to operations which change the state of the structure. The development of cognitive structures, as defined by Piaget (1968/1971), can be traced in three general trends (Gardner 1972, Cowan 1978, Codd 1980).

The first is increasing decentration. Decentration, as discussed under egocentrism, underlies cognitive development. The child exhibits a steady decline in egocentrism and is increasingly able to participate in verbal exchanges.

The second general trend to be considered is the increasing interiorization of action. Cowan depicts this trend as thought being supported by internal language. As the child moves through the developmental stages, action is

eventually transformed into thought or internal language. Furth (1970) represents this trend as a movement from practical to operational intelligence.

The third general trend is the internalization of action. Piaget did not separate internalization and interiorization but used one term to denote both concepts. Thus, for the purpose of this discussion, the term symbolization will be used. An increasing use of symbols can best characterize this third trend and is in keeping with Piaget's original connotations. Various kinds of symbols may be used which include words, pictures, and concepts. The child will exhibit greater use of symbols as he progresses in his cognitive development.

The interview protocols will be discussed to exemplify the second structural feature of listening. The general postulate is that: the cognitive structures of listening incorporate transformations. Transformations do not occur within the protocols of the stimulus situations but during the child's cognitive development. Evidence that decentration and symbolization are operational in the child's listening process and that interiorization occurred prior to the child's response will confirm that transformations have occurred or are occurring in the listening process. The general postulate will be confirmed as the interview protocols for each of the stimulus situations corroborate the existence of decentration, interiorization, and symbolization.

Stimulus Situation 1 - Marginal Listening

The first stimulus situation yielded examples of decentration, interiorization, and symbolization. However,

only one protocol per trend was selected as representative of the children in the study. Six of the three-year olds and eight of the four-year olds generated examples over the three categories.

The first protocol demonstrated the decentration of the child. Simon illustrated that he was aware of both the noises in the background and the story.

Simon (4/5)

I - Would you have understood the story better if the noises weren't there?

S - Yes.

I - Why do you think that?

S - Cause it be much louder and better.

I - Did the noises make it difficult for you to answer the questions?

S - Yes.

I - Why do you think that?

S - Cause they - cause the noises were much louder and they are they the other questions or hear you.

Even though he admitted to difficulty in understanding the story he did not centre on the noises alone. He was cognizant of the characteristics of the noises and of the questions he needed to respond to during the interview. Simon's responses throughout the interview reflected his capacity to decentre in the face of the conflicting audio information.

The interiorization of action, the evidence of increasing internal thought, is the second trend to be investigated. The child must demonstrate that he had, prior to responding to the environmental demand of the stimulus situation, internal thought or language. The protocol from Richard is a good example of interiorization. The internal thought or language evidenced would have been transformed from action during his cognitive development.

Richard (4/7)

- I - Do you think marrows would make good policemen?
 R - Yup.
 I - Why do you think that?
 R - Cause he had ropes to tie them up.
 I - He had ropes to tie them up.
 Can marrows be policemen?
 R - Yes.
 I - O.K.
 R - But! Some not - not around here - only in the story.
 I - Only in the story. Why can the marrows only be policemen in the story?
 R - Cause - these people have to be policemen. Cause the other - the Munch Bunch people aren't real. They're only puppets.

Richard demonstrated that he had considered this question internally prior to giving his response. He showed a method of reasoning in which he could respond in terms of reality or make-believe. He knew that marrows could not be policemen in reality but was also able to place himself within the fanciful world of make-believe.

Sam provided the first example for the existence of symbolization as a characteristic of transformation.

Sam (4/11)

- I - What did Emma, Sally, and Olive put into the sweets they made especially for Dick Turnip and his gang?
 S - (pause)
 I - What did they put into them specially for them?
 S - Bubbles.
 I - Bubbles. How did they make bubbles?
 S - They just got them from the shop.
 I - They got them from the shop. How do you know that that was what they put in?
 S - Just did.

His response to the question on the composition of the special sweets made for Dick Turnip and his gang was symbolic. Instead of answering 'soap powder' Sam symbolically expressed the outcome of eating the sweets both in words - "bubbles" and actions - gestures with hands and mouth to depict bubbles blowing in the air.

Stimulus Situation 2 - Appreciative Listening

The second stimulus situation also generated many good examples of transformation as evidenced by each of the three general trends. Transformations were confirmed in both age groups. A total of 14 children demonstrated the transformational aspect of structure in this situation. The following four interview protocols exemplify the structural feature under investigation and are illustrative of the responses of the children in the study.

The excerpt selected from the interview with Blake, to illustrate decentration, can be contrasted with protocols containing egocentric responses.

Blake (4/10)

- I - Did you enjoy the music?
 B - Yup.
 I - Why did you like it?
 B - Because I think it was neat.
 I - O.K. Was there a part of that music that you liked the best?
 B - Yup.
 I - What part was that?
 B - Ummm... Star Wars ship.
 I - The part that sounded like the Star Wars ship?
 B - Yup.
 I - What part was that? Can you remember what the music sounded like when the Star Wars ship was on?
 B - (makes noise of a laser gun) Like that.

The egocentric response to this question, for example, would have been "Because I liked it". The reasoning process of the egocentric child could not be extended any further. Blake, in contrast, had demonstrated his ability to go beyond egocentric thought in his listening, to discuss a feature of the music that he particularly enjoyed.

The interiorization of thought is illustrated in the

following protocol. For a three-year old it represents evidence of initial interiorization.

Hayden (3/10)

- I - What did you hear in the music that made you think of shooting crocodiles?
 H - (pause)
 I - Mmm?
 H - Because I know it.
 I - Did the music make you think of shooting crocodiles?
 H - Yep.
 I - How did it do that?
 H - No, it didn't. It (music) told me to draw.
 I - So the music told you to draw shooting crocodiles.
 H - Yeah.
 I - How did it do that?
 H - Cause it could.

The stimulus situation involved the child in drawing a picture to music. Hayden's response to questioning about his picture illustrated that the action of drawing had been interiorized to the point that Hayden realized that it was listening to the music which caused him to draw the picture that appeared on the paper. The depth of Hayden's explanation revealed that the interiorization was recent.

The use of symbolization is illustrated in the following interview protocols, one from each age group. Ross used two simple forms of symbols in his description of the loudness of the music. First, and very loudly, he described the loud music with "boings" like the clashing of cymbals. In contrast, his actions symbolize the softness of the music as he compares the music to the gentle blowing of the wind.

Ross (3/8)

- I - Was the music loud all the time?
 R - Yes.
 I - How did you know it was loud all the time?
 R - I just did.

- I - How did you know that it was loud all the time?
 R - Cause I just did. Boing! Boing! Boing! (loudly)
 I - Is that what it [the music] sounded like?
 R - Yes. Bang! Boing! Boing!
 I - How does soft music sound?
 R - (Blows gently like wind) Lovely.

The second protocol illustrates the use of symbols to differentiate between the degree of loudness in the music.

Jevon (4/10)

- I - Was the music loud all the time?
 J - (shakes head no)
 I - No?
 J - It was - it was sometimes.
 I - It was some of the time. So some of the time it was loud and some of the times it was soft. How did you tell the difference between the loud part and the soft part?
 J - The loud part came first.
 I - The loud part came first. What did it sound like?
 J - Like truck.
 I - It sounded like a truck. O.K. And the soft part sounded like what?
 J - A car.

The symbols are taken from the child's everyday experience of loud and soft. The truck represents the loud music and the car represents the softer music.

Stimulus Situation 3 - Attentive Listening

Stimulus Situation 3, the investigation of attentive listening, produced several revealing examples of decentration, interiorization, and symbolization as defined for this study. Even though three out of four protocols selected for this discussion resulted from conversations with three-year old children, the four-year olds were equally revealing in their responses. Interviews with seven three-year olds and eight four-year olds illustrated the existence of transformation as a cognitive-structural feature.

The first protocol, evidence of decentration in the young child, illustrated the questioning process involved in arriving at a final conclusion. Caroline was discussing the loudness of the drum following her attempts at reproducing the patterns used during the task.

Caroline (3/11)

- I - Was the banging on the drum loud or soft?
 C - Loud.
 I - Loud. How did you know it was loud?
 C - Cause I just know. My brain made me think and I just know.
 I - Let's just listen to my drum. Tell me whether this is loud or soft. (I hits drum loudly and slowly)
 C - Soft.

Caroline exhibited her ability to determine if the banging on the drum was loud or soft. After repeated examples of the concept of loud and soft the questioning investigated the concept of fast and slow.

- I - Caroline, were some of the times I hit my drum faster than other times?
 C - Yup.
 I - How did you know that?
 C - Cause I just think in my brain and I think and I just knew.
 I - Tell me, is this one fast or slow? (I hits fast/loud)
 C - Fast.
 I - Is this one fast or slow? (I hits drum slow/fast)
 C - Slow. ?

The interrogation on the rate of speed was necessary to determine if loudness and speed were in juxtaposition as apparent in several cases previously. In Caroline's case speed and loudness were not juxtaposed and she was able to decentre, thus confirming the existence of a transformational feature of her cognitive structure.

The prior interiorization of thought was apparent in the

following protocols. Richard was being probed on the understanding of the listening process.

Richard (4/7)

- I - How did you hear what to do?
 R - (pause)
 I - How did you hear?
 R - Because I've got these (points to ears)!
 I - You've got those! What are those?
 R - Ears.
 I - How did those ears of yours work?
 R - Because they've got little holes in them and they can hear what you say.
 I - So what I say goes in those little holes?
 R - Yup.
 I - And then where does it go?
 R - Nowhere.

Richard, who had previously exhibited this feature, did so again in this situation. He was asked to explain how he listened. Repeated experience with listening gave Richard all the information he needed to internalize his thoughts about listening. Unfortunately, but not known to Richard, his interiorization process was still being developed as he was not able to trace the intake of information any further than his ears. However, Richard did exhibit a gradual development of the interiorization of action.

Caroline's interiorization was further advanced than Richard's. Her interview protocol below confirms this viewpoint.

Caroline (3/11)

- I - Caroline, were some of the times I hit my drum faster than other times?
 C - Yup.
 I - How did you know that?
 C - Cause I just think in my brain and I think and I just knew.

