# FROM EPISTEMOLOGICAL TRENDS TO CLINICAL AND EDUCATIONAL PRACTICES IN SPEECH-LANGUAGE PATHOLOGY

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**Abstract:**
Without denying the importance of disciplinary studies, it is important to identify the role of interdisciplinary research. Although there is a division of knowledge into disciplines, the movement toward interdisciplinarity demonstrates a limitless innovation that better represents the reality of contemporary society and its beliefs. According to John Locke's theory of the mind , one is born without innate ideas or concepts (Deigh 1994). We could assume that our knowledge is based on personal experiences and sensory perceptions. Understanding the human being is almost by necessity multidisciplinary because there is no single school of thought or discipline that can define the human being without taking into consideration the role of other disciplines. This paper will not only examine the role that interdisciplinarity plays in current research but it will also examine how speech-language pathology is innately interdisciplinarian and evidence-based. Clinical and educational practices will serve as examples to show how this field is inherently interdisciplinary.

**Key Words:** Epistemology, Educational Speech-Language Pathology, Interdisciplinarity

**Introduction:**

The degree of integration of the interactions between disciplines should not be seen as combinations of thought but rather as the establishment of a hierarchical distinction (Piaget 1970). According to this school of thought, multidisciplinarity equates a phenomenon of borrowing from one science to another without causing changes in the original discipline. Piaget goes on to describe the interdisciplinary level as a reciprocal exchange between disciplines while the transdisciplinary level represents relationships between disciplines that would fall within a total system without borders. We notice, once again, that interdisciplinarity represents an exchange of ideas between disciplines. In order to standardize this interdisciplinary exchange, we should discuss the importance of epistemological trends in regards to scientific research.

**Terminology**

In order to further examine interdisciplinarity, it is essential to review the terminology associated with the study of disciplines. A summary of interdisciplinarity is defined as an area that encompasses several disciplines whereas multidisciplinarity is defined as an area for several disciplines (Voyer 2000). Finally, transdisciplinarity examines an area that crosses the borders of various disciplines which represents the integration of other disciplines to support a specific study (Voyer 2000). In short, despite the lexical incoherence, we may find that interdisciplinary study means a study not only between disciplines but also a study that respects the contribution of each discipline and takes into consideration the importance of interdisciplinary collaboration in specific research. According to Peter Weingart, "Both interdisciplinarity and disciplinarity are, thus, given positive valuations for different functions: innovation on the one hand and rigor and control for error on the other. (...) They are complementary rather than contradictory: No new discovery is made without a frame of mind that allows one to distinguish between new and old, and relevant and irrelevant, and to record and remember "(Weingart 2000, p.29).

**Epistemological Trends**

In this section we will examine the epistemological views of several authors. Firstly, epistemology, according to Gauthier, is a prospective - which therefore concerns the future - that does not necessarily reflect current science, but rather critiques science in a constructive heuristic manner (Gauthier 2005). The philosophical interests of Gauthier go beyond the scope of logic, mathematics and physics and he notes that there is a distinction between science and philosophy. According to Gauthier, a scientific theory is "a discourse on a subject of science" (Gauthier 2005, p.19) while the philosophical discourse becomes more of a *meta* as in the study of metaphysics. It should be noted therefore that an object that qualifies as *scientific* can only be thusly defined when a scientific theory determines it so. Could philosophical discourse, then, lead to the identification of an object if it is first a thought that becomes a scientific theory? Gauthier adds that the dichotomy between theory and practice is found at all levels of scientific discourse (Gauthier 2005). If the important link between theory and practice is recognized, can we therefore conclude that Gauthier offers an interdisciplinary approach to the study of science?

