13. Language and Communication:

Human language - Properties, structure and linguistic hierarchy, Language acquisition- predisposition, critical period hypothesis; Theories of language development - Skinner and Chomsky; Process and types of communication - effective communication training.
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Language Development, Properties and Structure

Language development

Language development is a process starting early in human life, when a person begins to acquire language by learning it as it is spoken and by mimicry. Children's language development moves from simple to complex. Infants start without language. Yet by four months of age, babies can read lips and discriminate speech sounds. The language that infants speak is called babbling.

Usually, language starts off as recall of simple words without associated meaning, but as children grow, words acquire meaning, with connections between words being formed. As a person gets older, new meanings and new associations are created and vocabulary increases as more words are learned.

Infants use their bodies, vocal cries and other preverbal vocalizations to communicate their wants, needs and dispositions. Even though most children begin to vocalize and eventually verbalize at various ages and at different rates, they learn their first language without conscious instruction from parents or caretakers. In fact research has shown that the earliest learning begins in uterus when the fetus can recognize the sounds and speech patterns of its mother’s voice.

Theoretical frameworks of language development

There are four major theories of language development.

The behaviorist theory, proposed by B. F. Skinner suggests that language is learned through operant conditioning (reinforcement and imitation). This perspective sides with the nurture side of the nature-nurture debate. This perspective has not been widely accepted in either psychology or linguistics for some time, but by many accounts, is experiencing a resurgence. Some empiricist theory accounts today use behaviorist models.

The nativist theory, proposed by Noam Chomsky, argues that language is a unique human accomplishment. Chomsky says that all children have what is called an LAD, an innate language acquisition device that allows children to produce consistent sentences once vocabulary is learned. His claim is based upon the view that what children hear - their linguistic input - is insufficient to explain how they come to learn language. While this view has dominated linguistic theory for over fifty years, it has recently fallen into disrepute.

The empiricist theory suggests, contra Chomsky, that there is enough information in the linguistic input that children receive, and therefore there is no need to assume an innate language acquisition device (see above). This approach is characterized by the construction of computational models that learn aspects of language and/or that simulate the type of linguistic output produced by children. The most influential models within this approach are statistical learning theories such as connectionist models and chunking theories.
The last theory, the interactionist perspective, consists of two components. This perspective is a combination of both the nativist and behaviorist theories. The first part, the information-processing theories, tests through the connectionist model, using statistics. From these theories, we see that the brain is excellent at detecting patterns. The second part of the interactionist perspective, is the social-interactionist theories. These theories suggest that there is a native desire to understand others as well as being understood by others.

**Biological preconditions**

Linguists do not agree on the biological factors contributing to language development, however most do agree that the ability to acquire such a complicated system is unique to the human species. Furthermore, many believe that our ability to learn spoken language may have been developed through the evolutionary process and that the foundation for language may be passed down genetically. The ability to speak and understand human language requires a specific vocal apparatus as well as a nervous system with certain capabilities.

One hotly debated issue is whether the biological contribution includes capacities specific to language acquisition, often referred to as universal grammar. For fifty years, linguist Noam Chomsky has argued for the hypothesis that children have innate, language-specific abilities that facilitate and constrain language learning. In particular, he has proposed that humans are biologically prewired to learn language at a certain time and in a certain way, arguing that children are born with a Language Acquisition Device (LAD).

Other researchers, who believe that words and grammars are learned (rather than innate), have hypothesized that language learning results from general cognitive abilities and the interaction between learners and their surrounding communities. It has also recently been suggested that the relatively slow development of the prefrontal cortex in humans may be one reason that humans are able to learn language, whereas other species are not.

**Environmental Influences**

A purely behaviorist view of language development is no longer considered a viable explanation of how children acquire language, yet a great deal of research describes ways in which a children's environmental experiences influence their language skills. Michael Tomasello stresses that young children are intensely interested in their social world and that early in their development they can understand the intentions of other people."

One component of the young child's linguistic environment is (child-directed speech) also known as baby talk or motherese, which is language spoken in a higher pitch than normal with simple words and sentences. Although the importance of its role in developing language has been debated, many linguists think that it may aid in capturing the infant's attention and maintaining communication. Adults use strategies other than child-directed speech like recasting, expanding, and labeling: "Recasting is rephrasing something the child
has said, perhaps turning it into a question or restating the child’s immature utterance in the form of a fully grammatical sentence. Expanding is restating, in a linguistically sophisticated form, what a child has said. Labeling is identifying the names of objects.

**Social preconditions**

It is crucial that children are allowed to socially interact with other people who can vocalize and respond to questions. For language acquisition to develop successfully, children must be in an environment that allows them to communicate socially in that language.

There are a few different theories as to why and how children develop language. The most popular -- and yet heavily debated-- explanation is that language is acquired through imitation. The two most accepted theories in language development are psychological and functional. Psychological explanations focus on the mental processes involved in childhood language learning. Functional explanations look at the social processes involved in learning the first language.

**There are four main components of language:**

- **Phonology** involves the rules about the structure and sequence of speech sounds.
- **Semantics** consists of vocabulary and how concepts are expressed through words.
- **Grammar** involves two parts. The first, syntax, is the rules in which words are arranged into sentences. The second, morphology, is the use of grammatical markers (indicating tense, active or passive voice etc.).
- **Pragmatics** involves the rules for appropriate and effective communication.

Pragmatics involves three skills:

- using language for greeting, demanding etc.
- changing language for talking differently depending on who it is you are talking to
- following rules such as turn taking, staying on topic

Each component has its own appropriate developmental periods.

**Phonological development**

From shortly after birth to around one year, the baby starts to make speech sounds. At around two months, the baby will engage in cooing, which mostly consists of vowel sounds. At around four months, cooing turns into babbling which is the repetitive consonant-vowel combinations. Babies understand more than they are able to say.

From 1–2 years, babies can recognize the correct pronunciation of familiar words. Babies will also use phonological strategies to simplify word pronunciation. Some strategies include repeating the first consonant-vowel in a multisyllable word ('TV'--> 'didi') or deleting unstressed syllables in a multisyllable word ('banana'-->'nana'). By 3–5 years, phonological awareness continues to improve as well as pronunciation.
By 6–10 years, children can master syllable stress patterns which helps distinguish slight differences between similar words.

**Semantic development**

From birth to one year, comprehension (the language we understand) develops before production (the language we use). There is about a 5 month lag in between the two. Babies have an innate preference to listen to their mother’s voice. Babies can recognize familiar words and use preverbal gestures.

From 1–2 years, vocabulary grows to several hundred words. There is a vocabulary spurt between 18–24 months, which includes fast mapping. Fast mapping is the babies’ ability to learn a lot of new things quickly. The majority of the babies’ new vocabulary consists of object words (nouns) and action words (verbs). By 3–5 years, children usually have difficulty using words correctly. Children experience many problems such as underextensions, taking a general word and applying it specifically (for example, 'blankie') and overextensions, taking a specific word and applying it too generally (example, 'car' for 'van'). However, children coin words to fill in for words not yet learned (for example, someone is a cooker rather than a chef because a child will not know what a chef is). Children can also understand metaphors.

From 6–10 years, children can understand meanings of words based on their definitions. They also are able to appreciate the multiple meanings of words and use words precisely through metaphors and puns. Fast mapping continues.

**Grammatical development**

From 1–2 years, children start using telegraphic speech, which are two word combinations, for example 'wet diaper'. Brown (1973) observed that 75% of children's two-word utterances could be summarised in the existence of 11 semantic relations:

Eleven important early semantic relations and examples based on Brown 1973:

- Attributive: 'big house'
- Agent-Action: 'Daddy hit'
- Action-Object: 'hit ball'
- Agent-Object: 'Daddy ball'
- Nominative: 'that ball'
- Demonstrative: 'there ball'
- Recurrence: 'more ball'
- non-existence: 'all-gone ball'
- Possessive: 'Daddy chair'
- Entity + Locative: 'book table'
- Action + Locative: 'go store'
At around 3 years, children engage in simple sentences, which are 3 word sentences. Simple sentences follow adult rules and get refined gradually. Grammatical morphemes get added as these simple sentences start to emerge. By 3–5 years, children continue to add grammatical morphemes and gradually produce complex grammatical structures. By 6–10 years, children refine the complex grammatical structures such as passive voice.

**Pragmatics development**

From birth to one year, babies can engage in joint attention (sharing the attention of something with someone else). Babies also can engage in turn taking activities. By 1–2 years, they can engage in conversational turn taking and topic maintenance. At ages 3–5, children can master illocutionary intent, knowing what you meant to say even though you might not have said it and turnabout, which is turning the conversation over to another person.

By age 6-10, shading occurs, which is changing the conversation topic gradually. Children are able to communicate effectively in demanding settings, such as on the telephone.

**Linguistics**

Linguistics is the scientific study of human language. Linguistics can be broadly broken into three categories or subfields of study: language form, language meaning, and language in context.

The first is the study of language structure, or grammar. This focuses on the system of rules followed by the speakers (or hearers) of a language. It encompasses morphology (the formation and composition of words), syntax (the formation and composition of phrases and sentences from these words), and phonology (sound systems). Phonetics is a related branch of linguistics concerned with the actual properties of speech sounds and nonspeech sounds, and how they are produced and perceived.

The study of language meaning is concerned with how languages employ logical structures and real-world references to convey, process, and assign meaning, as well as to manage and resolve ambiguity. This subfield encompasses semantics (how meaning is inferred from words and concepts) and pragmatics (how meaning is inferred from context).

Language in its broader context includes evolutionary linguistics, which considers the origins of language; historical linguistics, which explores language change; sociolinguistics, which looks at the relation between linguistic variation and social structures; psycholinguistics, which explores the representation and function of language in the mind; neurolinguistics, which looks at language processing in the brain; language acquisition, how children or adults acquire language; and discourse analysis, which involves the structure of texts and conversations.
Although linguistics is the scientific study of language, a number of other intellectual disciplines are relevant to language and intersect with it. Semiotics, for example, is the general study of signs and symbols both within language and without. Literary theorists study the use of language in literature. Linguistics additionally draws on and informs work from such diverse fields as psychology, speech-language pathology, informatics, computer science, philosophy, biology, human anatomy, neuroscience, sociology, anthropology, and acoustics.

**Terminology for the discipline**

Before the 20th century, the term philology, first attested in 1716, was commonly used to refer to the science of language, which was then predominantly historical in focus. Since Ferdinand de Saussure’s insistence on the importance of synchronic analysis, however, this focus has shifted and the term "philology" is now generally used for the "study of a language’s grammar, history, and literary tradition", especially in the United States, where it was never as popular as it was elsewhere (in the sense of the "science of language").

Although the term "linguist" in the sense of "a student of language" dates from 1641, the term "linguistics" is first attested in 1847. It is now the usual academic term in English for the scientific study of language.

The term linguist, used for one who studies language, applies within the field to someone who either studies linguistics or uses linguistic methodologies to study groups of languages or particular languages. Outside the field, this term is commonly used to refer to people who speak many languages fluently.

**Fundamental concerns and divisions**

Linguistics concerns itself with describing and explaining the nature of human language. Fundamental questions include what is universal to language, how language can vary, and how human beings come to know languages. Linguistic fields can then be broadly divided into those that distinguish themselves by a focus on linguistic structure and grammar, and those that distinguish themselves by the nonlinguistic factors they consider.