She obviously had interiorized the action of banging on

a drum or other instruments and knew immediately that her brain was responsible for her actions once she had listened to something and could verbalize audibly her inner language.

Symbolization was evident in the protocol from Ross. Instead of verbally answering the question he behaviourally symbolized his response by the clicking of his tongue. Though elementary, it was the commencement of symbolization for Ross.

Ross (3/8)

- I - How did you hear it? (referring to the
banging on the drum)
R - (clicks tongue to pattern)
I - Like that? What did you use?
R - (clicks tongue again)

The end of Ross's protocol also revealed significant information. In response to a query about what he used to listen with he clicked his tongue. This was reminiscent of Piaget's first stage of thought (think with mouth) and of earlier protocols in this study where children listened with their mouths as a primary stage of the understanding of the listening process.

Stimulus Situation 4 - Analytic Listening

The fourth stimulus situation also evoked a wealth of information about the transformational feature of structure. Decentration, interiorization, and symbolization were easily identifiable in interviews with 15 of the 20 children in this situation.

A cursory glance at Hayden's responses would suggest that Hayden was not able to decentre at this time. However, based on the facts of the story, Hayden surprisingly demonstrates his ability to decentre.

Hayden (3/10)

- I - Did Rozzy lose her key first or did she trick Tiny and Button Mushroom first?
 H - Yup. She tricked Button up.
 I - She played the trick on Tiny and Button first?
 H - Yup.
 I - How do you know that?
 H - Because that's because she's a supposed to every day. So it's the soldiers can see her doing it.

Hayden, in fact, is able to supply information on more of the story than the stage in question. All he needed for his response to this question was that Rozzy had tricked Tiny and Button Mushroom first. Once he gave this information he placed the answer in the sequence of the story. This is shown by his reference to the soldiers who were meant to see Rozzy's next trick of being supposedly shot by the Indians.

The following protocol is illustrative of two points. First, it demonstrates the child's interiorization of thought. Second, it illustrates the cognitive growth of Ania over the short time from the commencement of the clinical interviews.

Ania (3/8)

- I - Where did you get that idea? (after the preceding answer)
 A - Well I get found out and I can sift it out of my mind.
 I - You got it out of your mind.
 A - It just did.
 I - It just did?
 A - It slipped into my mind.
 I - It just slipped into your mind?
 A - Yeah.
 I - Did you hear that when I was reading the story?
 A - Yes and it slipped into my mind.

A paraphrase of Ania's response is: "I listened to the story and the information from the story was lodged in my

mind. When I needed to respond to your question I found the appropriate response, sifted it out from among the unnecessary information, and gave my answer." The preceding paraphrase indicates that the listening process had indeed been interiorized with evidence of internal thought.

Also Ania's response illustrates her growth over a short period. Her previous reply to a similar question, was similar to thinking with the mouth. In Ania's case she had listened with her mouth. Now however, Ania's understanding of the process of listening, though not clearly explained, is more complete and thus evidence of growth in interiorization.

The final three protocols illustrate the presence of symbolization in the young child. The symbolization which occurs for Tristan, Ross, and Jevon takes the form of internal images which are explained to the interviewer during the discussion.

Tristan (3/11)

I - Can plums talk?
 T - Noooo.
 I - Why not?
 T - Because they ain't got mouths and eyes.
 I - Mmm... can they be nurses then?
 T - (shakes head no)

Ross (3/8)

I - Can plums talk?
 R - No.
 I - Why not?
 R - They can't because they just can't. Plums aren't meant to talk.
 I - Why aren't they meant to talk?
 R - (pause)
 I - Why aren't they meant to talk, Ross?
 R - Because they grow on trees.

Jevon (4/10)

- I - Do you think plums would make good nurses?
 J - (shakes head no)
 I - No? Why not?
 J - Because they're not allowed to run in the nurses' place.
 I - Can plums be nurses?
 J - No.
 I - Why not?
 J - Because people have to.

While listening to the story all three boys have symbolically, in their minds, developed a picture of a plum as a nurse. While symbolically sharing this with the interviewer they reject their vision of Nurse Plum and return to reality. This is not before they have demonstrated that symbolization is a scheme of action available to them as a transformational feature of structure.

Summary

The interview protocols corroborated the general postulate for the second structural feature of listening. Across each of the four stimulus situations evidence of the existence of decentration, interiorization, and symbolization confirmed that transformations had occurred or were occurring in the listening process during the child's cognitive development. This evidence furthers the search for structure and the understanding of the listening process.

The final structural feature, self-regulation, will be examined below. The exemplification of this feature will conclude the discussion on the cognitive-developmental structures of listening.

Self-Regulation

The third and final feature of structure to be discussed is self-regulation. The process of self-regulation needs to

be delimited for the purpose of this section. Piaget and authors such as Furth (1969), Cowan (1978), and Brown & Desforges (1979) note that equilibrium becomes a sequence of or provides the self-regulatory processes responsible for cognitive development. In other words the concept of self-regulation is difficult to separate from equilibrium. However, on the basis that the theme of this thesis is the understanding of listening by the consideration of the equilibration of its cognitive structures and that the present goal is to know the cognitive structures by evidence of the existence of their structural features, self-regulation will be examined, across the stimulus situations, through the interaction of several concepts to be elaborated below. The equilibration of the cognitive structures on the second level will be discussed in the next section.

The idea of self-regulation entails self-maintenance and closure. Self-maintenance is the active involvement of the child at his own level of competence. Closure refers to completeness with the safeguarding of meaning to any further modifications.

The three basic mechanisms of self-regulation as outlined by Piaget (1968/1971) are rhythm, regulation, and operation. The "openness" of the structures of listening, as outlined in Chapter Three, omits the operation mechanism and considers only rhythm and regulation. Rhythm, such as pervades biology, is considered in the social sciences at the elementary level of symmetries and repetitions. Regulation means that action is not repeated in the same form but is modified into another action with the modification due to the effect of the original action (Vuyk, 1981).

Vuyk notes that regulations are of two types:

correction (negative feedback) and reinforcement (positive feedback). Elkind (1979), similarly but in a more practical sense, refers to regulations that have direction, organization, and self-correction. Self-regulation occurs to overcome dissonance within the child. This dissonance comprises two types (Piaget 1975/1977, Vuyk 1981). Simplified somewhat, an "obstacle" refers to an inability to assimilate and a "lacuna" to a gap or unfulfilled requirement in the scheme of action. Both obstacles and lacunae lead to regulations.

The examination of the interview protocols for evidence of the structural feature of self-regulation as a means of knowing the cognitive structures of listening will consider two postulates. First, the features of self-regulation, closure and self-maintenance, will come into play upon an encounter with either an obstacle or a lacuna. Second, the encounter with the obstacle or lacuna will initiate two pertinent basic mechanisms of self-regulation, regulation and rhythm with their various forms, which will overcome the dissonance in the system.

The structural feature of self-regulation will be corroborated across the four listening situations by the investigation of the interview protocols as outlined in the two postulates. A protocol selected for inclusion in the discussion exhibits an interplay of the factors involved in self-regulation as a feature of the cognitive structures of listening.

Stimulus Situation 1 - Marginal Listening

In the marginal listening situation 19 children exhibited self-regulation as a feature of the structure of

listening. In particular this stimulus situation will be utilized to exhibit rhythm as a mechanism of self-maintenance. As rhythm involves repetition of action two interview excerpts are required from each child selected.

Gillian (4/1)

- I - Where did Dick Turnip live?
 G - I don't know.
 I - You don't know where he lived? Let me give you some choices then. Did he live in a kettle, a boot, or a funnel?
 G - A boot.
 I - A boot. How do you know he lived in a boot?
 G - Cause you told me it in the story?
- I - Why did everyone have a lovely time at the end of the story?
 G - I don't know.
 I - Did they get the food back from Dick Turnip and his gang or did Dick Turnip and his gang come to the party or was Supercool's party lots of fun?
 G - Lots of fun.
 I - How do you know that?
 G - Because you told it in the story.

In both of these excerpts Gillian encountered an obstacle in her environment. Gillian's inability to respond to the question was evidenced by her answer "I don't know". Based upon Gillian's previous responses in this stimulus situation and the other three preceding stimulus situations the interviewer knew that the correct line of questioning was to offer Gillian three alternatives to the initial question. Gillian was able to respond correctly to the question once she received the choices. She did not seem to withhold any scheme of action which would have allowed her to answer the initial question without the alternatives. The rhythmic self-regulation was observed when the pattern was repeated as shown in the second excerpt. The rhythmic self-regulation at

Gillian's own level of involvement was also observed in the fourth listening situation.

Two excerpts from the interview with Ania have been selected to exemplify self-regulation in the first stimulus situation.

Ania (3/9)

I - Who did Dick Turnip live next door to?

A - (pause)

I - Who did Dick Turnip live next door to?

A - I don't know.

I - Was it Rozzy Raspberry, Tom Tomato, or Rory Rhubarb?

A - Rory Rhubarb.

I - Rory Rhubarb. Where did you get that idea?

A - I don't know. It must have slipped into my brain again.

I - How did it slip into your brain?

A - Through my ears!

I - What did Dick Turnip say when he was about to rob somebody?

A - Don't know.

I - Did he say, "Stick 'em up!", "Stand and deliver!", or "Give me the cake!"?

A - No. He said "Stand and deliver!"

I - How did you know that?

A - Just did.

I - Just did.

A - It must have slipped in through my ears again.

In both of these excerpts Ania experienced difficulty in responding to the question. She needed to be given a selective, non-suggestive probe before her scheme of action could provide an answer. For Ania, self-maintenance was enacted upon encountering an obstacle, as this was her particular level of involvement. She did not seem, at this time, to have command of any skills which she did not employ. The rhythmic mechanism was instigated by the observance of the second time she required the selective probe. Each time during the interview, the response pattern was "question - no

answer - selective probe - answer" the system was self-regulated by the mechanism of rhythm.

Ania's protocols also indicated that her interiorization of thought and understanding of the listening process was deepening. This stimulus situation was the last in the series for Ania. Throughout the study Ania has progressed from listening using her mouth, to listening slipping into her brain for sifting out, to finally, listening with her ears to transmit the message to her brain as evidenced in this final protocol.

Stimulus Situation 2 - Appreciative Listening

In this listening situation 16 children demonstrated self-regulation. The following two protocols are illustrative of the children who experienced dissonance in the form of a lacuna.