Secondly, Edgar Morin also offers a logical approach when determining the pillars of classical science: order, separability and reason. Morin says that order is a deterministic and mechanistic concept of the world while separability is based on the Cartesian principle that solves a problem or a phenomenon by breaking the simple elements. He explains that reason is based on three principles: induction, deduction and identity (Morin 1999). It would be almost remiss not to mention that Karl Popper was among the first to assert himself against induction because he did not support the theory of accepting a conclusion by induction only (Popper 1972)**.**

Morin, whose three pillars have been shaken by the developments of contemporary science later offered three theories: information theory, cybernetics and systems theory. The information theory deals with the uncertainty, the surprise and the unexpected where the information becomes what controls the energy and gives autonomy to a machine (Morin 1999), while cybernetics examines autonomous machines and hints at the appearance of artificial intelligence. This theory also includes the aspect of feedback that can have either a negative or a positive form. Negative feedback stabilizes a system and reduces the deviance while positive feedback represents a rather inflationary approach (Morin 1999). When we discuss feedback, however, we also speak of causality that, despite Morin's reference to artificial intelligence, is somewhat ironic because one of the possible foundations of causality includes the role of religion as the primary cause in the feedback cycle.

Finally, Morin introduced the systems theory, which also lays the groundwork for organizational thinking (Morin 1999). According to Morin, this theory includes the psychological aspect of gestalt because it explains that the whole is greater than the sum of its parts. According to Morin, the three theories introduce us to a world of phenomena where organization is done with order as well as with chaos (Morin 1999). Complex thinking is essentially the theory that examines research and / or opinions with uncertainty and which is able to create somewhat of an organization. The paradigm of complexity however cannot be synonymous with simplification as it requires to connect but always while making a distinction (Morin, 1999) and so the debate ensues regarding unidisciplinarity, multidisciplinarity and interdisciplinarity.

Logic seems to be a common feature between Gauthier. with his constructivist approach and Morin, with his complex thought, but how does this common trait bind these two schools of thought? Is a connection even possible? Gauthier speaks of internal logic as that which refers to a definite theory that aims to better represent individual factors of a theory (Gauthier 1991) while Morin considers logic without the appearance of contradiction. He implies that thought would lose creativity, a sense of innovation and complexity if logic prevailed. Evidently two theorists referencing the same vocabulary however, semantically, two schools of thought prevail.

Gauthier claims that philosophy, metaphysics and theology cannot be excluded a priori from the field of science (Gauthier 2005). Gauthier insists therefore that the unscientific eye must first be rejected despite the fact that it plays a fundamental role in the field of science. Morin for his part argues that complex thought can be reduced to neither science nor philosophy, but rather allows for the communication from one to another (Morin 1999). Can we therefore conclude that Yvon Gauthier acknowledges the presence of other disciplines while Edgar Morin recognizes the importance of other disciplines? According to Laflamme, Yvon Gauthier builds bridges between systematic and empiric

theory that emerge from his research of less interpretative findings (Laflamme 2008) and, perhaps, by supporting probability and statistics. Edgar Morin, however, presents a logic that is not representative of a linear function as well as a thought that supports the mosaic of different areas such that interdisciplinarity is inherent. Is it realistic to be able to convey the notion of interdisciplinarity in a clinical setting and in a field of scientific study?

**Clinical Practice**

Speech-language pathologists have a range of knowledge regarding normal development and communication disorders and master the technical evaluation and response thereto. On the one hand, the evaluation of communication disorders is done through a process of screening, identification, assessment and, most recently, diagnostic. For its part, the intervention involves the promotion, prevention, counseling, treatment, consultation, care, rehabilitation, and finally, training and rehabilitation. Speech-language pathologists work directly with clients and other individuals who regularly interact with them, including primarily members of the family, paraprofessionals, colleagues and support staff. Speech-language pathology (SLP) is a regulated health profession which must meet the requirements mandated by the governing law. In order to join the College of speech-language pathologists, a member shall, in addition to meeting the academic expectations, meet "certain aspects of local expertise, including: case law, values "and ethical framework, systems and health policies "(CASLPA 2011). Speech-language pathologists must also demonstrate continued competence and respect the code of ethics that, in general, describes the core professional values.