**Fundamental questions**

All humans achieve competence in whatever language is used around them when growing up, with little apparent need for explicit conscious instruction (setting aside extremely pathological cases). Linguists assume that the ability to acquire and use language is an innate, biologically based potential of modern human beings, similar to the ability to walk, because nonhumans do not acquire human language in this way (although many nonhuman animals can learn to respond to language, or can even be trained to use it to a degree).

There is no consensus, however, as to the extent of humans' innate potential for language, or the degree to which such innate abilities are specific to language. Some theorists claim
that there is a very large set of highly abstract and specific binary settings coded into the human brain; the combinations of these settings would give rise to every language on the planet. Other linguists claim that the ability to learn language is a product of general human cognition. It is, however, generally agreed that there are no strong genetic differences underlying the differences between languages: An individual will acquire whatever language(s) he or she is exposed to as a child, regardless of parentage or ethnic origin. Nevertheless, recent research suggests that even weak genetic biases in speakers may, over a number of generations, influence the evolution of particular languages, leading to a nonrandom distribution of certain linguistic features across the world.

**Divisions based on linguistic structures studied**

Linguistic structures are pairings of meaning and form. Any particular pairing of meaning and form is a Saussurean sign. For instance, the meaning "cat" is represented worldwide with a wide variety of different sound patterns (in spoken languages), movements of the hands and face (in signed languages), and written symbols (in written languages).

Linguists focusing on structure attempt to understand the rules regarding language use that native speakers know (not always consciously). All linguistic structures can be broken down into component parts that are combined according to (sub)conscious rules, over multiple levels of analysis. For instance, consider the structure of the word "tenth" on two different levels of analysis. On the level of internal word structure (known as morphology), the word "tenth" is made up of one linguistic form indicating a number and another form indicating ordinality. The rule governing the combination of these forms ensures that the ordinality marker "th" follows the number "ten." On the level of sound structure (known as phonology), structural analysis shows that the "n" sound in "tenth" is made differently from the "n" sound in "ten" spoken alone. Although most speakers of English are consciously aware of the rules governing internal structure of the word pieces of "tenth", they are less often aware of the rule governing its sound structure. Linguists focused on structure find and analyze rules such as these, which govern how native speakers use language.

Linguistics has many sub-fields concerned with particular aspects of linguistic structure. These sub-fields range from those focused primarily on form to those focused primarily on meaning. They also run the gamut of level of analysis of language, from individual sounds, to words, to phrases, up to discourse.

**Sub-fields of structure-focused linguistics include:**

- Phonetics, the study of the physical properties of speech (or signed) production and perception
- Phonology, the study of sounds (or signs) as discrete, abstract elements in the speaker’s mind that distinguish meaning
- Morphology, the study of internal structures of words and how they can be modified
- Syntax, the study of how words combine to form grammatical sentences
- Semantics, the study of the meaning of words (lexical semantics) and fixed word combinations (phraseology), and how these combine to form the meanings of sentences
- Pragmatics, the study of how utterances are used in communicative acts, and the role played by context and nonlinguistic knowledge in the transmission of meaning
- Discourse analysis, the analysis of language use in texts (spoken, written, or signed)

Many linguists would agree that these divisions overlap considerably, and the independent significance of each of these areas is not universally acknowledged. Regardless of any particular linguist’s position, each area has core concepts that foster significant scholarly inquiry and research.

**Divisions based on nonlinguistic factors studied**

Alongside the structurally motivated domains of study are other fields of linguistics. These fields are distinguished by the kinds of nonlinguistic factors that they consider:

- **Applied linguistics**, the study of language-related issues applied in everyday life, notable ones being language policies, planning, and education. (Constructed language fits under Applied linguistics.)
- **Biolinguistics**, the study of natural as well as human-taught communication systems in animals, compared to human language.
- **Clinical linguistics**, the application of linguistic theory to the field of Speech-Language Pathology.
- **Computational linguistics**, the study of computational implementations of linguistic structures.
- **Developmental linguistics**, the study of the development of linguistic ability in individuals, in particular the acquisition of language in childhood.
- **Evolutionary linguistics**, the study of the origin and subsequent development of language by the human species.
- **Historical linguistics** or diachronic linguistics, the study of language change over time.
- **Language geography**, the study of the geographical distribution of languages and linguistic features.
- **Linguistic typology**, the study of the common properties of diverse unrelated languages, properties that may, given sufficient attestation, be assumed to be innate to human language capacity.
- **Neurolinguistics**, the study of the structures in the human brain that underlie grammar and communication.
- **Psycholinguistics**, the study of the cognitive processes and representations underlying language use.
- **Sociolinguistics**, the study of variation in language and its relationship with social factors.
- **Stylistics**, the study of linguistic factors that place a discourse in context.
Semiotics is not a discipline within linguistics; rather, it investigates the relationship between signs and what they signify more broadly. From the perspective of semiotics, language can be seen as a sign or symbol, with the world as its representation.

**Variation and universality**

Much modern linguistic research, in particular within the paradigm of generative grammar, has concerned itself with trying to account for differences between languages of the world. This has worked on the assumption that, if human linguistic ability is narrowly constrained by human biology, then all languages must share certain fundamental properties.

In generativist theory, the collection of fundamental properties all languages share are referred to as universal grammar (UG). The specific characteristics of this universal grammar are a much debated topic. Typologists and non-generativist linguists usually refer simply to language universals, or universals of language.

Similarities between languages can have a number of different origins. In the simplest case, universal properties may be due to universal aspects of human experience. For example, all humans experience water, and all human languages have a word for water. Other similarities may be due to common descent: The Latin language spoken by the Ancient Romans developed into Spanish in Spain and Italian in Italy; similarities between Spanish and Italian are, thus, in many cases due to their both having descended from Latin. In other cases, contact between languages — in particular where many speakers are bilingual — can lead to much borrowing of structures, as well as words. Similarity may also, of course, be due to coincidence. English much and Spanish mucho are not descended from the same form or borrowed from one language to the other; nor is the similarity due to innate linguistic knowledge (see False cognate).

Arguments in favor of language universals have also come from documented cases of sign languages (such as Al-Sayyid Bedouin Sign Language) developing in communities of congenitally deaf people, independently of spoken language. In general, the properties of these sign languages conform to many of the properties of spoken languages. Other known and suspected sign language isolates include Kata Kolok, Nicaraguan Sign Language, and Providence Island Sign Language.

**Structures**

**Ferdinand de Saussure**

It has been perceived that languages tend to be organized around grammatical categories such as noun and verb, nominative and accusative or present and past, though not exclusively so. The grammar of a language is organized around such fundamental categories, though many languages express the relationships between words and syntax in other discrete ways (cf. some Bantu languages for noun/verb relations, ergative-absolutive systems for case relations, several Native American languages for tense/aspect relations).
In addition to making substantial use of discrete categories, language has the important property that it organizes elements into recursive structures; this allows, for example, a noun phrase to contain another noun phrase (as in "the chimpanzee's lips") or a clause to contain a clause (as in "I think that it's raining"). Though recursion in grammar was implicitly recognized much earlier (for example by Jespersen), the importance of this aspect of language became more popular after the 1957 publication of Noam Chomsky's book Syntactic Structures, which presented a formal grammar of a fragment of English. Prior to this, the most detailed descriptions of linguistic systems were of phonological or morphological systems.

Chomsky used a context-free grammar augmented with transformations. Since then, following the trend of Chomskyan linguistics, context-free grammars have been written for substantial fragments of various languages (for example, GPSG, for English). It has been demonstrated, however, that human languages (the most notable ones being Dutch and Swiss German) include cross-serial dependencies, which cannot be handled adequately by context-free grammars.

Selected sub-fields

Historical linguistics

Historical linguistics studies the history and evolution of languages through the comparative method. Often, the aim of historical linguistics is to classify languages in language families descending from a common ancestor. This involves comparison of elements in different languages to detect possible cognates in order to be able to reconstruct how different languages have changed over time. This also involves the study of etymology, the study of the history of single words. Historical linguistics is also called "diachronic linguistics" and is opposed to "synchronic linguistics" that study languages in a given moment in time without regarding its previous stages. In universities in the United States, the historic perspective is often out of fashion. Historical linguistics was among the first linguistic disciplines to emerge and was the most widely practiced form of linguistics in the late 19th century. The shift in focus to a synchronic perspective started with Saussure and became predominant in western linguistics with Noam Chomsky’s emphasis on the study of the synchronic and universal aspects of language.

Semiotics

Semiotics is the study of sign processes (semiosis), or signification and communication, signs, and symbols, both individually and grouped into sign systems, including the study of how meaning is constructed and understood. Semioticians often do not restrict themselves to linguistic communication when studying the use of signs but extend the meaning of "sign" to cover all kinds of cultural symbols. Nonetheless, semiotic disciplines closely related to linguistics are literary studies, discourse analysis, text linguistics, and philosophy of language.
Descriptive linguistics and language documentation

Since the inception of the discipline of linguistics, linguists have been concerned with describing and documenting languages previously unknown to science. Starting with Franz Boas in the early 1900s, descriptive linguistics became the main strand within American linguistics until the rise of formal structural linguistics in the mid-20th century. The rise of American descriptive linguistics was caused by the concern with describing the languages of indigenous peoples that were (and are) rapidly moving toward extinction. The ethnographic focus of the original Boasian type of descriptive linguistics occasioned the development of disciplines such as Sociolinguistics, anthropological linguistics, and linguistic anthropology, disciplines that investigate the relations between language, culture, and society.

The emphasis on linguistic description and documentation has since become more important outside of North America as well, as the documentation of rapidly dying indigenous languages has become a primary focus in many of the worlds' linguistics programs. Language description is a work intensive endeavour usually requiring years of field work for the linguist to learn a language sufficiently well to write a reference grammar of it. The further task of language documentation requires the linguist to collect a substantial corpus of texts and recordings of sound and video in the language, and to arrange for its storage in accessible formats in open repositories where it may be of the best use for further research by other researchers.

Applied linguistics

Linguists are concerned largely with finding and describing the generalities and varieties both within particular languages and among all languages. Applied linguistics takes the results of those findings and "applies" them to other areas. Linguistic research is commonly applied to areas such as language education, lexicography, and translation. "Applied linguistics" has been argued to be something of a misnomer, since applied linguists focus on making sense of and engineering solutions for real-world linguistic problems, not simply "applying" existing technical knowledge from linguistics; moreover, they commonly apply technical knowledge from multiple sources, such as sociology (e.g., conversation analysis) and anthropology.

Today, computers are widely used in many areas of applied linguistics. Speech synthesis and speech recognition use phonetic and phonemic knowledge to provide voice interfaces to computers. Applications of computational linguistics in machine translation, computer-assisted translation, and natural language processing are areas of applied linguistics that have come to the forefront. Their influence has had an effect on theories of syntax and semantics, as modeling syntactic and semantic theories on computers constraints.

Linguistic analysis is a subdiscipline of applied linguistics used by many governments to verify the claimed nationality of people seeking asylum who do not hold the necessary documentation to prove their claim. This often takes the form of an interview by personnel in an immigration department. Depending on the country, this interview is conducted
either in the asylum seeker’s native language through an interpreter or in an international
lingua franca like English. Australia uses the former method, while Germany employs the
latter; the Netherlands uses either method depending on the languages involved. Tape
recordings of the interview then undergo language analysis, which can be done either by
private contractors or within a department of the government. In this analysis, linguistic
features of the asylum seeker are used by analysts to make a determination about the
speaker’s nationality. The reported findings of the linguistic analysis can play a critical role
in the government’s decision on the refugee status of the asylum seeker.