The first excerpt illustrates the action of a child upon encountering dissonance in the form of a lacuna. The cognitive structure was self-regulated, with the child at his own unique level of development, through an organizational regulation.

Ania (3/8)

- I - Was the music loud all the time?
 A - No.
 I - No? How did you tell the difference...
 A - Sometimes it gets soft and sometimes it gets loud.
 I - How did you tell the difference between the loud part and the soft part?
 A - Because I know. Because I know what that feels like.
 I - You know what that feels like.
 A - Yeah.
 I - What does the loud part feel like?
 A - Dumpy.
 I - How does the soft part feel?
 A - Soft.

- I - Where do you feel it?
 A - Through it - I can feel it through the tape recorder or through that thing there (speaker).
 I - Do you feel it someplace in you?
 A - Yes. Sometimes. Not often.
 I - Where would that be?
 A - Da da da (points to stomach).
 I - Right there in your stomach.

The lacuna was apparent in Ania as her scheme of action was unable to grasp the concept of loud and soft without referring to feeling. Her initial scheme of action was deficient and required accommodation to allow Ania to organizationally modify her response to speak in terms of feelings. Ania responded to the best of her ability as limited by her cognitive capacity.

Emma, in the second protocol, encountered a lacuna in her scheme of action when she was required to discuss the aspects 'fast and slow' during the second stimulus situation.

Emma (4/6)

- I - Was that part of the music fast or slow?
 E - Slow.
 I - Was it slow all the time?
 E - No. The soft part was slow.
 I - The soft part was slow? And the loud part was fast?
 E - Yeah.

Emma realized that her scheme of action was not sufficient to respond to the questions on the speed of the music. Her lacuna resulted in a regulation which organized her scheme of action, at her level of involvement (self-maintenance), to allow her to reply to the probes. The accommodation which was necessary to alter her scheme included the degree of loudness of the music. In her 'new' scheme soft music was slow and loud music was fast. She held speed and loudness in juxtaposition but the aspect of

structure evidenced in self-regulation did enable her to respond in a situation, which in the absence of the self-regulation would have been impossible.

Stimulus Situation 3 - Attentive Listening

The two protocols selected to explain self-regulation represent the responses from 11 children who exhibited this construct during their interviews for this stimulus situation. Both protocols discuss the actions of the child upon encountering an obstacle in his/her environment.

The protocol below illustrates that the child encountered an obstacle and via a regulatory mechanism completed the task in such a way as to safeguard any further modification.

Jevon (4/10)

- I - Now that story is all mixed up. Can you tell me the way it really happened not all mixed up?
- J - (pause)
- I - Will you tell me that story?
- J - No. I don't know how to tell you.
- I - Would you like to listen to it all mixed up one more time?
- J - Yes. (I repeats story)
-
- I - Alright now. Can you take all those sentences and tell me the way they really happened?
- J - I don't know how to do it.
- I - Do you know what would come first in all those mixed up sentences?
- J - I know what comes first.
- I - What comes first?
- J - Ahh... I got up in the morning.
- I - Right.
- J - And I go to Kindergarten.
- I - Right. Then what?
- J - Then I think I said hello to my teacher.

The obstacle was evident when Jevon was unable to complete the task without listening to the mixed up story one

more time. He had not assimilated the information during the first period of listening. The initial response given by Jevon was modified by the mechanism of regulation in order to respond to the questions. His initial response had the effect of being insufficient so he had to modify it. Once the modification had occurred it was a series of corrections (response led to a correction that included more of the sequence) that resulted in closure once Jevon had successfully completed the sequence.

Further exemplification of the self-regulation construct is evident in the following protocol. The obstacle that is encountered by Marya is not as difficult to overcome as in Jevon's case but still requires self-regulation.

Marya (3/11)

- I - Can you tell me the way it (the story) really should happen?
 M - I had my breakfast and I went to school. Umm... I - I don't know that one.
 I - You went to school? And what did you do after breakfast?
 M - Got my clothes on.
 I - Got your clothes on after breakfast. And then what did you do after you got your clothes on?
 M - Went to school.
 I - You went to school. And what was the first thing you did when you got to school?
 M - Umm. Got to line up to the line.
 I - You got to the line right away. And is that when you say hello to your teacher?
 M - Yup.

Marya commences the retelling of the story in the correct order but is unable to continue as evidenced by her response "I don't know that one". In conversation with the interviewer Marya does not repeat her action, in this case verbal response of "I don't know that one", because that action was incorrect. The resulting modification to the

original response is an organizational regulation that is a series of corrections. In Marya's case each progressive response is an organized modification on the previous response until the task is completed. The completion of the task with the end to the successive regulations is Marya's approximation of closure.

Stimulus Situation 4 - Analytic Listening

The final listening situation investigating the structural feature of self-regulation is abstracted from the interviews of 16 children which contained examples of this construct.

The first protocol illustrates the idea of closure via a reinforcing regulation due to a lacuna encountered by the child. Nicola was asked to relate to the interviewer a detail about the story. Even though she responded quickly it was apparent that her scheme of action was insufficient.

Nicola (3/11)

- I - What trick did she play on Nurse Plum?
 N - She just pretended that she was hit.
 I - She was hit by what?
 N - Indians.
 I - By the Indians?
 N - Mmm. (yes)
 I - How did you know that that was the trick she played on Nurse Plum?
 N - Because she had a hat with an arrow in it.
 I - Ahh, she did. Where did you get the idea from?
 N - In the story.

Each successive answer given by Nicola added to the modification of her initial reply. Her scheme was not able to generate all the details at once. The successive modifications by reinforcement, in this case gentle probes to stimulate thought, eventually led to a complete answer and

closure of the system.

The final protocol selected as evidence for self-regulation demonstrates one of the basic properties of self-regulation, rhythm, which was operative in the fourth stimulus situation as well as the first situation.

Richard (4/7)

- I - Who did Rozzy live next door to?
 R - Umm ... some of the Munch Bunch.
 I - Some of the Munch Bunch. Do you know which one of the Munch Bunch she lived next door to?
 R - No.
 I - Did she live next door to Merv Marrow, Tom Tomato, or Chunky Pineapple?
 R - Chunky Pineapple.
 I - Chunky Pineapple. What made you think of that?
 R - Um... because I just heard it on the story. That's all.
- I - What was Rozzy's first trick?
 R - I forgot.
 I - You forgot.
 R - Yes.
 I - Do you think it was the nail in the bandage, the jack-in-the-box, or the ink in the flower?
 R - The ink in the flower!
 I - The ink in the flower. Why do you think that was first and not one of the others?
 R - Because I just heard it on the story before.
 I - And that's the way you remember it happening first?
 R - Yup.

This excerpt from the interview with Richard indicates that upon encountering an obstacle, in this case the inability to respond to the question, rhythm was activated as a mechanism of self-maintenance. Richard was given in both circumstances a selective, non-suggestive probe which resulted in the accommodation of his scheme of action in order to answer the initial question. The rhythmic mechanism was evident when Richard's response pattern was "question -

no answer -choices - answer" for the second time. In each circumstance it was evident to the interviewer that Richard participated at his own unique level of involvement.

Summary

Self-regulation as a structural feature of listening has been exemplified across the four stimulus situations. Confirmation of the postulates for self-regulation concludes the analysis of the structural features of listening.

Examination of the cognitive-structural features across the four stimulus situations demonstrates the existence of the cognitive structures of listening. Corroboration of the major postulate made at the beginning of this section, by examination of the functional categories of listening, now paves the path for the discussion of the second level of equilibrium.

Equilibrium - Level 2

The second level of equilibrium is equilibrium between the interactions between sub-systems involving reciprocal assimilation and accommodation. Until the foregoing exemplification of the cognitive-structural features of listening had been completed only a theoretical discourse on the second level of equilibrium was possible. The delineation of the wholeness, transformation, and self-regulation of the cognitive structures of listening constitutes a praxis of this level of equilibrium.

Explanation of the listening process will be advanced by the consideration of the interactions between the sub-systems of listening. The interactions of the sub-systems at this stage involve only the simple relationships between

collaterals (Piaget 1975/1977). This type of relationship was illustrated by Vuyk (1981) as eye-hand coordination.

Thus the coordination of the stimulus situations will illustrate the existence of the second level of equilibrium. It is postulated that each listening situation will interact with one or more different listening situations.

The interview protocols will be examined, in turn, for evidence of the interaction between listening situations. Although many examples were evoked, only a representation will be made. The responses from both the three-year olds and the four-year olds contained examples of the second level of equilibrium.

Stimulus Situation 1 - Marginal Listening

The search for evidence of the the second level of equilibrium revealed that the interviews with 16 of 20 children contained examples of this construct. The following protocols both illustrate the interaction between the marginal listening situation and the analytic listening situation. Both boys were listening to the story with background noises.

Hayden (3/10)

- I - What happened first? Did Merv Marrow arrest Dick Turnip and his gang first or did Dick Turnip and his gang rob Emma Apple first?
- H - Yup.
- I - Which one?
- H - He robbed Emma Apple first.
- I - He robbed Emma Apple first. Why do you think that happened first?
- H - Cause it's supposed to and did. And a big fire engine came along.
- I - And a big fire engine came along?
- H - Yup.

The analytic question posed to Hayden elicited a response which indicated that he could not dissociate the noises from the story. His sequencing scheme of action interrelated story facts and noise facts. The reference to the fire engine, only a background noise and not part of the story, demonstrated the interplay of the two listening situations. This syncretistic response indicated the interaction of the two listening situations as the noises were made part of the story.

Sam (4/11)

- I - Did you hear something that made you think he lived in a boot, today?
 S - (nods yes)
 I - What did you hear?
 S - I heard music and Dick Turnip lived in a boot.

Sam's response was similar to Hayden's response. He referred to both the background noises (music) and the story (lived in a boot) when responding to the question. The analytic question was replied to by associating story detail with details of the noises. The relationship was evident, that Sam had simultaneously listened to the story and the noises as permitted by the cognitive structures of the listening process.

Stimulus Situation 2 - Appreciative Listening

The interviews from 13 children included examples of the second level of equilibrium. As illustrative of these examples the next protocol demonstrates the interaction between listening situations resulting from the questioning on descriptive terms heard in the music. In Tristan's case

the interaction between the appreciative listening situation and the attentive listening situation was evident.