Recently, the Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) and the College of Audiologists and Speech-Language Pathologists (CASLPO) strongly recommend the use of practices that are observable, measurable, manageable, and which are established by experts (CASLPA 2011). These guidelines are also skills in close connection with the practice that is evidence-based, otherwise known as evidence based practice (EBP). When speaking of practices that are evidence-based, they must include separate, measurable and meaningful elements that often result from a collection and data analysis. This evidence therefore eventually leads to a practice generally accepted by the clinicians and thus forms a standard applicable in daily work. The evidence based practice not only encourages clinical approaches that are the basis of formal research, but also persuades the clinicians to think in terms of EBP, which is to say that clinicians are encouraged to weigh the evidence relating to their own practice and provide measures by which to gauge performance and progress. Take for example the speech-language pathologists of the *Conseil scolaire catholique de Nouvel Ontario*, a French school-board set in a linguistic minority setting. A group of francophone clinicians working within a linguistic minority, decided to create their own screening tool instead of simply translating an English tool that did not represent normative data (Minor-Corriveau, 2012). One could deduce that they adopted a kind of logical positivism as they created their own tool, based on data collection and following an experimental reliability and validity, to meet their own needs. One might also add that they simply respected the mandate of their College, which explains that a proper assessment involves the following: "a) the identification of disorders best performed in the native language and combined with the assessment in the second language b) cultural and linguistic appropriateness c) well supported; d) an evaluation process that is natural and holistic and includes the use of non-standard methods, e) consideration of societal factors which may hinder language proficiency; f) evaluation reports that are descriptive" (CASLPA 2011). Certainly it is not realistic that a clinician develop a new assessment tool each time a different tool is inadequate but logical positivism certainly encourages evidence-based practice as logical positivism is based on the optimal situation, either the model or ideal, of research (Gauthier 2005).

The speech-language pathologist may work in several environments: a clinic that targets the pre-school population, a school board, a treatment center for children, a hospital, a rehabilitation center, a private clinic, etc. In short the environment in which the clinician performs can vary but one factor that remains constant is the client and despite this consistent factor, no two clients are alike. How can a clinician assess or act strictly based on the evidence of certain practices especially if there are no established practices for each affected population? The relationship between the client and its environment therefore becomes an essential factor.

Consider a group intervention session. Group members include the speech-language pathologist, a 5-year old boy, a 5-year old girl and another 6-year old boy. The three children have a phonological awareness delay, specifically in terms of syllabic segmentation. It is also noteworthy

that the 5-year old girl is blind and the 6-year old boy has a hearing impairment. In addition, the SLP must consider the techniques taught in the classroom so as not to confuse the message of the teacher. What factors dominate the approach to assess and intervene? Evidence-based practice, the client's needs and his or her environment or a combination of both approaches? It seems that a combination of both approaches would be the ideal practice. Knowing that technology plays a role in learning for the client with a loss of vision (Hersh and Johnson 2008)), the clinician could incorporate a hearing program to explain the syllabic segmentation while the little boy who has a hearing impairment could use tokens or other visual cues to facilitate understanding. Meanwhile, the 5-year old boy could benefit from both approaches. This portrait of a speech-language session is not exceptional, but rather typical, and the speech-language pathologists must often change their approaches to accommodate as much as possible the needs of their clients. So we could see that despite the importance of the influence of logical positivism, the SLP takes into account the interaction between the subject and its environment.

Although Piaget moves away from logical positivism, his theory is largely based on observations (Piaget 1970). According to this author, it is also thought that knowledge does not develop without interaction with the environment even if it remains neutral. Take for example the role of feedback and modeling in the field of speech-language pathology. An adult is seated during a session of intervention where he works on word fluency following a brain injury. At the beginning of the session, the clinician explains the breathing techniques and strategies to consider when moments of dysfluency occur. During the course of the session, the therapist is merely carrying out the activities and allows the client to self-regulate when facing difficulties. In this scenario, the session would evidently be ineffective as the clinician does not offer any feedback or modeling of the recommended techniques. One could therefore argue that intervention and learning are not unidirectional and that the interaction between clinician and client is essential because it not only contributes to the effectiveness of the intervention but is also necessary in order to achieve therapeutic goals. The feedback provided by the SLP could also allow for learning to take place by problem solving because the client could change his techniques and self-correct in response to comments from the feedback.