Description and prescription

Linguistics is descriptive; linguists describe and explain features of language without
making subjective judgments on whether a particular feature is ”right” or ”wrong”. This is
analogous to practice in other sciences: A zoologist studies the animal kingdom without
making subjective judgments on whether a particular animal is better or worse than
another.

Prescription, on the other hand, is an attempt to promote particular linguistic usages over
others, often favouring a particular dialect or ”acrolect”. This may have the aim of
establishing a linguistic standard, which can aid communication over large geographical
areas. It may also, however, be an attempt by speakers of one language or dialect to exert
influence over speakers of other languages or dialects (see Linguistic imperialism). An
extreme version of prescriptivism can be found among censors, who attempt to eradicate
words and structures that they consider to be destructive to society.

Speech and writing

Most contemporary linguists work under the assumption that spoken (or signed) language
is more fundamental than written language. This is because:

Speech appears to be universal to all human beings capable of producing and hearing it,
while there have been many cultures and speech communities that lack written
communication.

Speech evolved before human beings invented writing.

People learn to speak and process spoken languages more easily and much earlier than
writing.

Nonetheless, linguists agree that the study of written language can be worthwhile and
valuable. For research that relies on corpus linguistics and computational linguistics,
written language is often much more convenient for processing large amounts of linguistic
data. Large corpora of spoken language are difficult to create and hard to find, and are
typically transcribed and written. In addition, linguists have turned to text-based discourse
occurring in various formats of computer-mediated communication as a viable site for
linguistic inquiry.
The study of writing systems themselves is, in any case, considered a branch of linguistics.

**History**

The earliest known linguistic activities date to Iron Age India (around the 8th century BC) with the analysis of Sanskrit. The Pratishakhyas were a proto-linguistic ad hoc collection of observations about mutations to a given corpus particular to a given Vedic school. Systematic study of these texts gives rise to the Vedanga discipline of Vyakarana, the earliest surviving account of which is the work of Pāṇini (c. 520 – 460 BC), who looked back on what are, it is presumed, several generations of grammarians, whose opinions he occasionally refers to. Pāṇini formulates close to 4,000 rules that together form a compact generative grammar of Sanskrit. Inherent in his analytic approach are the concepts of the phoneme, the morpheme, and the root. Due to its focus on brevity, his grammar has a highly intuitive structure.

Indian linguistics maintained a high level for several centuries; Patanjali in the 2nd century BC still actively criticizes Pāṇini. In the later centuries BC, Pāṇini’s grammar came to be seen as prescriptive, and commentators came to be fully dependent on it. Bhartṛhari (c. 450 – 510) theorized the act of speech as being made up of four stages: first, conceptualization of an idea, second, its verbalization and sequencing (articulation), and third, delivery of speech into atmospheric air, the interpretation of speech by the listener, the interpreter.

Western linguistics begins in Classical Antiquity with grammatical speculation such as Plato's Cratylus. The first important advancement of the Greeks was the creation of the alphabet. As a result of the introduction of writing, poetry such as the Homeric poems became written and several editions were created and commented, forming the basis of philology and critic. The sophists and Socrates introduced dialectics as a new text genre. Aristotle defined the logic of speech and the argument, and his works on rhetoric and poetics developed the understating of tragedy, poetry, and public discussions as text genres.

One of the greatest of the Greek grammarians was Apollonius Dyscolus. Apollonius wrote more than thirty treatises on questions of syntax, semantics, morphology, prosody, orthography, dialectology, and more. In the 4th c., Aelius Donatus compiled the Latin grammar Ars Grammatica that was to be the defining school text through the Middle Ages. In De vulgari eloquentia ("On the Elocution of Vernacular"), Dante Alighieri expanded the scope of linguistic enquiry from the traditional languages of antiquity to include the language of the day.

In the Middle East, the Persian linguist Sibawayh made a detailed and professional description of Arabic in 760, in his monumental work, Al-kitāb fi al-nahw (The Book on Grammar), bringing many linguistic aspects of language to light. In his book, he distinguished phonetics from phonology.
Sir William Jones noted that Sanskrit shared many common features with classical Latin and Greek, the notable ones being verb roots and grammatical structures, such as the case system. This led to the theory that all languages sprang from a common source and to the discovery of the Indo-European language family. He began the study of comparative linguistics, which would uncover more language families and branches.

In 19th-century Europe, the study of linguistics was largely from the perspective of philology (or historical linguistics). Some early-19th-century linguists were Jakob Grimm, who devised a principle of consonantal shifts in pronunciation – known as Grimm's Law – in 1822; Karl Verner, who formulated Verner's Law; August Schleicher, who created the "Stammbaumtheorie" ("family tree"); and Johannes Schmidt, who developed the "Wellentheorie" ("wave model") in 1872.

Ferdinand de Saussure was the founder of modern structural linguistics, with an emphasis on synchronic (i.e., nonhistorical) explanations for language form.

In North America, the structuralist tradition grew out of a combination of missionary linguistics (whose goal was to translate the Bible) and anthropology. While originally regarded as a sub-field of anthropology in the United States, linguistics is now considered a separate scientific discipline in the US, Australia, and much of Europe.

Edward Sapir, a leader in American structural linguistics, was one of the first who explored the relations between language studies and anthropology. His methodology had strong influence on all his successors. Noam Chomsky's formal model of language, transformational-generative grammar, developed under the influence of his teacher Zellig Harris, who was in turn strongly influenced by Leonard Bloomfield, has been the dominant model since the 1960s.

The structural linguistics period was largely superseded in North America by generative grammar in the 1950s and 1960s. This paradigm views language as a mental object, and emphasizes the role of the formal modeling of universal, and language specific rules. Noam Chomsky remains an important but controversial linguistic figure. Generative grammar gave rise to such frameworks such as Transformational grammar, Generative Semantics, Relational Grammar, Generalized phrase structure grammar, Head-Driven Phrase Structure Grammar (HPSG), and Lexical Functional Grammar (LFG). Other linguists working in Optimality Theory state generalizations in terms of violable constraints that interact with each other, and abandon the traditional rule-based formalism first pioneered by early work in generativist linguistics.

Functionalist linguists working in functional grammar, and Cognitive Linguistics tend to stress the non-autonomy of linguistic knowledge and the non-universality of linguistic structures, thus differing significantly from the formal approaches.

**Schools of study**
There is a wide variety of approaches to linguistic study. These can be loosely divided (although not without controversy) into formalist and functionalist approaches. Formalist approaches stress the importance of linguistic forms, and seek explanations for the structure of language from within the linguistic system itself. For example, the fact that language shows recursion might be attributed to recursive rules. Functionalist linguists, by contrast, view the structure of language as being driven by its function. For example, the fact that languages often put topical information first in the sentence, may be due to a communicative need to pair old information with new information in discourse.

**Generative grammar**

During the last half of the 20th century, following the work of Noam Chomsky, linguistics was dominated by the generativist school. While formulated by Chomsky in part as a way to explain how human beings acquire language and the biological constraints on this acquisition, in practice it has largely been concerned with giving formal accounts of specific phenomena in natural languages. Generative theory is modularist and formalist in character. Formal linguistics remains the dominant paradigm for studying linguistics, though Chomsky's writings have also gathered criticism.

**Cognitive linguistics**

In the 1970s and 1980s, a new school of thought known as cognitive linguistics emerged as a reaction to generativist theory. Led by theorists such as Ronald Langacker and George Lakoff, linguists working within the realm of cognitive linguistics propose that language is an emergent property of basic, general-purpose cognitive processes, though cognitive linguistics has also been the subject of much criticism. In contrast to the generativist school of linguistics, cognitive linguistics is non-modularist and functionalist in character. Important developments in cognitive linguistics include cognitive grammar, frame semantics, and conceptual metaphor, all of which are based on the idea that form-function correspondences based on representations derived from embodied experience constitute the basic units of language.

**Language acquisition**

Language acquisition is the process by which humans acquire the capacity to perceive, produce and use words to understand and communicate. This capacity involves the picking up of diverse capacities including syntax, phonetics, and an extensive vocabulary. This language might be vocal as with speech or manual as in sign. Language acquisition usually refers to first language acquisition, which studies infants' acquisition of their native language, rather than second language acquisition, which deals with acquisition (in both children and adults) of additional languages.

The capacity to acquire and use language is a key aspect that distinguishes humans from other organisms. While many forms of animal communication exist, they have a limited
range of nonsyntactically structured vocabulary tokens that lack cross cultural variation between groups.

A major concern in understanding language acquisition is how these capacities are picked up by infants from what appears to be very little input. A range of theories of language acquisition has been created in order to explain this apparent problem including innatism in which a child is born prepared in some manner with these capacities, as opposed to the other theories in which language is simply learned.

**History**

Plato felt that the word-meaning mapping in some form was innate. Sanskrit grammarians debated over twelve centuries whether meaning was god-given (possibly innate) or was learned from older convention—e.g. a child learning the word for cow by listening to trusted speakers talking about cows.

In modern times, empiricists like Hobbes and Locke argued that knowledge (and for Locke, language) emerge ultimately from abstracted sense impressions. This led to Carnap's Aufbau, an attempt to learn all knowledge from sense datum, using the notion of "remembered as similar" to bind these into clusters, which would eventually map to language.

Under Behaviorism, it was argued that language may be learned through a form of operant conditioning. In B.F. Skinner's *Verbal Behaviour* (1957), he suggested that the successful use of a sign such as a word or lexical unit, given a certain stimulus, reinforces its "momentary" or contextual probability. Empiricist theories of language acquisition include statistical learning theories of language acquisition, Relational Frame Theory, functionalist linguistics, social interactionist theory, and usage-based language acquisition.

This behaviourist idea was strongly attacked by Noam Chomsky in a review article in 1959, calling it "largely mythology" and a "serious delusion". Instead, Chomsky argued for a more theoretical approach, based on a study of syntax.

**General approaches**

**Social interactionism**

Social interactionist theory consists of a number of hypotheses on language acquisition. These hypotheses deal with written, spoken, or visual social tools which consist of complex systems of symbols and rules on language acquisition and development. The compromise between “nature” and “nurture” is the "interactionist" approach. In addition, for years, psychologists and researchers have been asking the same question. What are the language behaviors that nature provides innately and what are those behaviors that are realized by environmental exposure, which is nurture.
Social interactionist theory

Social Interactionist Theory is number of proven hypotheses of language acquisition methods in which a variety of its forms including written, spoken, or visual as a social tool consisting of a complex system of symbols and rules on the question of language acquisition and development—the compromise between “nature” and “nurture” is the “Interactionist” approach which demands a particular type of syntagma in recognizing that many factors influence language development.

Initial stages

The Social Interactionist approach to language acquisition research has focused on three areas, namely the cognitive approach to language acquisition or the developmental cognitive theory of Jean Piaget, the information processing approach or the information processing model of Brian MacWhinney and Elizabeth Bates (the competition model), and the social interactionist approach or social interaction model of Lev Vygotsky (socio-cultural theory). Although the initial research was essentially descriptive in an attempt to describe language development from the stand point of social development, more recently, researchers have been attempting to explain a few varieties of acquisition in which learner factors lead to differential acquisition by the process of socialization; called the theory of “social interactionist approach”.