Tristan (3/11)

- I - How do you tell the difference when something's fast or slow?
 T - When the fire engine comes then I think the noise.
 I - When the fire engine comes - is that the fast part or the slow part?
 T - Slow part.
 I - The fire engine is the slow part?
 T - Yup.
 I - And what's the fast part?
 T - The singing.

Tristan's scheme of action dictated that he combine appreciative listening with attentive listening. He could not have talked about the descriptive terms unless he had attentively listened to the music as shown by his choice of words for his description. He had heard, in the music, a part that sounded like a fire engine. This also indicates a growing use of symbols as he depicted slowness by the fire engine.

The next exemplification of the second level of equilibrium also involves appreciative listening and attentive listening.

Bernard (4/10)

- I - Did you enjoy the music?
 B - Yup.
 I - Why did you like it?
 B - Because when it went real loud it was nice and when it went real soft it was nice.
 I - Ahh you liked both parts. Was there a part of that music that you liked the best?
 B - Yup.
 I - What part was that?
 B - The loud part.
 I - Why did you like the loud part the best?
 B - Ahh - I don't know.

Bernard was asked to comment on his enjoyment of the music which is an appreciative listening situation task. His initial one word answer could not be maintained if he was to continue the interview. In order to state his reason for his enjoyment of the music the interrelation of the listening situations had to be evoked. Bernard demonstrated his attentive listening, by attending to the music to be able to use descriptive terms, and appreciative listening by his comment on enjoyment. One listening skill alone without the interrelation of the other would have resulted in an insufficient answer. The interaction of the two listening situations indicated the second level of equilibrium during Bernard's interview.

Stimulus Situation 3 - Attentive Listening

Examples of the interaction between the listening situations were evidenced in one-half of the interviews from the third stimulus situation. The following two protocols illustrate the interaction of attentive and analytic listening situations. The task was to unscramble a mixed up story.

In order to unscramble the story the child had to attend closely to the details of the story. The task involved, for success or non-success, the ability to sequence the story. If the child relied only on attentive listening the response was likely to be still mixed up. However, success or even partial success, was dependent upon the interplay between analytic and attentive listening.

Caroline (3/11)

- I - How did you know that that was first?
 C - Oh. I just knew and I just think.
 I - You just knew. Why did you just know that? How did you know that?
 C - Cause I just knew and I just thinked and my brain made me tell it.
 I - O.K. Why did you not say, "I said hello to my teacher" first?
 C - Well - um - cause that was - um - mixed up.

Caroline's success was a result of the interrelation of attentive and analytic listening as enabled by the cognitive structure of the listening process. Her response also indicated that there was some underlying knowledge that the brain, as the seat of structure, was responsible for success.

Gillian (4/1)

- I - Can you tell me the way it really should happen?
 G - (nods yes)
 I - How was that?
 G - First you should wake up, then get dressed, then go and have your breakfast, then go to preschool.
 I - What would you do when you got to preschool?
 G - Do some work.

Gillian's success was also related to the interaction of the attentiveness and analytical features of the listening process. Her prompt response to the task demonstrated this interaction clearly. Gillian, as had Caroline, achieved success in this task by attaining equilibrium between listening situations.

Stimulus Situation 4 - Analytic Listening

The final stimulus situation involved 20 children. In the interviews which were recorded 15 children provided evidence of the second level of equilibrium.

The three protocols selected for the exemplification of the second level of equilibrium involve the interrelationship between analytic listening and attentive listening within the whole of the listening process.

Sam (4/11)

- I - Do you think Rozzy will play tricks on people anymore?
 S - No.
 I - No. Why do you think she won't play tricks on people anymore?
 S - Because she won't find her door key.
 I - What happened to Rozzy because she played tricks?
 S - They didn't help her find her door key.
 I - How do you know that?
 S - Because I heard it in the story.

The interview with Sam clearly indicated the interaction between the analytic listening situation and the attentive listening situation. Sam accurately answered the analytic questions (e.g. What happened to Rozzy because she played tricks?) exhibiting not only his analytic capacity for listening but an attentive capacity. The attentive listening capacity was emphasized at the end of the protocol as Sam indicated he knew the answers because he had heard (attended to) it in the story. The analytic listening in this case was dependent upon attentive listening.

Marya's response was similar to Sam's indicating an interrelationship of analytic and attentive listening capacities.

Marya (3/11)

- I - Why did Rozzy have a horrible feeling at the end of the story?
 M - Because she's lost her door key.
 I - What gave you that idea? How did you know that she had lost her door key?
 M - I heard it at the end of the story?

Marya was able to respond promptly to the analytic question regarding her comprehension of the story. She was also able to illuminate for the interviewer that she had attentively listened to the story in order to respond correctly to the question. As in eye-hand coordination Marya had within her cognitive capacity coordinated analytic and attentive listening.

Caroline also illustrated the attentive/analytic interaction. Her analytic task, however, demands that she speculate on the effect of playing mean tricks on her friends.

Caroline (3/11)

- I - What would happen to ...
 C - Yeah.
 I - ... if you played mean tricks on your friends?
 C - Um ... I think I bring - I wouldn't find my key from my house.
 I - You think you wouldn't find your key? Why do you think that?
 C - Cause I think they wouldn't help me.
 I - Why wouldn't they help you?
 C - Umm. I think they just wouldn't help cause I played tricks on them.

Caroline, when asked to predict what would happen if she played mean tricks on her friends, thought she would not find her door key. The response, regardless of its content, indicated that she had complied with the analytic environmental demand. However, the interplay with attentive listening becomes evident when the response is evaluated in relation to the story. Rozzy Raspberry in the story had played mean tricks on her friends and as a result her friends refused to help her search for her lost key. The similarity of Caroline's response to the details of the story indicates the degree to which Caroline had attended to the story. When

she received the analytic request analytic and attentive listening interacted to produce the response needed to satisfy the demand. It was only the equilibrium of the different listening situations within the listening process that enabled Caroline to respond adequately.

Summary

Examination of the interview protocols has succinctly demonstrated the equilibrium between the different listening situations. The interactions observed allowed a deeper understanding of the listening process. Once the cognitive-structural features of listening had been exemplified during the earlier stages of this chapter, the understanding of the listening process was advanced by establishing that interaction did occur and then by observing the interplay in the protocols from young children.

Final Summary and Conclusions

Listening has been discussed, in this chapter, by the consideration of a central process of equilibration. The analysis of the data, the interview protocols, constituted an investigation of the topic in three general areas: (a) assimilation and accommodation as the means of achieving equilibrium, (b) the cognitive-structural features of listening, and (c) the levels of equilibrium themselves.

The supposition at the beginning of the analysis was that listening was an undeveloped field, in terms of cognitive structures, and that the Piagetian constructs used in the analysis could not be assumed to be valid for the listening process. In each classification, the interview protocols were examined to confirm or reject several

postulates. The confirmation of several of the postulates was necessary prior to the discussion of the second level of equilibrium.

The postulates for the first area of investigation, that of assimilation, accommodation, and the first level of equilibrium, were confirmed by the exemplification of the interview protocols. The study of listening required that these concepts were valid. If, for instance, a child was unable to assimilate environmental demands either before or after the accommodation process, equilibration would not occur and the development of the cognitive structures of listening would not be possible. At that stage the inquiry would be terminated.

A similar line of reasoning may be observed for the existence of cognitive structures. Prior to the research reported in this study the cognitive-structural features of listening had not been exemplified. The theoretical framework could be derived but the task of determining the existence of structure had not been undertaken. Piaget's claim that cognitive development was dependent upon the equilibration of cognitive structures demanded the existence of these structures. If equilibration and cognitive development were to occur the structures of listening had to exist.

The general postulate for the second area was that each of the identified stimulus situations exhibit the cognitive-structural features of wholeness, transformation, and self-regulation. The interview protocols corroborated this general postulate. Egocentrism, as an important consideration in the understanding of the child's cognitive development was included in the analysis.

The confirmation of the existence of the cognitive-structural features of listening enabled the examination of the second level of equilibrium. Until the establishment of these features of listening, equilibration of the second order could not occur.

A formulation of a model for the understanding of the listening process based on the equilibration of the cognitive structures of listening evolves naturally from the analysis in this chapter. The model would be composed of environmental demands, functions, cognitive structures, content, and finally, the three levels of equilibrium. The design of the model is based upon the results of the analysis of the interview protocols with listening corroborated as a cognitive activity. The educational implications for the understanding of the listening process and for early childhood education are the topic of Chapter Six.

CHAPTER SIX

REVIEW, EDUCATIONAL IMPLICATIONS, SUGGESTIONS FOR FURTHER RESEARCH AND CONCLUSIONS

The final chapter of this thesis will be composed of four main sections. The first section will contain a concise review of the research to this point in the report. In the second section the pertinent educational implications of the study with an emphasis on curriculum implications will be discussed. In the third section areas for further research will be suggested. The final section will contain conclusions from the present study on the understanding of the cognitive processes of listening in three- and four-year old children.

Review

The investigation of the listening process in three- and four-year old children was based upon Piagetian principles and methodology. The purpose of the study was to consider the equilibration of the cognitive structures of listening in order to provide an evaluation of the cognitive processes in listening. The equilibration of cognitive structures, according to Piaget (1975/1977), occurs on three levels. The first two levels of equilibrium, (a) the equilibrium of the internal elements of the system and (b) the equilibrium between the interactions between sub-systems, were intrinsic to the listening process at the three- and four-year old age level.

The first level of equilibrium could be explained without direct reference to the cognitive structures of listening. However, the explanation must state that although

the structures did not have to be alluded to they still existed as the determining mechanisms of the child's content or observable actions.

The review of the literature revealed that research in the area of listening did not sufficiently consider cognitive structures. The second level of equilibrium could not be discussed without prior exemplification of the cognitive-structural features of listening. Thus, it was necessary to undertake a search for these aspects of structure in order to be able to discuss the second level of equilibrium.

As outlined in Chapter Three, the theoretical perspective for the research was based upon the Piagetian principles of cognitive psychology and structuralism. The implementation of these principles aided the discussion of the second level of equilibrium.