**Epistemeology and interdisciplinary research**

In epistemology, research can be referred to as soft or hard in the sense that we may or may not see the links with other sectors or disciplines (Vanpoulle 2011). These external or scientific borrowings contribute to the field of interdisciplinary studies because they give rise to the transfer of methods and / or knowledge from one discipline to another. According to Franck, the unity of knowledge claims that knowledge is unique and there is a harmonization of concepts (Franck 1999). Furthermore he explains that the unity of knowledge does not require erasing disciplinary boundaries but rather that interdisciplinarity is not limited strictly to scientific borrowings. Research can thus be defined as an interdisciplinary collaboration of researchers where anyone from any discipline includes the study area without being aware of jargon and / or knowledge related to a specific discipline (Voyer 2000).

According to the Canadian Association of Speech-Language Pathologists and Audiologists, SLPs are autonomous professionals who have expertise with regards to normal development and communication disorders, and swallowing as well as in the assessment and intervention of these areas (CASLPA 2011). According to the College of Psychologists of Ontario (CPO), psychology services include, without limitation, one or more of the following: a) assessment and diagnosis of a person or group; b) interventions conducted with a person or group; c) consultation d) development and evaluation; e) supervision; f) research (The College of Psychologists of Ontario 2009). Sociology can be defined as the branch of human sciences which seeks to understand and explain the impact of social representations on human behavior: research subjects are varied but are still connected to the human environment and take into consideration human social phenomena from different angles (Touraine 2003); whereas, linguistics is the study of human language and should not be confused with the study of grammar (Laurence 2003). The linguist studies the mechanisms of language in a broad manner, however there is also a specific analysis in theoretical linguistics (i.e. phonetics, syntax, morphology, semantics) The linguist also compares the use of a language for a specific period (synchronic linguistics) against the evolution of a language (diachronic linguistics) (Rodrigues Aristar

1991). Research in linguistics is often descriptive and explains the nature of language without passing value judgments (i.e. ebonics) (Baugh 2000).

Following a brief description of the disciplines mentioned above, it is useful to emphasize the commonalities of these compared to speech and language development. First, the speech-language pathologist is interested, among other things, in the comprehension and use of language in daily life. For its part, the psychologist is interested in the cognitive processes involved in the use of language and often uses skills related to language in order to determine the cognitive abilities of an individual, while the sociologist possibly considers the interests of an individual regarding language use and / or socioeconomic factors such as education which has an impact on language development. Finally, linguists are interested in language processes included in the use of a language (also important for clinicians), as well as the omission of phonetic or morphological markers, for example, omission of the plural marker - possibly as a sociological factor. Evidently there are many commonalities between the above mentioned disciplines and the study of speech and language development and its use would be incomplete without taking into consideration various fields of study – many of which remain to be examined in this paper such as biology, neuroscience and medicine just to name a few.

**Conclusion:**

As mentioned above, the speech-language pathologist works with a diverse population with various communicative disorders. Language can certainly be interpreted, analyzed and studied by several disciplines and because of its complexity, language lends itself to systematic reviews at various angles depending on various fields of study. First, because language is a complex orchestration of multiple cognitive processes, it is an important field of research in areas such as psychology and speech-language pathology as we attempt to understand it with a microstructural approach. Similarly, in linguistics, we focus on the concept of language according to its linguistic components. On the other hand, since it is an essential skill in today's society, language development and the use thereof are also researched in the fields of education and sociology where there is more interest in the practical applications and its macrofunctional role. In summary, language skills are related to human development that is studied in various fields and it should be noted that a unidisciplinarian approach alone does not allow for an extensive and comprehensive review. However, the field of speech-language pathology and its interdisciplinarian nature allows for such an extensive and comprehensive review.

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