Socio-cultural theory

Vygotsky, a psychologist and social constructivist, laid the foundation for the interactionists view of language acquisition. According to Vygotsky, social interaction plays an important role in the learning process and proposed the zone of proximal development (ZPD) where learners construct the new language through socially mediated interaction. Although Vygotsky’s social-development theory was proposed many years ago, it has then begun to serve as a foundation for the interactionists approaches to language acquisition recently and as the social interactionists model in recent years.

In contrast to the theoretical modalities in behaviourism, the approach to language acquisition emphasizing that children are conditioned to learn language by a stimulus-response pattern, the social interactionist approaches rest on the premises of both the Nativist and the Empiricist approaches.

It levels an outline of a language acquisition theory in combining of both the traditional behavioral and linguistic position in language production; the essentials of this theory, which differentiate it from a semantically based theory, are that the deepest level of representation specifies the communicative intent primarily and semantic content secondarily. Thus, within this theory the language acquisition can easily be realized differently in emphasizing the role of the environment in producing such differences, as is most often the case in child language and not infrequently the case in adult language. It is incumbent on this model as on any serious attempt to provide a theory of language
acquisition, to answer questions about how the model accounts for changes in the child's knowledge with development, and how the model can be different to account for the adult's language system.

And as the behavioral approaches view that children as passive beneficiaries of the language training techniques employed by their parents and the linguistic approaches view that children as active language processors of whose maturing neural systems guide development; conversely, social integrationists communication enjoys a rather curious position in contemporary theories of language acquisition as a dynamic system where typically children cue their parents in to supplying the appropriate language experience that children require for language advancement. In essence, it turns in supplying of supportive communicative structure that allows efficient communication despite its primitives.

This field of language acquisition has been studied from many angles as such and primarily concerned with the environment in which language learning takes place. From the subset of the perspective by and large neutral as to the role of innateness, it is also compatible with a model of learning that posits as such mechanism must interact with the environment in order to mature. It suggests, for example, that innate linguistic mechanism alone cannot explain children’s mastery of language, and that what is intended is that the relationship of interaction to acquisition per se does not entirely depend on whether there is or is not an innate mechanism that guides the learning task; also suggesting that the linguistic competence goes beyond conditioning and imitation to include also nonlinguistic aspect of interactions.

**Current strand**

Social-interactionists, such as Catherine Snow, theorize that adults play an important part in children's language acquisition (see Moerk, E. L., 1992; also: http://www.jstor.org/pss/11284444). However, some researchers claim that the empirical data on which theories of social interactionism are based have often been over-representative of middle class American and European parent-child interactions. Various anthropological studies of other human cultures, as well as anecdotal evidence from western families, suggests rather that many, if not the majority, of the world's children are not spoken to in a manner akin to traditional language lessons, but nevertheless grow up to be fully fluent language users. Many researchers now take this into account in their analyses.

Nevertheless, Snow's criticisms might be powerful against Chomsky's argument, if the argument from the poverty of stimulus were indeed an argument about degenerate stimulus, but it is not. The argument from the poverty of stimulus is that there are principles of grammar that cannot be learned on the basis of positive input alone, however complete and grammatical that evidence is. This argument is not vulnerable to objection based on evidence from interaction studies such as Snow's, but it is vulnerable to the clear evidence of the availability of negative input given by conversation analysis. In addition, meta-analysis has shown that there is a large amount of corrections made to language
produced by children. Moerk (1994) conducted a meta-analysis of 40 studies and found substantial evidence that corrections do indeed play a role. From this work, corrections are not only abundant but contingent on the mistakes of the child. (see behavior analysis of child development).

Relational frame theory

The relational frame theory (Hayes, Barnes-Holmes, Roche, 2001), provides a wholly selectionist/learning account of the origin and development of language competence and complexity. Based upon the principles of Skinnerian behaviorism, RFT posits that children acquire language purely through interacting with the environment. RFT theorists introduced the concept of functional contextualism in language learning, which emphasizes the importance of predicting and influencing psychological events, such as thoughts, feelings, and behaviors, by focusing on manipulable variables in their context. RFT distinguishes itself from Skinner’s work by identifying and defining a particular type of operant conditioning known as derived relational responding, a learning process that to date appears to occur only in humans possessing a capacity for language. Empirical studies supporting the predictions of RFT suggest that children learn language via a system of inherent reinforcements, challenging the view that language acquisition is based upon innate, language-specific cognitive capacities.

Relational frame theory

Relational frame theory, or RFT, is a psychological theory of human language and cognition. It was developed largely through the efforts of Steven C. Hayes of University of Nevada, Reno and Dermot Barnes-Holmes of National University of Ireland, Maynooth and is currently being tested in about three dozen laboratories around the world.

Relational frame theory is based on the philosophical roots of functional contextualism, it focuses on how humans learn language through interactions with the environment. Functional contextualism is an extension and contextualistic interpretation of B.F. Skinner’s radical behaviorism, and emphasizes the importance of predicting and influencing psychological events, such as thoughts, feelings, and behaviors, by focusing on manipulable variables in their context.

Development

RFT is a behavioral approach to language. B.F. Skinner proposed one such approach in 1957 in his book Verbal Behavior. Skinner presented his approach as an interpretation, not an experimental research program, and researchers commonly acknowledge that the research products are somewhat limited in scope. For example, it has been useful in some aspects of language training in developmentally disabled children, but it has not led to a robust research program in the range of areas relevant to language and cognition, such as problem-solving, reasoning, metaphor, logic, and so on. RFT advocates are fairly bold in
stating that their goal is an experimental behavioral research program in all such areas, and RFT research has indeed emerged in a number of these areas including grammar.

In a review of Skinner’s book, linguist Noam Chomsky argued that the generativity of language shows that it cannot simply be learned, that there must be some innate "language acquisition device". Many have seen this review as a turning point, when cognitivism took the place of behaviorism as the mainstream in psychology. Behavior analysts generally viewed the criticism as unfair and largely off point (for a behavior analytic response to Chomsky, see MacCorquodale (1970), On Chomsky’s Review Of Skinner’s Verbal Behavior), but it is undeniable that psychology turned its attention elsewhere and the review was very influential in helping to produce the rise of cognitive psychology.

Despite the lack of attention from the mainstream, behavior analysis is alive and growing. Its application has been extended to areas such as language and cognitive training, animal training, business and school settings, as well as hospitals and areas or research.

RFT distinguishes itself from Skinner's work by identifying and defining a particular type of operant conditioning known as derived relational responding. This is a learning process that to date appears to occur only in humans possessing a capacity for language. Derived relational responding is theorized to be a pervasive influence on almost all aspects of human behavior. The theory represents an attempt to provide a more empirically progressive account of complex human behavior while preserving the naturalistic approach of behavior analysis.

Evidence

Several dozen studies have tested RFT ideas. Supportive data exists in the areas needed to show that an action is "operant" such as the importance of multiple examples in training derived relational responding, the role of context, and the importance of consequences. Derived relational responding has also been shown to alter other behavioral processes such as classical conditioning, an empirical result that RFT theorists point to in explaining why relational operands modify existing behavioristic interpretations of complex human behavior. Empirical advances have also been made by RFT researchers in the analysis and understanding of such topics as metaphor, perspective taking, and reasoning.

Proponents of RFT often indicate the failure to establish a vigorous experimental program in language and cognition as the key reason why behavior analysis fell out of the mainstream of psychology despite its many contributions, and argue that RFT might provide a way forward. The theory is still somewhat controversial within behavioral psychology, however. At the current time the controversy is not primarily empirical since RFT studies publish regularly in mainstream behavioral journals and few empirical studies have yet claimed to contradict RFT findings. Rather the controversy seems to revolve around whether RFT is a positive step forward, especially given that its implications seem to go beyond many existing interpretations and extensions from within this intellectual tradition.
Applications

Acceptance and commitment therapy

RFT underlies the therapeutic practice known as acceptance and commitment therapy. RFT provides conceptual and procedural guidance for enhancing the cognitive and language development capability (through its detailed treatment and analysis of derived relational responding and the transformation of function) of early intensive behavior intervention (EIBI) programs for young children with autism and related disorders. Relational frame theory has become important in predicting the differences between standard cognitive therapy changes through thought change versus acceptance-based interventions like acceptance and commitment therapy.

The IRAP

The Implicit Relational Assessment Procedure (IRAP), an implicit measure similar to the Implicit Association Test (IAT), with the key difference being that it measures specific relations between stimuli rather than general associations, has its theoretical basis in RFT. The IRAP was developed by Dermot Barnes-Holmes.

Emergentism

Emergentist theories, such as MacWhinney's competition model, posit that language acquisition is a cognitive process that emerges from the interaction of biological pressures and the environment. According to these theories, neither nature nor nurture alone is sufficient to trigger language learning; both of these influences must work together in order to allow children to acquire a language. The proponents of these theories argue that general cognitive processes subserve language acquisition and that the end result of these processes is language-specific phenomena, such as word learning and grammar acquisition. The findings of many empirical studies support the predictions of these theories, suggesting that language acquisition is a more complex process than many believe.

Syntax

Generativism

Generative grammar, associated especially with the work of Noam Chomsky, is currently one of the principal approaches to children's acquisition of syntax. The leading idea is that human biology imposes narrow constraints on the child's "hypothesis space" during language acquisition. In the Principles and Parameters Framework, which has dominated generative syntax since Chomsky's (1980) Lectures on Government and Binding, the acquisition of syntax resembles ordering from a menu: The human brain comes equipped with a limited set of choices, and the child selects the correct options using her parents' speech, in combination with the context.
An important argument in favor of the generative approach is the Poverty of the stimulus argument. The child's input (a finite number of sentences encountered by the child, together with information about the context in which they were uttered) is in principle compatible with an infinite number of conceivable grammars. Moreover, few if any children can rely on corrective feedback from adults when they make a grammatical error. Yet, barring situations of medical abnormality or extreme privation, all the children in a given speech-community converge on very much the same grammar by the age of about five years. An especially dramatic example is provided by children who for medical reasons are unable to produce speech, and therefore can literally never be corrected for a grammatical error, yet nonetheless converge on the same grammar as their typically developing peers, according to comprehension-based tests of grammar.

Considerations such as these have led Chomsky, Jerry Fodor, Eric Lenneberg and others to argue that the types of grammar that the child needs to consider must be narrowly constrained by human biology (the nativist position). These innate constraints are sometimes referred to as universal grammar, the human "language faculty," or the "language instinct."

Empiricism

Since Chomsky in the 1950s, many criticisms of the basic assumptions of generative theory have been put forth. Critics argue that the concept of a Language Acquisition Device (LAD) is unsupported by evolutionary anthropology, which tends to show a gradual adaptation of the human brain and vocal chords to the use of language, rather than a sudden appearance of a complete set of binary parameters delineating the whole spectrum of possible grammars ever to have existed and ever to exist. (Binary parameters are common to digital computers but not, as it turns out, to neurological systems such as the human brain.)

Further, while generative theory has several hypothetical constructs (such as movement, empty categories, complex underlying structures, and strict binary branching) that cannot possibly be acquired from any amount of linguistic input, it is unclear that human language is actually anything like the generative conception of it. Since language, as imagined by nativists, is unlearnably complex, subscribers to this theory argue that it must therefore be innate. A different theory of language, however, may yield different conclusions. While all theories of language acquisition posit some degree of innateness, a less convoluted theory might involve less innate structure and more learning. Under such a theory of grammar, the input, combined with both general and language-specific learning capacities, might be sufficient for acquisition.