Inherent in Piaget's principles was his method of inquiry - the clinical interview. The clinical interview was chosen as the means of investigation because of the advantages discussed in Chapter Three. The clinical interview, briefly, was determined to be more penetrating than other methods of inquiry and to be able to discover the underlying cognitive structures of listening in three-and four-year old children.

In order to conduct the clinical interviews four stimulus situations were developed. The development of the four stimulus situations was based upon the classification of listening by Spodek (1972). The applicability of the four types of listening at the kindergarten level was verified by Gillion (1980). The fourfold categorization was utilized as an organizational system for applying the Piagetian constructs. Prior to finalizing the stimulus materials a

pilot study was conducted and necessary adaptations were made to the stimulus situations.

Twenty children, ten three-year olds and ten four-year olds, were interviewed in the course of the research. The ten girls and ten boys were selected from two of the local preschools. The interviewer had established rapport with the children by spending time in each of the preschools prior to the interviews. Each child met with the interviewer on five occasions. The Peabody Picture Vocabulary Test was administered to the child at the first meeting. On each of the next four occasions the child was presented with one of the stimulus materials as the basis of the interview. The interviews varied in duration from four minutes to twenty-five minutes. All the interviews were taped for later transcription.

The analysis of the interview protocols was conducted across the four stimulus situations developed for the investigation of the listening process. According to the theoretical perspective formulated prior to the interviews the cases were coded. Selected protocols were then utilized to exemplify the equilibration of the cognitive structures of listening.

The analysis, in brief, indicated that the three-and four-year old children were capable of assimilation and accommodation and the first level of equilibrium. Further analysis of the cases, in the search for cognitive structures of listening, demonstrated the cognitive-structural features of wholeness, transformation, and self-regulation by which the existence of the structure is illustrated.

The exemplification of the cognitive-structural features of listening allowed the second level of equilibrium to be

discussed. The interactions between the sub-systems were established using examples from the interview protocols.

The discussion of the second level of equilibrium, the interactions between sub-systems, completed the analysis of the interview protocols. The corroboration of the postulates for each of the theoretical Piagetian constructs suggested a model for the listening process based upon the equilibration of the cognitive structures of listening. This model, and the educational implications, will be elaborated in the next section.

Educational Implications

A Model of the Listening Process

Prior to a discussion on the curriculum and methodological implications and suggestions for further research the final result of the analysis, an educational implication itself, requires elaboration. The final outcome of the clinical analysis was a model of the listening process. The proposed model is an advancement on the discussion by Flavell (1963) and the diagrammatic illustration by Codd (1980).

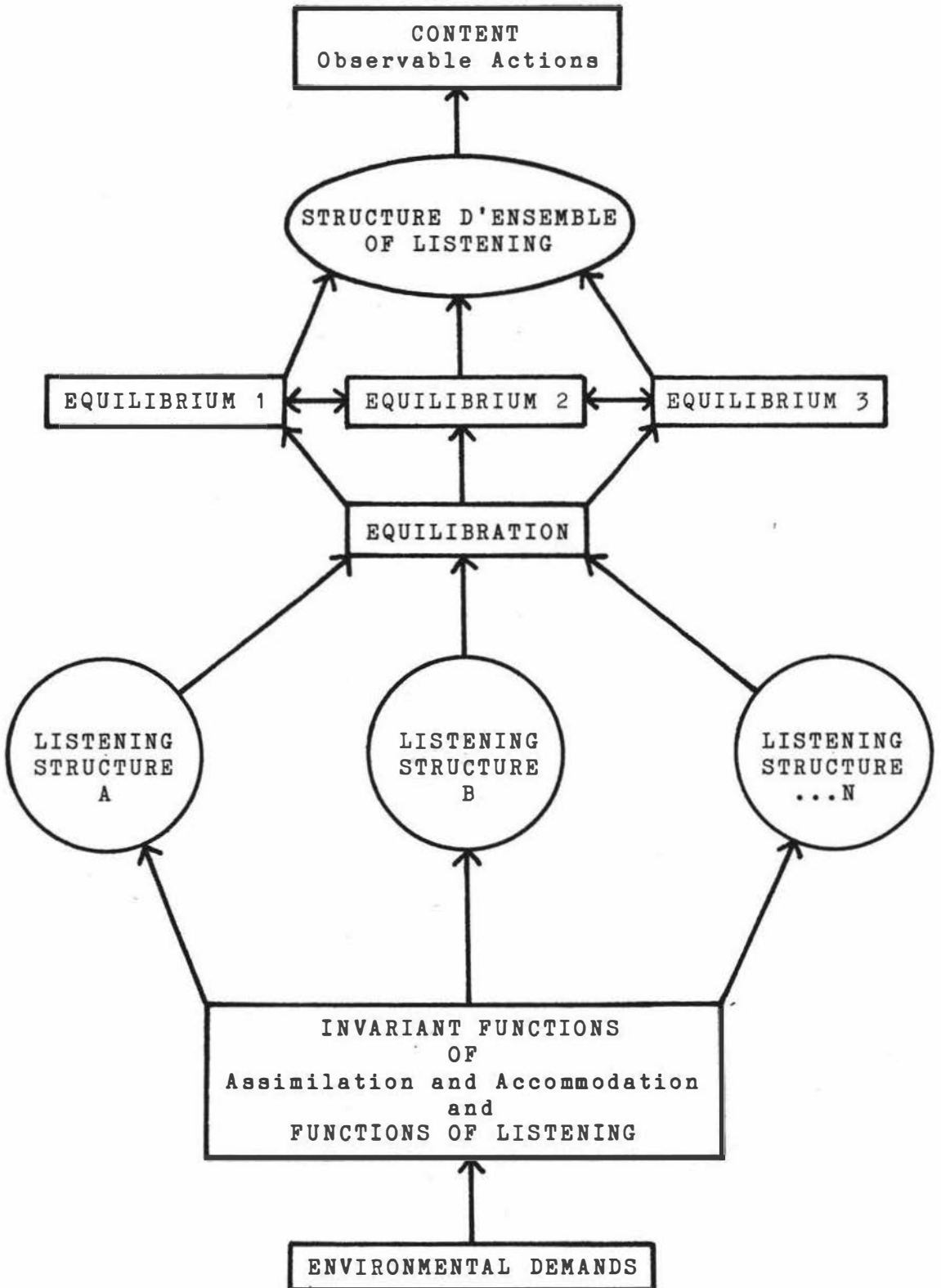
Flavell (1963) discussed the concept of structure in terms of lying between the invariant functions of assimilation and accommodation and the specific variants of content. Codd advanced Flavell's theorizing to include the environmental demands placed upon the person which lead to the invariant functions. Codd diagrammed these elements into a model of active cognition which was illustrated in Chapter Three of this thesis.

The model was formulated on the evidence generated by the interview protocols. The consideration of the

equilibration of cognitive structures (Piaget, 1975/1977) in the research of listening effectually expanded the basic model of active cognition for listening, Figure 14.

Figure 14

A Model of the Listening Process



The model of the listening process is an advancement on the model discussed by Flavell and Codd. The basic elements of "The Model of Active Cognition" (Codd, 1980), the environmental demands, functions of assimilation and accommodation, structure, and content were discussed in detail in Chapter Three of this thesis and will not be elaborated in detail. However, these basic elements were instrumental to the initial analysis of the interview protocols and the development of the revised model.

The key to the development of knowledge is the equilibration of its cognitive structures. Thus, the inclusion of the three levels of equilibrium is a necessity. It cannot be assumed that the equilibration occurs somewhere among the elements of the model but must be diagrammatically represented. Equilibration occurs when the structures generated by the functions are in dissonance. As discussed in Chapter Five, the dissonance may be in the form of an obstacle or a lacuna. An explanation of the flow of the model will illuminate each of the elements.

Initially the child encounters an environmental demand. The demand may take the form of a task, a question, a problem or a dilemma. The child's response to the environmental demand is designated as 'content' in the model.

The second level of the model is composed of the invariant functions of assimilation and accommodation and also the functions of listening. Assimilation and accommodation are inherent in the cognitive process and the functions of listening are inherent in the process of listening. The invariant functions of assimilation and accommodation, at this stage, generate the cognitive structures. The functions of listening are narrower in

definition than assimilation and accommodation and refer to the phenomenon, in this case listening.

The next level of the model comprises the cognitive structures generated by the functions. For the purpose of the model, although by no means definitive, three structures have been illustrated. Although this present study utilized listening or stimulus situations they do not represent the structures illustrated in the model. The listening situations used in the design of the study were an organizational system for the application of Piagetian constructs. The structures of a phenomenon are known by their cognitive-structural features.

The equilibration of the individual cognitive structures at the next level of the model eventually results in the construction of the structure d'ensemble which enables the child to exhibit the actions of the content level of the model. The content is the behavioural actions of the child which may be utterances, decisions, judgments, or performances.

The three levels of equilibrium are diagrammed side by side. Each contributes to the construction of the structure d'ensemble, the totality of the structure of listening, initiated by the environmental demands. The equilibration of the cognitive structures confirms the speculation by Flavell & Wohlwill (1969):

... there appears to be no reason that the structures d'ensemble could not be looked at as a family of separate structures, each following its own developmental timetable (p. 95).

The varying developmental timetables of the structures necessitate the equilibration process and the interconnection of the levels. However, each structure once equilibrated by

one or more of the levels makes a contribution to the structure d'ensemble.

The equilibration process is instrumental to the listening process. The child's capacity for development is limited by his cognitive structure d'ensemble which is, in terms of increasing equilibration, determined by the levels of equilibrium. The levels of equilibrium may be considered as screens to the structure d'ensemble through which the environmental demand, acted upon by the invariant functions, must pass.

As observed in the present research the first two levels of the equilibration process may occur simultaneously or the mutual assimilation and accommodation of the first level may enable the second level of the equilibration process to eventuate. The design of this study precluded the investigation of the third level of equilibrium with the three-and four-year old children, as discussed in Chapter Five, but will be discussed under suggestions for further research.

This explanation of the model of the listening process is fundamental to the remainder of the discussion. The consideration of a central process of equilibration places the Piagetian constructs evidenced in the interview protocols into an overall perspective.

Curriculum Implications

The completion of the research on the evaluation of the cognitive processes of listening in three-and four-year old children generated several curriculum-based implications. These implications are illustrative and pertinent concerns arising from the research.

1. Models for the Other Language Arts in Early Childhood

The first curriculum-based implication considers the applicability and the adaptability of the model of the listening process as based on the consideration of the equilibration of the cognitive structures. The multi-level model proposed in this thesis outlines the steps of the listening process, strongly relating each one to Piagetian constructs of the central process of equilibration. The question is whether or not the model would be applicable and/or adaptable to other phenomena in the area of language arts.

The manifestation of the cognitive-structural features of thought in listening was one way to determine that listening was a cognitive activity. The analysis of the data in Chapter Five, the exemplification of these features in listening, demonstrated that listening was a cognitive activity. Thus the act of listening is a cognitive process involving and sharing the cognitive constructs of knowledge.

If listening is a cognitive process sharing the same constructs as thought, then it would follow that other phenomena could also share the same constructs. If so, then the principles of the model could also be shared. This presumed sharing of cognitive processes is implied from the present research but it is suggested that this be verified through further research. This point will be discussed in the section on suggestions for further research. The model developed for the listening process (Figure 14, p. 175) which incorporated the cognitive-structural features of thought could be implemented for other cognitive phenomena.

2. Curriculum Development in Listening

In order that listening may be more effectively taught to young children, whether in preschool or primary school, a listening curriculum would be advantageous. Tompkins, Smith, & Friend (1985) surveyed teachers on the teaching of listening and reported that teachers have limited knowledge about listening. The teachers indicated that they had received inadequate training in the teaching of listening. Tompkins, Smith, & Friend (1985) revealed that a listening curriculum was lacking in elementary schools and that there was a need for listening as part of the language arts textbooks. As a result teachers did not teach strategies that children could use in various listening situations. Tompkins, Friend, & Smith (1984) found that cognitive strategies could be taught. The skills of integration, transformation, and synthesis, for example, are available to children as young as three and four and more attention should be given to their development. Other listening strategies, not made available to children at this time, if encouraged would result in 'listening literate' students. The importance of listening, as the basis for a listening curriculum, as developed throughout this thesis is emphasized in the following points.

1. Young children spend a high percentage of each day listening.
2. Listening generates knowledge.
3. Listening is considered as the foundation of all language skills.

The topic of curriculum studies is a broad area composed of evaluation, design, implementation, and their respective components. The implications of this present study towards the development of a listening curriculum merit discussion.

2a. Evaluation

Evaluation is a central process in the development of a curriculum in any area. Evaluation should be an on-going process operative at all stages of the development. Initial evaluation, either by research or direct action, should be conducted to provide a foundation and to identify needs for decisions regarding development or modification of a curriculum. Three areas for initial evaluation are:

1. present practice - survey of teaching programs and resources,
2. knowledge of learning and growing - child growth and development, characteristics of learner, and
3. examination of other programs.

This present thesis has commenced the evaluation process for the development of a listening curriculum. First, the comprehensive review of the literature reported in Chapter Two included all areas of listening from the general theory to the assessment of listening. As an up-to-date review it provides the curriculum developer with an assessment of the listening field upon which curriculum work could be based. Second, the research reported in this thesis resulted in a description of listening as a cognitive activity and in an explication of a model of the listening process. As a contribution to the knowledge of children's cognitive processes and learning, the conclusion to this study could be another starting point for the evaluation process of curriculum development. The curriculum developer would have sufficient material to commence the design for a new or revised curriculum.

Readiness

Readiness, a sub-category of evaluation and design, presupposes a general maturational, motivational and social

disposition that must be present if a child is to master any particular activity or skill effectively and efficiently. The notion of readiness has been associated, historically, only with reading. The results of this research, indicating that listening is a cognitive activity, imply that 'listening readiness' is an issue which should be addressed by educators. As listening readiness has not been discussed in the literature the similarities between reading and listening and their implications for the classroom are avenues for investigation.

1. both require attention to readiness,
2. both flourish in a relaxed social situation,
3. both use similar units of comprehension,
4. both use common analogous signals, and
5. both employ critical thinking and emotional aspects.

Lundsteen (1976a) indicated that readiness is based on the following criteria:

1. experience with the English language,
2. speaking and listening vocabulary equal to the task,
3. evidence of interest or positive feeling for language activity, and
4. ability to remember and follow short sequences (p. 95).

Given: (a) the evidence in this thesis that listening is a cognitive activity, (b) the similarities between reading and listening, and (c) the readiness criteria, the development of listening readiness can be discussed. The position of listening as the first language art to appear necessitates that listening readiness be addressed early in the young child. It is important to remember that learning to read starts four or five years after listening and then proceeds slowly for a year or so.

The research has positively linked listening and reading as receptive communication arts and as major avenues for information acquisition as outlined in Chapter Two. As such, it has been accepted that reading readiness activities prepare the child for listening lessons. The curriculum implication, from this study, is that although reading readiness may be a source for determining the content of listening readiness the curriculum developer should establish listening readiness goals and objectives based upon listening as a separate cognitive activity.

Implicit to listening readiness is the question of whether or not readiness is an absolute phenomenon determined by the child's rate of development and interest. The alternative is that listening readiness involves the ability to capitalize on the child's abilities at the moment. Coupled with this question is the debate on enrichment and instruction regarding readiness. The enrichment supporters have the child growing up in an optimal environment. His growth is as advanced as possible and he needs enrichment not instruction. The instructionists regard readiness not as a fixed attribute of the child but as relative to the construction of materials appropriate to the child's level of development.

Reference to Piaget's theory of cognitive development is necessary to respond to the debate on listening readiness. Listening has been shown to be a cognitive activity which could be related directly to Piaget's stages of development. As the child progresses through the cognitive-developmental stages of his life he acquires knowledge and matures in his thinking processes. Absolutes are not possible in the stages of cognitive development but a preoperational child, for

example, cannot respond using formal operations when cognitively he is not ready. As each child develops individually, as the cognitive processes interplay, it is important not to try and advance children from one stage to another. A child's readiness is determined by his own cognitive structure. The development of the child's cognitive framework is his readiness for listening.

2b. Design

In addition the design of the curriculum could be based on the results of this study. For instance, the goals of the curriculum could be derived from the examination of the cognitive-structural features of listening and the equilibration process as discerned in the research. The second level of equilibration, the interaction between the sub-systems, provides an adequate example. This construct was exemplified in the present study. The necessary interaction between attentive and analytic listening would be the basis for a program goal. The goal would involve the attentive/analytic interaction and its necessity for the child. The limiting feature of structure would assist in the identification of the content of the curriculum while the specific objectives of the curriculum could be developed by delving into the invariant functions and the functions of listening.

Models for Early Childhood

Prior to the discussion of the implications for the implementation of a listening curriculum following the Piagetian clinical investigation it is imperative to outline the various models for early childhood curricula as a reference. Although there are many different early childhood programs in existence the majority can be classified into one

of the following four models (Spodek, 1972; Mayer, 1971).

The first is the Child-Development Model. Early childhood programs in this classification have as their goal the self-actualization of children's inherent potential through provision of a wide range of experiences from which the children have opportunity to make choices. The British Infant School is an example of the Child-Development Model.

The Verbal-Cognitive Model is organized to facilitate broad cognitive growth. The emphasis is on the development of structures for logical thought. An example of this model is the Cognitively Oriented Curriculum.

The Montessori School is an example of the Sensory-Cognitive Model. In this model the emphasis is on child-environment interaction as a vehicle for increased sensorimotor competence.

The final model, Verbal-Didactic, stresses the utilization of behavioural objectives which are met by a series of systematic teacher presentations, linked with specific, reinforced child responses. Distar is an example of this approach.

The design of a listening curriculum is influenced by the model for early childhood in use by the particular school. The Child-Development Model, for example, would have a listening centre as one of the child's activity choices. The Distar method would have listening as part of its programmed instruction. The curriculum developer and/or the practitioner must decide on the model and the design accordingly. In the following discussion the inclination is for the Verbal-Cognitive Model for early childhood education while still being cognizant of the other three general trends.

2c. Implementation

The educational implications, based on the findings of the present study, for the implementation of a listening curriculum are twofold. First, an examination of the results indicates that the section of the curriculum dealing with attentive listening would facilitate the learning process for the young child. For instance, as evidenced in the interview protocols, the child's ability to successfully assimilate an analytic task can be aided by increased attentive listening and as part of the implementation process more attention should be given to attentive listening. Second, the analysis of the data indicates that in the implementation process the development of the cognitive structures of listening, reflected in the content of the child, should be emphasized. The emphasis is necessary because structure is the enabling mechanism of the cognitive content. This was also evident in the model of listening as the child progressed from an initial environmental demand to the end result of an observable action. This implication for implementation refutes the expectation that cognitive structures will develop once the cognitive content has been taught.

Piaget-Derived Curriculum for Listening

An implication of this present study is to consider the possibility of a Piaget-derived curriculum for listening. The discussion of the four general models for early childhood education places Piagetian curriculum into the Verbal-Cognitive Model. The emphasis of this study has been Piagetian and the result of the study, that listening is considered as a cognitive activity, justifies this discussion. The discussion will include factors for the cognitive development of listening, general principles of a

Piagetian curriculum, the role of the teacher, listening curriculum, and equilibration.

When considering the implementation of a cognitively-oriented curriculum factors associated with cognitive development should be explicated. Five factors are associated with cognitive development (Kamii, 1972):

1. biological factors like physiological maturation,
2. experiences with physical objects/environment,
3. social factors/environment,
4. cultural and educational transmission, and
5. equilibration.

All five of these factors should be considered to allow the implementation of the listening curriculum. A deficit in any one of the five areas could result in the retardation of the cognitive development of listening.

The first principle for the development of a Piaget-derived listening curriculum is to design a new curriculum or to modify an existing one with the Piagetian cognitive-developmental stages in mind. Second, the listening curriculum should not try to simplify Piagetian tasks for younger children. This principle is easily adhered to with regards to listening as formal Piagetian listening tasks are almost non-existent. Third, as stated above, the implementation should not try to advance children from one stage to another. A child will not progress to the next stage until he is cognitively capable or ready.