Since 1980, linguists studying children, such as Melissa Bowerman, and psychologists following Jean Piaget, like Elizabeth Bates and Jean Mandler, came to suspect that there may indeed be many learning processes involved in the acquisition process, and that ignoring the role of learning may have been a mistake.

In recent years, opposition to the nativist position has multiplied. The debate has centered on whether the inborn capabilities are language-specific or domain-general, such as those
that enable the infant to visually make sense of the world in terms of objects and actions. The anti-nativist view has many strands, but a frequent theme is that language emerges from usage in social contexts, using learning mechanisms that are a part of a general cognitive learning apparatus (which is what is innate). This position has been championed by Elizabeth Bates, Catherine Snow, Brian MacWhinney, Michael Tomasello, Michael Ramscar, William O’Grady, and others. Philosophers, such as Fiona Cowie and Barbara Scholz with Geoffrey Pullum have also argued against certain nativist claims in support of empiricism.

**Statistical learning**

Some language acquisition researchers, such as Elissa Newport, Richard Aslin, and Jenny Saffran, believe that language acquisition is based primarily on general learning mechanisms, namely statistical learning. The development of connectionist models that are able to successfully learn words and syntactical conventions supports the predictions of statistical learning theories of language acquisition, as do empirical studies of children’s learning of words and syntax.

**Chunking**

Chunking theories of language acquisition constitute a group of theories related to statistical learning theories in that they assume that the input from the environment plays an essential role; however, they postulate different learning mechanisms. The central idea of these theories is that language development occurs through the incremental acquisition of meaningful chunks of elementary constituents, which can be words, phonemes, or syllables. Recently, this approach has been highly successful in simulating several phenomena in the acquisition of syntactic categories and the acquisition of phonological knowledge. The approach has several features that make it unique: the models are implemented as computer programs, which enables clear-cut and quantitative predictions to be made; they learn from naturalistic input, made of actual child-directed utterances; they produce actual utterances, which can be compared with children’s utterances; and they have simulated phenomena in several languages, including English, Spanish, and German.

Researchers at the Max Planck Institute for Evolutionary Anthropology have developed a computer model analyzing early toddler conversations to predict the structure of later conversations. They showed that toddlers develop their own individual rules for speaking with slots into which they could put certain kinds of words. A significant outcome of the research was that rules inferred from toddler speech were better predictors of subsequent speech than traditional grammars.

**Vocabulary acquisition**

The capacity to acquire the ability to incorporate the pronunciation of new words depends upon the capacity to engage in speech repetition. Children with reduced abilities to repeat nonwords (a marker of speech repetition abilities) show a slower rate of vocabulary
expansion than children for whom this is easy. It has been proposed that the elementary units of speech has been selected to enhance the ease with which sound and visual input can be mapped into motor vocalization. Several computational models of vocabulary acquisition have been proposed so far.

**Meaning**

Children learn on average 10 to 15 new word meanings each day, but only one of these words can be accounted for by direct instruction. The other nine to 14 word meanings need to be picked up in some other way. It has been proposed that children acquire these meanings with the use of processes modeled by latent semantic analysis; that is, when they meet an unfamiliar word, children can use information in its context to correctly guess its rough area of meaning.

**Neurocognitive research**

According to several linguists, neurocognitive research has confirmed many standards of language learning, such as: "learning engages the entire person (cognitive, affective, and psychomotor dominas), the human brain seeks patterns in its searching for meaning, emotions affect all aspects of learning, retention and recall, past experience always affects new learning, the brain's working memory has a limited capacity, lecture usually results in the lowest degree of retention, rehearsal is essential for retention, practice [alone] does not make perfect, and each brain is unique" (Sousa, 2006, p. 274). In terms of genetics, the gene ROBO1 has been associated with phonological buffer integrity or length.

**Skinner's Theory of Language Development**

**Verbal Behavior**

Verbal Behavior is a 1957 book by psychologist B. F. Skinner, in which he analyzes human behavior, encompassing what is traditionally called language, linguistics, or speech. For Skinner, verbal behavior is simply behavior subject to the same controlling variables as any other operant behavior, although Skinner differentiates between verbal behavior which is mediated by other people, and that which is mediated by the natural world. The book Verbal Behavior is almost entirely theoretical, involving little experimental research in the work itself. The book Verbal Behavior was an outgrowth of a series of lectures first presented at the University of Minnesota in the early 1940s and developed further in his summer lectures at Columbia and William James lectures at Harvard in the decade before the book's publication. A growing body of research and applications based on Verbal Behavior have occurred since its original publication, particularly in the past decade.

In addition a growing body of research has developed on structural topics in verbal behavior such as grammar.
Functional analysis

The context of speaker utterances is central to Skinner's perspective on language. With this as a background, Skinner developed the premise that Verbal Behavior - behavior under the control of consequences mediated by other people (who can interchangeably function as speaker and listener) - was best understood in a functional analysis. This theoretical extension was a direct product of his basic research using what he referred to as the "three term contingency model", with the basic behavioral unit being the response and its consequence in a specified situation (antecedent-behavior-consequence). This is now sometimes called the four-term contingency model with setting conditions added as a fourth term. This consists of a motivating operation (MO), discriminative stimulus (SD), response (R), and reinforcement (Srein). Skinner's Verbal Behavior also introduced the autotelic and six elementary operants: mand, tact, audience relation, echoic, textual, and intraverbal. Skinner argued that verbal behavior is a function of the speaker's current environment and his past behavioral and genetic history. For Skinner, the proper object of study is behavior itself, analyzed without reference to hypothetical (mental) structures, but rather with reference to the functional relationships of the behavior in the environment in which it occurs. This analysis extends Ernst Mach's pragmatic inductive position in physics, and extends even further a disinclination towards hypothesis making and testing. Verbal Behavior is divided into 5 parts with 19 chapters. The first chapter sets the stage for this work, a functional analysis of verbal behavior. Skinner presents verbal behavior as a function of controlling consequences and stimuli, not as the product of a special inherent capacity. Neither does he ask us to be satisfied with simply describing the structure, or patterns, of behavior. Skinner deals with some alternative, traditional formulations, and moves on to his own functional position.

General problems

Skinner notes the problems of verbal behavior as a dependent variable. Skinner’s general position favors rate of response as a dependent measure which, in Verbal Behavior is problematic since all verbal behavior does not have the same unitary quality as a lever press. In the ascertaining of the strength of a response Skinner suggests some criteria for strength(probability):emission, energy-level, speed, repetition, but notes that these are all very limited means for inferring the strength of a response as they do not always vary together as they may come under the control of other factors. Emission is a yes/no measure, however the other three -energy-level, speed, repetition - comprise possible indications of relative strength.

Emission - If a response is emitted it may tend to be interpreted as having some strength. Unusual or difficult conditions would tend to lend evidence to the inference of strength. Under typical conditions it becomes a less compelling basis for inferring strength. This is an inference that is either there or not, and has no gradation of value.

Energy-level - Unlike emission as a basis for inference, energy-level (response magnitude) provides a basis for inferring the response has a strength with a high range of varying strength. Energy level is a basis from which we can infer a high tendency to
respond. An energetic and strong "Chomsky!" forms the basis for inferring the strength of the response as opposed to a weak, brief "Chomsky".

**Speed** - Speed is the speed of the response itself, or the latency from the time in which it could have occurred to the time in which it occurs. A response given quickly when prompted forms the basis for inferring a high strength.

**Repetition** - "Chomsky! Chomsky! Chomsky!" may be emitted and used as an indication of relative strength compared to the speedy and/or energetic emission of "Chomsky!". In this way repetition can be used as a way to infer strength.

**Limitations** - Skinner notes that these are "easy to overestimate" especially in single instances. Other, extraneous variables, such as noise, special listeners, or those at a distance may induce variation in these relative indicators unrelated to their proper strength.

**Overall frequency** - The overall frequency of a response in a large body of responses may be used as another indicator of strength. Skinner's analysis of alliteration might be seen as one form of this analysis (Skinner, 1939).

**Mands**

Chapter Three of Skinner's work Verbal Behavior discusses a functional relationship called the "mand". A mand is a form of verbal behavior that is controlled by deprivation, satiation, or what is now called motivating operations (MO) as well as a controlling history. An example of this would be asking for water when one is water deprived ("thirsty"). It is tempting to say that a mand 'describes its reinforcer' which it sometimes does, but mands may have no correspondence to the reinforcer, for example a loud knock may be a mand "open the door" and a servant may be called by a hand clap as much as a child might "ask for milk".

The Lamarre & Holland (1985) study on mands would be one example of a research study in this area.

**Mand**

Mand is a term that B.F. Skinner used to describe a verbal operant in which the response is reinforced by a characteristic consequence and is therefore under the functional control of relevant conditions of deprivation or aversive stimulation. One cannot determine, based on form alone, whether a response is a mand; it is necessary to know the kinds of variables controlling a response in order to identify a verbal operant. A mand is sometimes said to 'specify its reinforcement" although this is not always the case. Skinner introduced the mand as one of six primary verbal operants in his 1957 work, Verbal Behavior.
Chapter three of Skinner’s work, Verbal Behavior, discusses a functional relationship called the mand. A mand is a form of verbal behavior that is controlled by deprivation, satiation, or what is now called motivating operations (MO), as well as a controlling history. An example of this would be asking for water when one is water deprived ("thirsty"). It is tempting to say that a mand describes its reinforcer, which it sometimes does. But many mands have no correspondence to the reinforcer. For example, a loud knock may be a mand "open the door" and a servant may be called by a hand clap as much as a child might "ask for milk".

Mands differ from other verbal operants in that they primarily benefit the speaker, whereas other verbal operants function primarily for the benefit of the listener. This is not to say that mands function exclusively in favor of the speaker, however; Skinner gives the example of the advice, "Go west!" as having the potential to yield consequences which will be reinforcing to both speaker and listener. When warnings such as "Look out!" are heeded, the listener may avoid aversive stimulation.

The Lamarre & Holland (1985) study on mands would be one example of a research study in this area.

**Dynamic properties**

The mand form, being under the control of deprivation and stimulation, will vary in energy level. Dynamic qualities are to be understood as variations that arise as a function of multiple causes. Dynamic in this case is opposed how someone reading from a text might sound if they do not simulate the normal dynamic qualities of verbal behavior. Mands tend to be permanent when they are acquired.

**Extended mands**

Emitting mands to objects or animals that cannot possibly supply an appropriate response would be an example of the extended mand. Telling "stop!" to someone out of earshot, perhaps in a film, who is about to hurt themselves is an example of the extended mand. Extended mands occur due to extended stimulus control. In the case of an extended mand, the listener is unable to deliver consequences that would reinforce the mand, but they have enough in common with listeners that have previously reinforced the mand that stimulus control can be inferred.

**Superstitious mands**

Mands directed to inanimate objects may be said to be superstitious mands. Mands to an unreliable car to "come on and start" for example may be due to a history of intermittent reinforcement.

**Magical mands**
A magical mand is a mand form where the consequences have never occurred that are specified in the mand. The form "I wish I had a million dollars" has never before produced a million dollars might be said to be magical. Skinner posits that many literary mands are of the magical form. Prayer might also be analyzed as belonging in one of the above three categories, depending upon one's opinion of the likelihood and mechanism of its answer.