The aim of a listening curriculum based on Piaget is to help or enable the child to develop a total cognitive framework for listening, the development of structures, so that the child will be able to apply it to any listening task. When a child reaches a certain level of cognitive development he is able to solve problems that he hasn't

encountered before. Cognitive development is the development of the total structure or structure d'ensemble and, as stated above, the development of the child's cognitive framework is readiness. The curriculum developer wants to develop the cognitive processes of listening so that they manifest themselves in the child's behaviour.

In the design and implementation of a listening curriculum the teacher has an unique role. The role of the teacher is summarized as follows:

1. he does not shape a response, transmit or program knowledge as in the empiricist approach,
2. he does not passively watch the children play waiting for readiness as in the maturationist approach,
3. the teacher structures the environment for children to activate the child's schemes of action,
4. the teacher structures situations where the child can activate his listening schemes,
5. the teacher intervenes so the child will test his schemes against other objects and people, and
6. the teacher should ask more 'why' questions.

The teacher should be reminded that the child's cognitive framework is not developed by having him go through all the stages of a Piagetian task. The implementation of the teacher's role will result in the child building new schemes by differentiation and integration of cognitive schemes.

In the case of most practitioners the existing early childhood program will be based on the Child-Development Model as explained previously. In order to take this approach to a listening curriculum and change to a Piaget-derived listening curriculum a several-stepped process is required.

1. experiment by providing the materials and atmosphere for development in listening.
2. observe the children in the activities to determine which ones capture their interest as interest indicates mental activity and construction.
3. ensure that instructional materials do not call for inductive or deductive reasoning as the pre-operational child's reasoning is transductive.
4. keep certain activities and then modify them
5. eliminate some activities
6. add new activities
7. observe and go through steps 1-6 again.

The effects of equilibration on the listening process have been emphasized throughout this thesis but are worthy of review. Equilibration is a self-regulating process which brings assimilation and accommodation into balanced coordination. The structure d'ensemble, developed through the process of equilibration, is ultimately responsible for the content or observable actions of the child. The development of the structure d'ensemble, the enabling mechanism of the child's framework is the goal of a Piagetian listening curriculum.

In practice the structure d'ensemble for listening will be developed or enhanced each time cognitive dissonance or conflict occurs. Research suggests that cognitive development is promoted whenever there is a moderate degree of discrepancy between the child's cognitive structure and some new event. The introduction of a new listening activity could cause conflict and lead to equilibration and growth in cognitive framework.

Methodology

The methodology used in this thesis leads to a further implication. The Piagetian clinical interview was selected, for reasons stated earlier, as the method which would produce the corroboration of the 'hypothesis' of the research. As the 'hypothesis' of the study was the explanation of the listening process by the consideration of the equilibration of its cognitive structures, the results of the research must be examined.

Pertinent to this discussion is the work of Piaget as viewed by others and by himself. Ginsburg & Opper (1979) reported that Piaget used naturalistic observation when working with infants and children two-to four-years old. Vuyk confirmed that Piaget did not utilize the clinical interview with three-year old children and concentrated on children four-to twelve-years old. However, even in the four-to twelve-year old age group Piaget focused on the older half of the age group. Thus Vuyk viewed Piaget as seldom using the clinical method with three-and four-year old children. Finally, Piaget (1972/1973) himself stated:

This stage [preoperational] is the one on which we have the least information on the operations of thought, for it is not possible to question the child before the age of four in a continuous conversation (p. 73).

According to the sources above, Piaget did not utilize the clinical method before the child was four-years old and not very often with the four-year old child. Piaget

considered that, because of an inability to sustain the child in conversation, little information could be attained from the child. However, the present research has shown that it is possible to utilize the clinical method at this early age. As evidenced by the development of a model for the process of listening and several hundred pages of interview transcripts the clinical method can be indeed productive at the three-and-four-year old age level.

The educational implication is that the clinical interview is a viable method for the inquiry of listening in early childhood. Since the methodology has been utilized successfully in the investigation of listening it is suggested this procedure constitutes a viable method for the inquiry of other phenomena in early childhood education.

Suggestions for Further Research

The research on the listening process produced several suggestions for further research. The main reason for the generation of these suggestions was the use of a methodology which had not been used previously to investigate listening in the young child.

Equilibrium - Level Three

The first suggestion for further research is to investigate fully the third level of equilibrium. This third level involves the equilibration between the differentiations and integrations between sub-systems and the total system. The third level, then, involves the relations uniting the sub-systems and the total system. Piaget (1975/1977) states

that the second level and the third level of equilibrium do not merge but are separate processes. The totality, the structure d'ensemble as illustrated by the model developed in this chapter, is characterized by its particular laws of composition.

The third level of equilibrium did not apply to the three-and four-year old children because of the design of the study. In order to generate the cognitive-structural features of listening and to consider the second level of equilibrium it became apparent that the differentiation of sub-systems was precluded by the utilization of an organizational system for applying the Piagetian constructs across the four stimulus situations. The cognitive-structural features were not known prior to the study but were evidenced across the four stimulus situations. Once the features were corroborated the equilibration between the sub-systems was possible. However, since the equilibration of the third level could not be attempted because the differentiation of sub-systems had been precluded by the organizational system, the hierarchical integration of sub-systems was not possible.

There are two recommendations for further research in this area. First, the same age group could be selected and a single stimulus situation developed as to be non-differentiated with regard to cognitive structures. With three-and four-year olds it may be difficult to accomplish this task. The difficulty arises from the two requirements that must be fulfilled by the stimulus situation. First, it would be necessary to develop a stimulus situation that would permit the differentiation and integration of sub-systems as

defined by the third level of equilibrium. Second, the stimulus situation must be of a duration that is in accordance with the attention spans of such a young age group. An adequate solution to the conflict between these two requirements could result in a rewarding study.

This leads to the second recommendation which would involve an older age group of children still regarded as early childhood. The selection of five-to eight-year olds would be adequate, making the development of the stimulus materials easier. The five-to eight-year old children are further advanced on the cognitive-developmental scale and their attention spans are longer. The stimulus material which could be developed for this age group would be longer, more complicated, and non-differentiated thus allowing the integration of the sub-systems. Together, these procedures should permit a more detailed investigation of the third level of equilibrium.

Verification by Replication

The second suggestion for further research is to verify the model of the listening process as presented in this thesis by replication. According to Elkind (1979) the reliability of the clinical method can be established by the repetition of the study by others. If other researchers arrive at the same categorization of responses into stages or sequence of development then the reliability of the original results is enhanced.

The present study is organized so as to permit replication. The four stimulus situations have been identified and the design and format outlined in detail in Chapter Four. The theoretical perspective and the choice of

the clinical method were also discussed in detail in Chapter Three, and finally the analysis of the interview protocols was discussed thoroughly during each step of the analysis. Thus, the study could be replicated with ease.

Replication of the present results would enhance the findings of this study. The credibility of the model of the process of listening coupled with the internal validity of the clinical method would then establish the use of the model in the explanation of the listening process.

Investigation of Other Phenomena

Two other suggestions for further research are derived from the utilization of the clinical method for the investigation of listening as a cognitive activity and from the development of a model to explain the cognitive processes of listening. First, the clinical method, successfully used with three- and four-year olds in the present study, could be implemented in the investigation of other phenomena in early childhood education. The design of this study would facilitate the design of further investigations as the theoretical perspective, choice of method, development of stimulus materials, and method of analysis are clearly outlined.

The second suggestion for research involves the model of the listening process. As outlined in the section on educational implications, the model was applicable to other phenomena. It is suggested that research in other areas of the language arts be conducted to corroborate this cognitive model and provide changes which are dictated by the characteristics of the particular phenomenon.

Individual Stimulus Situations of Listening

The final suggestion for further research is for a thorough investigation of each of the stimulus situations identified in this thesis. Prior to the analysis of the interview data the cognitive-structural features of listening had not been described. The information procured from each of the four stimulus situations has suggested further information regarding the cognitive structures.

The role played by the present research was to investigate the cognitive-structural features across four heuristic categories. Future research may select only one of the stimulus situations and investigate it on a larger scale. The number of children included in the investigation could be much larger. The present study generated 80 interviews which represented 20 cases for each stimulus situation as each child was seen for every situation. A group of 100 children for a single stimulus situation would not be unreasonable for the proposed research.

The individual cognitive structures may be further illuminated by extending the age group to five-to eight-year old children. The inclusion of the children up to eight years would yield information over a five year span thus strengthening the validity of the clinical method as developmental trends could be discerned.

Conclusions

The explanation of the listening process has been undertaken in the present thesis by the consideration of the central process of equilibration of the cognitive structures of listening. The research has been based on Piagetian

principles and methodology. The steps of this research have closely followed Piaget's own research on cognitive development as outlined by Vuyk. The steps of the present research were as follows:

1. formulate a general question - "Explain the listening process",
2. translate the general question or guiding hypothesis into the four stimulus situations,
3. conduct the clinical interviews in order to collect information,
4. link the interpretations of the stimulus situations to the general question, and
5. report the results.

The nature of the study, based on Piagetian principles and method, was unique to the research evidenced in the search of the literature. As a result, the review of the literature was treated as an historical perspective on listening. It was determined, however, that listening did occupy a place of prominence in the language arts. It was the first skill to appear chronologically, was the base for the other language arts, and young children were reported to spend up to 60% of their day listening.

The paucity of research in the area of cognitive structures of listening established a need for the present research. The research involved ten three-year old children and ten four-year old children with ten children of each sex.

The selection of such a young age group was made, being cognizant of the remarks made by Piaget that until a child reached the age of four a continuous conversation was not possible and little information could be attained. Piaget himself concentrated his clinical interviews on eight-to twelve-year olds (Vuyk, 1981). This study not only showed that a continuous conversation was possible with three-and

four-year old children but also that the conversations were productive. This result has major educational implications for it suggests that the technique of the clinical interview constitutes a viable mode of inquiry for future research in listening and also as a method for investigations in other areas of early childhood education.

The results of this research contribute to the understanding of the listening process. First, the consideration of the equilibration of cognitive structures proved to be a viable means of explanation. Second, Piagetian cognitive-structural features were corroborated across the four functional categories of listening. Third, the corroboration resulted in the identification of the listening process as a cognitive activity. Finally, consideration of the central process of equilibration was instrumental to the formation of a model of the listening process.