**Clinical application**

Failure to adequately mand appears to be correlated with destructive behavior. This seems to be especially true for those suffering from developmental disabilities.

**Behavior under the control of verbal stimuli**

**Textual**

In Chapter 4 Skinner notes forms of control by verbal stimuli. One form is textual behavior which refers to the type of behavior we might typically call reading or writing. A vocal response is controlled by a verbal stimulus that is not heard. There are two different modalities involved ("reading"). If they are the same they become "copying text" (see Jack Michael on copying text), if they are heard, then written, it becomes "taking dictation", and so on.

**Echoic**

Skinner was one of the first to seriously consider the role of imitation in language learning. He introduced this concept into his book Verbal Behavior with the concept of the echoic. A behavior under the functional control of a verbal stimulus. The verbal response and the verbal stimulus share what is called point to point correspondence (a formal similarity.) The speaker repeats what is said. In echoic behavior, the stimulus is auditory and response is vocal. Often seen in early shaping behavior. For example, in learning a new language, a teacher might say "parsimonious" and then say "can you say it?" to induce an echoic response.

Winokur (1978) is one example of research about echoic relations.

**Tacts**

Chapter Five of Verbal Behavior discusses the tact in depth. A tact is said to "make contact with" the world, and refers to behavior that is under the control of generalized reinforcement. The controlling stimuli is nonverbal, "the whole of the physical environment". It can undergo many extensions: generic, metaphoric, metonymical, solectic, nomination, and 'guessing'. It can also be involved in abstraction. Lowe, Horne, Harris & Randle (2002) would be one example of recent work in tacts.
Tact

Tact is a term that B.F. Skinner used to describe a verbal operant in which a certain response is evoked (or at least strengthened) by a particular object or event, or property of an object or event. More generally, the tact is verbal contact with the physical world.

Chapter Five of Skinner's Verbal Behavior discusses the tact in depth. A tact is said to "make contact with" the world, and refers to behavior that is under the control of generalized reinforcement. The controlling antecedent stimulus is nonverbal, and constitutes some portion of "the whole of the physical environment".

Less technically, a tact is like a label for something, though the concept of a tact is far more complicated. Some portion of the environment is present, for example a tree, a person makes a particular response pattern (in this case he or she will say "Tree") and a listener will provide some non-specific reinforcer (the listener might say "Correct!").

The tact can be extended, as in generic, metaphorical, metonymical, solecistic, nomination, and "guessing" tact. It can also be involved in abstraction. Lowe, Horne, Harris & Randle (2002) would be one example of recent work in tacts.

Extensions

The tact is said to be capable of generic extension. For example, something might be called a car; then something like the old object called a car is also called a car.

Tacts can be extended metaphorically, as when we describe something as "exploding with taste" by drawing the common property of an explosion with the response to our having eaten something (perhaps a strong response, or a sudden one).

Tacts can undergo metonymical extension when things that are paired together frequently are then used to stand for each other; as "The White House released a statement" when the President and The White House are paired together frequently so as to be "interchangeable".

When controlling variables unrelated to standard or immediate reinforcement take over control of the tact, it is said to be solecistically extended. Malapropisms, solecism and catachresis are examples of this.

Skinner notes things like serial order, or conspicuous features of an object, may come to play as nominative tacts. A proper name may arise as a result of the tact. For example, a house that is haunted becomes "The Haunted House" as a nominative extension to the tact of its being haunted.

A guess may seemingly be the emission of a response in the absence of controlling stimuli. Skinner notes that this may simply be a tact under more subtle or hidden controlling
variables, although this is not always the case in something like guessing the landing side of a coin toss where the possible alternatives are fixed and there is no subtle or hidden stimuli to control responding.

The tact described by Skinner in chapter 5 of his book Verbal Behavior includes three important and related events, known as the 3-term-contingency: a stimulus, a response, and a consequence, in this case reinforcement. A verbal response is occasioned by the presence of a stimulus, such as when you say “ball” in the presence of a ball. In this scenario, “ball” is more likely to be reinforced by the listener than saying “cat,” showing the importance of the third even, reinforcement, in relation to the stimulus (ball) and response (“ball”). Although the stimulus controls the response, it is the verbal community which establishes the stimulus’ control over the verbal response of the speaker. For example, a child may say “ball” in the presence of a ball (stimulus), the child’s parent may respond “yes, that is a ball,” (reinforcement) thereby increasing the probability that the child will say ball in the presence of a ball in the future. But if the parent never responds to the child saying “ball” in the presence of a ball then that response will cease to be emitted. It is important to note, though, that tact can only occur in the presence of, or immediately after the stimulus; so talking about a ball you saw yesterday would be tacting. While naming is also a form of a tact, saying “the red book” in the presence of a red book, a tact involves more than what is described above. For example, saying “Good Morning” to a person for the first time in the morning is also a tact, the presence of that person is the stimulus for the response.

**Special conditions affecting stimulus control**

Skinner deals with factors that interfere with, or change, generalized reinforcement. It is these conditions which, in turn, affect verbal behavior which may depend largely or entirely on generalized reinforcement. In children with developmental disabilities, tacts may need intensive training procedures to develop. Factors such as deprivation, emotional conditions and personal history may interfere with or change verbal behavior. Skinner mentions alertness, irrelevant emotional variables, "special circumstances" surrounding particular listeners or speakers, etc. (He refers to the conditions which are said to produce objective and subjective responses for example). We would now look at these as motivating operations/establishing conditions.

Under emersion conditions tacts will frequently emerge. However, in children with disabilities, more intensive training procedures are often needed.

**Distortion**

Distorted stimulus control may be minor as when a description (tact) is a slight exaggeration. Under stronger conditions of distortion it may appear when the original stimulus is absent, as in the case of the response called a lie. Skinner notes that troubadours and fiction writers are perhaps both motivated by similar forms of tact distortion. Initially they may recount real events but as differential reinforcement affects the account we may see distortion and then total fabrication.
Intraverbal

Intraverbals are verbal behavior under the control of other verbal behavior. Intraverbals are often studied by the use of classic association techniques.

Audiences

In Skinner’s account of verbal behavior, the audience (or, the listener) is a discriminative stimulus that signals that verbal behavior may be rewarded. This means that when an audience is present (this can also include oneself, as we can act as listener to our own verbal behavior), verbal behavior will occur; when the audience disappears, it is likely that verbal behavior will stop (because reinforcement is no longer available). This is the first function of the audience: to control whether behavior does or does not occur.

The second function (p. 173) is to determine which of two or more comparable responses will be emitted; for example, when manding for silence, you might say “shh” to a toddler, while to a coworker you might say “please be quiet.” Also determined is the language in which you will speak: in Paris you would greet someone with “Bonjour, monsieur!” while in the U.S. you would be far more likely to greet someone by saying “Good morning, sir!” The third function (p. 175) of the audience involves the selection of the subject matter: while a 5-year-old may respond well to verbal behavior regarding Teletubbies, your 50-year-old boss is not likely to.

Audience control is developed through long histories of reinforcement and punishment. Skinner’s three-term contingency can be used to analyze how this works: the first term, the antecedent, refers to the audience, in whose presence the verbal response (the second term) occurs. The consequences of the response are the third term, and whether or not those consequences strengthen or weaken the response will affect whether that response will occur again in the presence of that audience. Through this process, audience control, or the probability that certain responses will occur in the presence of certain audiences, develops. Skinner notes that while audience control is developed due to histories with certain audiences, we do not have to have a long history with every listener in order to effectively engage in verbal behavior in their presence (p. 176). We can respond to new audiences (new stimuli) as we would to similar audiences with whom we have a history.

Negative audiences

An audience that has punished certain kinds of verbal behavior is called a negative audience (p. 178): in the presence of this audience, the punished verbal behavior is less likely to occur. Skinner gives the examples of adults punishing certain verbal behavior of children, and a king punishing the verbal behavior of his subjects.

Summary of Verbal Operants

The following table summarizes the new verbal operants in the analysis of Verbal Behavior.
<table>
<thead>
<tr>
<th>Precondition</th>
<th>Verbal Operant</th>
<th>Consequence</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivating Operation</td>
<td>Mand</td>
<td>Directly effective</td>
<td>A child comes into the kitchen where a mother is, and says: &quot;I want milk&quot;. The mother opens the refrigerator and gives the child milk.</td>
</tr>
<tr>
<td>Feature of the physical environment</td>
<td>Tact</td>
<td>Social</td>
<td>A student looks out of the window, turns to his teacher and says: &quot;It is hot today.&quot; The teacher says, &quot;Right!&quot;</td>
</tr>
<tr>
<td>Verbal behavior of another person</td>
<td>Intraverbal</td>
<td>Social</td>
<td>A mother asks her daughter: &quot;What grade did you get in math?&quot; The daughter replies, &quot;An A.&quot; The mother says: &quot;Very good!&quot;</td>
</tr>
<tr>
<td>Verbal behavior of another person</td>
<td>Echoic</td>
<td>Social</td>
<td>A teacher says to a student: &quot;Behavior in German is Verhalten.&quot; The student repeats &quot;Behavior is Verhalten.&quot; The teacher says &quot;Correct.&quot;</td>
</tr>
<tr>
<td>A person's own verbal behavior</td>
<td>Autoclitic</td>
<td>Directly effective</td>
<td>A child comes into his parents' bedroom at night and says &quot;I think I am sick.&quot; The mother takes the child and brings him to a hospital.</td>
</tr>
</tbody>
</table>

One must keep in mind, however, that almost all verbal behavior does not consist of these 'pure' operants, but of a mixture of them.

**Use in Literary Analysis**

Skinner's analysis of verbal behavior drew heavily on methods of literary analysis. This tradition has continued.

**Verbal operators as a unit of analysis**

Skinner notes his categories of verbal behavior: mand, echoic, textual, intraverbal, tact, audience relations, and notes how behavior might be classified. He notes that form alone is not sufficient (he uses the example of "fire!" having multiple possible relationships depending on the circumstances). Classification depends on knowing the circumstances under which the behavior is emitted. Skinner then notes that the "same response" may be emitted under different operant conditions. Skinner states:
"Classification is not an end in itself. Even though any instance of verbal behavior can be shown to be a function of variables in one of more of these classes, there are other aspects to be treated. Such a formulation permits us to apply to verbal behavior concepts and laws which emerge from a more general analysis (p. 187)."

That is, classification alone does little to further the analysis - the functional relations controlling the operants outlined must be analyzed consistent with the general approach of a scientific analysis of behavior.

Several behavior analysts since Skinner have suggested that the elementary verbal relations be re-categorized to deal with difficulty in incorporating many responses into the classification system of the original analysis. Michael, for example, has proposed replacing textual and echoic categories with the more general codic and duplic relations, respectively. Ernest Vargas has suggested categorizing sources of control as intraverbal, autoverbal, and extraveral, while replacing Skinner's intraverbal with sequelic, and adding the mimetic relation to refer to imitation of sign language.

**Multiple causation**

Skinner notes in this chapter how any given response is likely to be the result of multiple variables. Secondly, that any given variable usually affects multiple responses. The issue of multiple audiences is also addressed, as each audience is, as already noted, an occasion for strong and successful responding. Combing audiences produces differing tendencies to respond.

**Supplementary stimulation**

Supplementary stimulation is a discussion to practical matters of controlling verbal behavior given the context of material which has been presented thus far. Issues of multiple control, and involving many of the elementary operants stated in previous chapters are discussed.