The investigation of the cognitive processes of listening, which utilized Piagetian methodology, generated two kinds of implications. The first was the educational implications which included the explication of the model for the cognitive processes of listening, curriculum-based implications, and the clinical interview as a method of inquiry. The second type of implications referred to the suggestions for further research. Included in this category was the third level of equilibrium as a further refinement to the model of the listening process, verification by replication, the investigation of other phenomena, and further research into the cognitive-structural features of listening.

The educational implications could contribute to the field of listening in particular, and to the area of early childhood in general, if implemented as suggested. Finally, the suggestions for further research would contribute to the acquisition of knowledge on the cognitive processes of listening in early childhood.

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APPENDIX ONE

INSTRUCTIONS AND STIMULUS MATERIALS FOR STIMULUS SITUATIONS
ONE THROUGH FOUR

Stimulus Situation 1 - Marginal Listening

Instructions: I am going to play you a story on the tape recorder. I want you to listen carefully. We will talk about the story before our time is up today.

Stimulus Material

DICK TURNIP

by Giles Reed

Dick Turnip is one of the Munch Bunch. He lives in an old boot with three little turnips. He calls them his Turnip Gang. * They all live next door to Rory Rhubarb. Dick likes to think he is the meanest, toughest turnip in the whole world. But really, he is no stronger than Lucy Lemon.

It was a very special day. It was Supercool's birthday. Dick Turnip and his Gang were most surprised because they had just received an invitation to his party. You see, normally, # * no one ever invites the turnips to parties, because they are usually so nasty.

Emma Apple was invited to the party as well. So she decided to make some little cakes to take along. "I do hope they enjoy my cakes," she said to herself.

And later, when the cakes had cooled, Emma put them into a box and set out to take them to Supercool's house. But * = start of background noise

= end of background noise"

Dick Turnip and his Turnip Gang were hiding in the bushes
waiting for her to go past.

"Stand and deliver!" shouted Dick, pointing his water-
pistol at Emma. He had heard that highwaymen always said
"Stand and deliver," but he didn't really know what it meant!
The three little turnips quickly stole the cakes from Emma
and ate them all up. Emma was furious.

Sally Strawberry had been busy too. She had baked
Supercool a lovely birthday cake and had covered it with
pretty icing. She was going to take it to Supercool, so she
put it in a big cakebox.

But, just as Sally was walking along the path, Dick
Turnip and his Gang jumped out of the bushes in front of her.
He pointed his water-pistol at her and demanded the box.
Once again, the three little turnips quickly opened it and
started to eat the delicious cake.

When Olive heard what had happened to Emma and Sally,
she had an idea. So she asked both of them to come round to
her house. The three of them then went indoors to work out
their plan.

They made some special sweets for Dick Turnip and his Gang. The sweets were made from soap-powder and tasted awful. But they looked absolutely delicious!

As soon as the sweets had cooled, Olive left to go to Supercool's house. She had not gone very far when the dreaded Turnip Gang stopped her. "Stand and deliver!" demanded Dick again. And one of the Gang grabbed the sweet box and they all ran off.

Emma, Sally and Olive went to see Merv Marrow, the village policeman. They explained what Dick Turnip and his Gang had been up to. And they also told Merv about the trick they had played on Dick.

So they all set off for Dick Turnip's house with Merv leading the way. As they approached the house, they could see lots and lots of bubbles pouring out everywhere. "It's worked," shrieked Olive. "Dick and his Gang have eaten the soapy sweets."

When they looked inside, Dick and his Gang were really ill. They had eaten most of the sweets, and every time they opened their mouths bubbles came out. "That will teach them not to steal other people's things in future," laughed Sally.

#

Merv Marrow arrested Dick and the Turnip Gang for stealing the cakes and the sweets. He tied them all up and took them off to jail.

*

Emma and Sally made some more cakes and took them along to Supercool's party. Merv Marrow arrived a little late because he had been busy locking Dick and his Gang in jail. Supercool's party was lots of fun. Everyone had a lovely time...

*

... except Dick Turnip and the Turnip Gang. That will teach them not to be so nasty in the future.

#

* = start of background noise
= end of background noise

Stimulus Situation 2 - Appreciative Listening

Instructions: I'm going to play you some music on the tape recorder. This music does not have any words. I'd like you to listen very carefully to the music. I'm going to give you a piece of paper from my folder with Donald Duck and Mickey Mouse and their friends on it and some crayons. Now, as you listen to the music draw any picture the music makes you think of. You may draw more than one if you like, if the music makes you think of more than one picture. Your picture is the one I want to see. Do you understand what I want you to do? Great! Here we go! Listen and draw when you want. We'll talk about your picture when you're finished.

Stimulus Material

The stimulus material for the second stimulus situation was Beethoven's Symphony No. 6 in F (Pastoral) Op. 68 as played by the Royal Philharmonic Orchestra conducted by Sir Charles Groves.

Stimulus Situation 3 - Attentive Listening

a) Body Movements

Instructions: I want you to play a game with me. I'll tell you how to move your hands and you move them. Listen carefully and do what I say.

Stimulus Material

The stimulus material for the first task of the third stimulus situation was a requested series of hand movements as in the childhood game of "Simon Says" but without the visual element. Each child was requested to move their hands, in order, to the following locations:

- | | |
|------------|-----------|
| 1. head | 8. eyes |
| 2. feet | 9. legs |
| 3. stomach | 10. mouth |
| 4. knees | 11. chair |
| 5. elbow | 12. mouth |
| 6. table | 13. feet |
| 7. ears | 14. head |

b) Reproduction of Sound (Drums and Words)

Instructions (drums): We are going to play a game with the drums now. Listen carefully as I hit my drum. Then I want you to hit your drum to make it sound just like mine.

Stimulus Material

- Drum Pattern 1 - 3 quarter notes
 Drum Pattern 2 - 2 quarter notes and two eighth notes
 Drum Pattern 3 - 1 quarter note, one eighth note, one quarter note, one eighth note
 Drum Pattern 4 - 6 eighth notes and 1 quarter note
 Drum Pattern 5 - 4 quarter notes and 4 eighth notes

Instructions (words): This is another part of the game but with words. I want you to say each set of words after me.

Stimulus Material

- Word Sequence 1 - The dog ran.
 Word Sequence 2 - Help, help, help!
 Word Sequence 3 - Fire trucks have ladders.
 Word Sequence 4 - What's for tea?
 Word Sequence 5 - The bird caught and ate the bird.

c) Story Scramble

Instructions: I have another little game I'd like to play with you. It's called "Story Scramble". I'll tell you a little story but the order of the ways things happened will be all mixed up. I want you to listen very carefully to the mixed up story and then tell me the story not mixed up - the way it really happened.

Stimulus Material

Story Scramble (incorrect sequence)

- I ate my breakfast.
 I said hello to my teacher.
 I got up in the morning.
 I went to Kindergarten (Preschool) with my mommy.
 I got dressed.

Stimulus Situation 4 - Analytic Listening

Instructions: I am going to read you a story. I want you to listen carefully. We'll talk about the story at the end before our time is up.

Stimulus Material

Rozzy Raspberry

by Giles Reed

Rozzy Raspberry is one of the Munch Bunch. She lives in an old punnet next to Chunky Pineapple. Rozzy looks such a sweet little berry, but her appearance can be very deceptive. She is usually a very naughty little berry.

Today, Rozzy thought she would have a bit of fun with some of her Munch Bunch friends. So she searched through her toybox, looking for something to do, until she came across her old box of tricks. "This could be very amusing," she thought to herself.

First, Rozzy found a trick bandage with a nail through it. She stood outside her punnet, and as soon as she saw Button and Tiny coming she pretended to cry. "Oh, you poor little thing," shrieked Button looking at Rozzy's finger. "Whatever have you done?"

"Come home with us and have some cake," said Tiny. "You must feel really terrible." This was just what Rozzy wanted. She put her feet up, and let Button and Tiny make a fuss of her.

As soon as Rozzy had finished eating the cake, she started to giggle and pulled the bandage off her finger. The mushrooms looked aghast, and were very upset at having been tricked. Rozzy ran off laughing. "Thanks for the cake," she shouted. "It was lovely."

Rozzy rushed home to find her next trick. "Who can I

trick this time?" she chuckled to herself. Just then, Adam Avocado came down the road. "Adam, please can you get the lid off this box for me? It seems to have stuck," asked Rozzy innocently. "Certainly," replied Adam. "Only too pleased to help."

Adam tugged at the lid. But it wasn't stuck at all. A Jack-in-the-box leapt up straight into his face. Rozzy fell about laughing, but Adam was really shaken. It had given him a big shock.

The day was turning out to be even more amusing than Rozzy had hoped for. Next, she put on a hat with an arrow through it, and staggered up to Nurse Plum's home. "Help," cried Rozzy. "I've been shot by the Indians." Nurse Plum was horrified and quickly took Rozzy into the Hospital.

"Don't worry, Rozzy. I will tuck you up in bed and bring you a drink of milk and some sweets. That will make you feel better," said Nurse Plum. She was very concerned for her patient. "Oh, thank you, Nurse," she murmured. "I'm beginning to feel a little better now."

As soon as Rozzy had finished her sweets and drink, she leapt out of bed and flung her hat in the air. "Fooled you," she shouted. But Nurse Plum did not think it was very funny at all. "Rozzy Raspberry, you are very naughty. You have wasted my valuable time when I have got other patients who are really ill to look after."

But Rozzy wasn't at all bothered. She was having great fun, and when she saw Aubrey Aubergine coming towards her she couldn't resist playing one last trick. "Would you like to smell this pretty flower that I picked today, Aubrey?" she asked.

Aubrey bent over to have a good sniff. But just as he

was looking straight into the flower, Rozzy squirted ink into his face. Aubrey's new waistcoat was ruined. But Rozzy didn't notice how upset he was - she was too busy laughing.

It was getting late, so Rozzy made her way back to her punnet. "That really was a good day," she chuckled to herself. But then she had a horrible feeling. She discovered that she had lost her door key.

Just then, some of the Munch Bunch walked by. "Hey, Adam, Button, Tiny, Aubrey, Nurse Plum, please help me," shouted Rozzy. "I can't find my door key." "Not likely," replied Button. "You are not going to play any more of those silly tricks on us."

But this time Rozzy wasn't joking. She really had lost her key. And she had to spend the whole night out in the dark on her own. Playing tricks on her friends didn't seem so funny now...