**New combinations of fragmentary responses**

A special case of where multiple causation comes into play creating new verbal forms is in what Skinner describes as fragmentary responses. Such combinations are typically vocal, although this may be due to different conditions of self-editing rather than any special property. Such mutations may be 'nonsense' and may not further the verbal interchange in which it occurs. Freudian slips may be one special case of fragmentary responses which tend to be given reinforcement and may discourage self-editing. This phenomena appears to be more common in children, and in adults learning a second language. Fatigue, illness and insobriety may tend to produce fragmentary responding.

**Autoclitics**
An autoclitic is a form of verbal behavior which modifies the functions of other forms of verbal behavior. For example, "I think it is raining" possesses the autoclitic "I think" which moderates the strength of the statement "it is raining". An example of research that involved autoclitics would be Lodhi & Greer (1989).

One form of autoclitic of critical importance in the development of language, is Skinner's concept of the autoclitic frame. Autoclitic frames help for rapid learning of new verbal behavior and the building of rules. Stemmer (2000) holds: "(1) The events are responsible for the productive character of listener behavior and, via the transfer effect, of verbal behavior in general.(2) Together with ostensive events, the events are responsible for most aspects, probably even for all aspects, of early listener behavior.(3) Because ostensive learning does not require the repeated reinforcement of specific responses to vocal stimuli, the events are the main cause of the explosion in early verbal behavior."

**Autoclitics**

Autoclitics are verbal responses that modify the effect on the listener of the primary operants that comprise B.F. Skinner's classification of Verbal Behavior.

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An autoclitic is a verbal behavior that modifies the functions of other verbal behaviors. For example, "I think it is raining" possesses the autoclitic "I think," which moderates the strength of the statement "it is raining." Research that involves autoclitics includes Lodhi & Greer (1989).

**Descriptive autoclitics**

A speaker may acquire verbal behavior describes their own behavior. I said I love Noam Chomsky is a descriptive autoclitic that describes the behavior of talking about one's own behavior. They may also describe strength of response, as the emission of I think is often used to indicate some level of weakness, as in I love Noam Chomsky, I think.' Descriptive autoclitics modify the listener's reaction by specifying something about the circumstances of the emission of a response or the condition of the speaker providing the verbal response. For example, the I guess in I guess he is here describes strength of the statement he is here. It does so because I guess specifies that the speaker is not sure he is here, just guessing, thus showing weakness in the strength of the response he is here. In describing something about a response, descriptive autoclitics specify some condition of a response, such as I said in I said "Hello. The I said describes the condition under which Hello was said. Descriptive autoclitics can include information regarding the type of verbal operant it accompanies, the strength of the verbal response, the relation between responses, or the emotional or motivation conditions of the speaker. In addition, negative autoclitics quantify or cancel the responses they accompany. For example, the not in it is not raining cancels the response it is raining. Descriptive autoclitics can also just indicate a response is being emitted, or that the emitted response is subordinate in relation to what has been said, e.g,
for example. Qualifying autoclitics modify the listener's behavior in their qualification of tacts in its intensity or direction. Negation is a common qualifying autoclitic, as in it is not raining, the not qualifies it is raining. Without the not, the listener's behavior would be inappropriate. No! also serves to cancel a response, while Yes! encourages a response, as qualifying autoclitics can serve to assert a response.

Quantifying autoclitics modify the reaction of the listener, in that all, some, and no affect the responses they accompany. And the narrow a listener in on the response that follows and its relation to the controlling stimulus. For example, circumstances under which we say book vary from those where we say the book, with the functioning to modify the listener's reaction. Relational autoclitics are different from descriptive autoclitics in that they affect the behavior of the listener. For example, above in the book is above the shelf tells the listener where to find the book, thereby altering where the listener looks for the book. Another way to look at relational autoclitics is that they describe the relation between verbal operants, and modify the listener's behavior in that way. For example, in the statement the book is black the is tells the listener there is a relation between book and black, is specifies what is black.

**Grammar and syntax as autoclitic processes**

Skinner describes grammatical manipulations, such as the order or grouping of responses, as autoclitic. The ordering of patterns may be a function of relevant strength, temporal ordering, or other factors. Skinner speaks to the use of predication and the use of tags, contrasting the Latin forms, which use tags—and English, which uses grouping and ordering. Skinner proposes the relational autoclitic as a descriptor for these kinds of relationships.

**Composition and its effect**

Composition represents a special class of autoclitic responding, because the responding itself a response to previously existing verbal responses. The autoclitic is controlled not only by the effects on the listener but upon the speaker as listener of their own responses. Skinner notes that 'emotional and imaginal' behavior has little to do with grammar and syntax. Obscene words and poetry are likely to be effective, even when emitted non-grammatically.

**Self editing**

Self editing as a compositional process follows the autoclitic process of manipulating responses. After the responses are changed with autoclitics they are examined for their effects and then 'rejected or released'. Conditions may prevent self editing, such as a very high response strength.

**Rejection**
The physical topography of the rejection of verbal behavior in the process of editing varies from the partial emission of a written word to the apparent non-emission of a vocal response. It may include ensuring that responses simply do not reach a listener, as in not delivering a manuscript or letter. Manipulative autociotics can revoke words by striking them out, as in a court of law. Similar effects may arise from expression like Forget it.

**Defective feedback**

A speaker may fail to react as a listener to their own speech under conditions where the emission of verbal responses is very quick. The speed may be a function of strength or of differential reinforcement. Physical interruption may arise as in the case of those who are hearing impaired, or under conditions of mechanical impairment such as ambient noise. Skinner notes the Ouija board may operate to mask feedback and so produce unedited verbal behavior.

**Self-strengthening**

Here Skinner draws a parallel to his position on self-control and notes: "A person controls his own behavior, verbal or otherwise, as he controls the behavior of others." Appropriate verbal behavior may be weak, as in forgetting a name, and in need of strengthening. It may have been inadequately learned, as in a foreign language. Repeating a formula, reciting a poem, and so on. The techniques are manipulating stimuli, changing the level of editing, the mechanical production of verbal behavior, changing motivational and emotional variables, incubation, and so on. Skinner gives an example of the use of some of these techniques provided by an author.

**Logical and scientific**

The special audience in this case is one concerned with "successful action". Special methods of stimulus control are encouraged that will allow for maximum effectiveness. Skinner notes that 'graphs, models, tables' are forms of texts that allow for this kind of development. The logical and scientific community also sharpens responses to assure accuracy and avoiding distortion. Little progress in the area of science has been made from a verbal behavior perspective; however, suggestions of a research agenda have been laid out.

**Tacting Private Events**

Private events are events accessible to only the speaker. Public events are events that occur outside of an organism's skin that are observed by more than one individual. A headache is an example of a private event and a car accident is an example of a public event. Private events were first acknowledged by B.F. Skinner.

The tacting of private events by an organism is shaped by the verbal community who differentially reinforce a variety of behaviors and responses to the private events that occur (Catania, 2007, p.9). For example, if a child verbally states, “a circle” when a circle is
in the immediate environment, it may be a tact. If a child verbally states, “I have a tooth ache”, she/he may be tacting a private event, whereas the stimulus is present to the speaker, but not the rest of the verbal community.

The verbal community shapes the original development and the maintenance or discontinuation of the tacts for private events (Catania, 2007, p232). An organism responds similarly to both private stimuli and public stimuli (Skinner, 1957, p.130). However, it is harder for the verbal community to shape the verbal behavior associated with private events (Catania, 2007, p. 403). It may be more difficult to shape private events, but there are critical things that occur within an organism’s skin that should not be excluded from our understanding of verbal behavior (Catania, 2007, p.9).

Several concerns are associated with tacting private events. Skinner (1957) acknowledged two major dilemmas. First, he acknowledges our difficulty with predicting and controlling the stimuli associated with tacting private events (p. 130). Catania (2007) describes this as the unavailability of the stimulus to the members of the verbal community (p253). The second problem Skinner (1957) describes is our current inability to understand how the verbal behavior associated with private events is developed (p.131).

Skinner (1957) continues to describe four potential ways a verbal community can encourage verbal behavior with no access to the stimuli of the speaker. He suggests the most frequent method is via “a common public accompaniment”. An example might be that when a kid falls and starts bleeding, the caregiver tells them statements like, “you got hurt”. Another method is the “collateral response” associated with the private stimulus. An example would be when a kid comes running and is crying and holding their hands over their knee, the caregiver might make a statement like, “you got hurt”. The third way is when the verbal community provides reinforcement contingent on the overt behavior and the organism generalizes that to the private event that is occurring. Skinner refers to this as “metaphorical or metonymical extension”. The final method that Skinner suggests may help form our verbal behavior is when the behavior is initially at a low level and then turns into a private event. (Skinner, 1957, p. 134) This notion can be summarized by understanding that the verbal behavior of private events can be shaped through the verbal community by extending the language of tacts. (Catania, 2007, p. 263).

Private events are limited and should not serve as “explanations of behavior” (Skinner, 1957, p. 254). Skinner (1957) continues to caution that,”the language of private events can easily distract us from the public causes of behavior” (see functions of behavior).

**Criticism and other reactions**

**Chomsky's review**

In 1959, Noam Chomsky published an influential critique of Verbal Behavior. "Verbal behavior" he defined as learned behavior which has its characteristic consequences being delivered through the learned behavior of others; this makes for a view of communicative behaviors much larger than that usually addressed by linguists. Skinner's approach focused
on the circumstances in which language was used; for example, asking for water was functionally a different response than labeling something as water, responding to someone asking for water, etc. These functionally different kinds of responses, which required in turn separate explanations, sharply contrasted both with traditional notions of language and Chomsky's psycholinguistic approach. Chomsky thought that a functionalist explanation restricting itself to questions of communicative performance ignored important questions. (Chomsky-Language and Mind, 1968).

Chomsky's 1959 review, amongst his other work of the period, is generally thought to have been influential in the decline of behaviorism's influence within linguistics, philosophy and cognitive science. However, it has drawn fire from a number of critics, the most famous criticism being that of Kenneth MacCorquodale's 1970 paper On Chomsky's Review of Skinner's Verbal Behavior. MacCorquodale argued that Chomsky did not possess an adequate understanding of either behavioral psychology in general, or the differences between Skinner's behaviorism and other varieties. As a consequence, he argued, Chomsky made several serious errors of logic. On account of these problems, MacCorquodale maintains that the review failed to demonstrate what it has often been cited as doing, implying that those most influenced by Chomsky's paper probably already substantially agreed with him. Chomsky's review has been further noted to misrepresent the work of Skinner and others, including by taking quotes out of context. Chomsky has maintained that the review was directed at the way Skinner's variant of behavioral psychology "was being used in Quinean empiricism and naturalization of philosophy".

Chomsky's influence was a point that Skinner himself conceded. Sam Leigland suggests that interest in Skinner's work is growing with the next focus on a variety of complex verbal phenomena.

**Alternatives to Skinner's behavior analysis**

There is also now an alternative to Skinner's account within behavior analysis, Relational Frame Theory, and authors in that area have developed a number of behavior analytic objections to Skinner's specific approach. There is some controversy regarding RFT's status in regard to Behavior Analysis. Its founder Steven Hayes regards it as an extension of operant conditioning principles that is consistent with Skinner's analysis but goes beyond it (personal communication).

Others feel that it is consistent with Behavior Analysis but involves emergent principles not found in conventional operant conditioning. Finally, there are those who feel that it is simply another form of Cognitive Behaviorism, rather than Radical Behaviorism.

**Relational frame theory**

Relational frame theory, or RFT, is a psychological theory of human language and cognition. It was developed largely through the efforts of Steven C. Hayes of University of Nevada,
Reno and Dermot Barnes-Holmes of National University of Ireland, Maynooth and is currently being tested in about three dozen laboratories around the world.

Relational frame theory is based on the philosophical roots of functional contextualism, it focuses on how humans learn language through interactions with the environment. Functional contextualism is an extension and contextualistic interpretation of B.F. Skinner's radical behaviorism, and emphasizes the importance of predicting and influencing psychological events, such as thoughts, feelings, and behaviors, by focusing on manipulable variables in their context.

**Development**

RFT is a behavioral approach to language. B.F. Skinner proposed one such approach in 1957 in his book Verbal Behavior. Skinner presented his approach as an interpretation, not an experimental research program, and researchers commonly acknowledge that the research products are somewhat limited in scope. For example, it has been useful in some aspects of language training in developmentally disabled children, but it has not led to a robust research program in the range of areas relevant to language and cognition, such as problem-solving, reasoning, metaphor, logic, and so on. RFT advocates are fairly bold in stating that their goal is an experimental behavioral research program in all such areas, and RFT research has indeed emerged in a number of these areas including grammar.

In a review of Skinner's book, linguist Noam Chomsky argued that the generativity of language shows that it cannot simply be learned, that there must be some innate "language acquisition device". Many have seen this review as a turning point, when cognitivism took the place of behaviorism as the mainstream in psychology. Behavior analysts generally viewed the criticism as unfair and largely off point (for a behavior analytic response to Chomsky, see MacCorquodale (1970), On Chomsky's Review Of Skinner's Verbal Behavior), but it is undeniable that psychology turned its attention elsewhere and the review was very influential in helping to produce the rise of cognitive psychology.

Despite the lack of attention from the mainstream, behavior analysis is alive and growing. Its application has been extended to areas such as language and cognitive training, animal training, business and school settings, as well as hospitals and areas or research.

RFT distinguishes itself from Skinner's work by identifying and defining a particular type of operant conditioning known as derived relational responding. This is a learning process that to date appears to occur only in humans possessing a capacity for language. Derived relational responding is theorized to be a pervasive influence on almost all aspects of human behavior. The theory represents an attempt to provide a more empirically progressive account of complex human behavior while preserving the naturalistic approach of behavior analysis.

**Evidence**
Several dozen studies have tested RFT ideas. Supportive data exists in the areas needed to show that an action is "operant" such as the importance of multiple examples in training derived relational responding, the role of context, and the importance of consequences. Derived relational responding has also been shown to alter other behavioral processes such as classical conditioning, an empirical result that RFT theorists point to in explaining why relational operants modify existing behavioristic interpretations of complex human behavior. Empirical advances have also been made by RFT researchers in the analysis and understanding of such topics as metaphor, perspective taking, and reasoning.

Proponents of RFT often indicate the failure to establish a vigorous experimental program in language and cognition as the key reason why behavior analysis fell out of the mainstream of psychology despite its many contributions, and argue that RFT might provide a way forward. The theory is still somewhat controversial within behavioral psychology, however. At the current time the controversy is not primarily empirical since RFT studies publish regularly in mainstream behavioral journals and few empirical studies have yet claimed to contradict RFT findings. Rather the controversy seems to revolve around whether RFT is a positive step forward, especially given that its implications seem to go beyond many existing interpretations and extensions from within this intellectual tradition.

Applications

Acceptance and commitment therapy

RFT underlies the therapeutic practice known as acceptance and commitment therapy. RFT provides conceptual and procedural guidance for enhancing the cognitive and language development capability (through its detailed treatment and analysis of derived relational responding and the transformation of function) of early intensive behavior intervention (EIBI) programs for young children with autism and related disorders. Relational frame theory has become important in predicting the differences between standard cognitive therapy changes through thought change versus acceptance-based interventions like acceptance and commitment therapy.

The IRAP

The Implicit Relational Assessment Procedure (IRAP), an implicit measure similar to the Implicit Association Test (IAT), with the key difference being that it measures specific relations between stimuli rather than general associations, has its theoretical basis in RFT. The IRAP was developed by Dermot Barnes-Holmes.

Research and theory

Functional Analytic Psychotherapy is one application of Skinner’s model of Verbal Behavior to typically developing adult human populations in non-laboratory (clinical) settings. As such this approach represents an attempt to empirically validate Applied behavior analysis and Verbal Behavior for problems such as depression and other common clinical problems.
Current research in Verbal Behavior is published in The Analysis of Verbal Behavior (TAVB), and other Behavior Analytic journals such as The Journal of the Experimental Analysis of Behavior (JEAB) and the Journal of Applied Behavior Analysis (JABA). Also research is presented at poster sessions and conferences, such as at regional Behavior Analysis conventions or Association for Behavior Analysis (ABA) conventions nationally or internationally. There is also a Verbal Behavior Special Interest Group (SIG) of the Association for Behavior Analysis (ABA) which has a mailing list.

Journal of Early and Intensive Behavior Intervention and the Journal of Speech-Language Pathology and Applied Behavior Analysis both publish clinical articles on interventions based on verbal behavior.

Skinner has argued that his account of verbal behavior might have a strong evolutionary parallel. In Skinner's essay, Selection by Consequences he argued that operant conditioning was a part of a three level process involving genetic evolution, cultural evolution and operant conditioning. All three processes, he argued, were examples of parallel processes of selection by consequences. David L. Hull, Rodney E. Langman and Sigrid S. Glenn have developed this parallel in detail. This topic continues to be a focus for behavior analysts.

**Chomsky’s Theory of Language Development**

Universal grammar is a theory in linguistics that suggests that there are properties that all possible natural human languages have. Usually credited to Noam Chomsky, the theory suggests that some rules of grammar are hard-wired into the brain, and manifest without being taught. There is still much argument whether there is such a thing and what it would be.

**Argument**

If humans growing up under normal conditions (not conditions of extreme deprivation) always develop a language with property X (for example, distinguishing nouns from verbs, or distinguishing function words from lexical words) then property X is a property of universal grammar in this most general sense (here not capitalized).

There are theoretical senses of the term Universal Grammar as well (here capitalized). The most general of these would be that Universal Grammar is whatever properties of a normally developing human brain cause it to learn languages that conform to universal grammar (the non-capitalized, pretheoretical sense). Using the above examples, Universal Grammar would be the property that the brain has that causes it to posit a difference between nouns and verbs whenever presented with linguistic data.
As Chomsky puts it, "Evidently, development of language in the individual must involve three factors: (1) genetic endowment, which sets limits on the attainable languages, thereby making language acquisition possible; (2) external data, converted to the experience that selects one or another language within a narrow range; (3) principles not specific to FL." [FL is the faculty of language, whatever properties of the brain cause it to learn language.] So (1) is Universal Grammar in the first theoretical sense, (2) is the linguistic data which the child is exposed to.

Sometimes aspects of Universal Grammar in this sense seem to be describable in terms of general facts about cognition. For example, if a predisposition to categorize events and objects as different classes of things is part of human cognition, and as a direct result nouns and verbs show up in all languages, then it could be said that this aspect of Universal Grammar is not specific to language, but is part of cognition more generally. To distinguish properties of languages that can be traced to other facts about cognition from properties of languages that cannot, the abbreviation UG* can be used. UG is the term often used by Chomsky for those aspects of the human brain which cause language to be the way it is (i.e. are Universal Grammar in the sense used here) but here for discussion it is used for those aspects which are furthermore specific to language (thus UG, as Chomsky uses it, is just an abbreviation for Universal Grammar, but UG* as used here is a subset of Universal Grammar).

In the same article, Chomsky casts the theme of a larger research program in terms of the following question: "How little can be attributed to UG while still accounting for the variety of I-languages attained, relying on third factor principles?" (I-languages meaning internal languages, the brain states that correspond to knowing how to speak and understand a particular language, and third factor principles meaning (3) in the previous quote).

Chomsky has speculated that UG might be extremely simple and abstract, for example only a mechanism for combining symbols in a particular way, which he calls Merge. To see that Chomsky does not use the term "UG" in the narrow sense UG* suggested above, consider the following quote from the same article:

"The conclusion that Merge falls within UG holds whether such recursive generation is unique to FL or is appropriated from other systems."

I.e. Merge is part of UG because it causes language to be the way it is, is universal, and is not part of (2) (the environment) or (3) (general properties independent of genetics and environment). Merge is part of Universal Grammar whether it is specific to language or whether, as Chomsky suggests, it is also used for example in mathematic thinking.

The distinction is important because there is a long history of argument about UG*, whereas most people working on language agree that there is Universal Grammar. Many people assume that Chomsky means UG* when he writes UG (and in some cases he might actually mean UG*, though not in the passage quoted above).
Some students of universal grammar study a variety of grammars to abstract generalizations called linguistic universals, often in the form of "If X holds true, then Y occurs." These have been extended to a range of traits, from the phonemes found in languages, to what word orders languages choose, to why children exhibit certain linguistic behaviors.

The idea can be traced to Roger Bacon's observation that all languages are built upon a common grammar, substantially the same in all languages, even though it may undergo in them accidental variations, and the 13th century speculative grammarians who, following Bacon, postulated universal rules underlying all grammars. The concept of a universal grammar or language was at the core of the 17th century projects for philosophical languages. The 18th century in Scotland saw the emergence of a vigorous universal grammar school. Later linguists who have influenced this theory include Noam Chomsky and Richard Montague, developing their version of the theory as they considered issues of the Argument from poverty of the stimulus to arise from the constructivist approach to linguistic theory. The application of the idea to the area of second language acquisition (SLA) is represented mainly by the McGill linguist Lydia White.

Most syntacticians generally concede that there are parametric points of variation between languages, although heated debate occurs over whether UG constraints are essentially universal due to being "hard-wired" (Chomsky's Principles and Parameters approach), a logical consequence of a specific syntactic architecture (the Generalized Phrase Structure approach) or the result of functional constraints on communication (the functionalist approach).

**History**

During the early 20th century, language was usually understood from a behaviourist perspective, suggesting that language learning, like any other kind of learning, could be explained by a succession of trials, errors, and rewards for success. In other words, children learned their mother tongue by simple imitation, listening to and repeating what adults said.

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The idea rose to notability in modern linguistics with theorists such as Noam Chomsky and Richard Montague, developed in the 1950s to 1970s, as part of the "Linguistics Wars".

**Chomsky’s theory**

Linguist Noam Chomsky made the argument that the human brain contains a limited set of rules for organizing language. In turn, there is an assumption that all languages have a common structural basis. This set of rules is known as universal grammar.

Speakers proficient in a language know what expressions are acceptable in their language and what expressions are unacceptable. The key puzzle is how speakers should come to know the restrictions of their language, since expressions which violate those restrictions are not present in the input, indicated as such. This absence of negative evidence—that is, absence of evidence that an expression is part of a class of the ungrammatical sentences in one's language—is the core of the poverty of stimulus argument. For example, in English one cannot relate a question word like 'what' to a predicate within a relative clause (1):

(1) *What did John meet a man who sold?*

Such expressions are not available to the language learners, because they are, by hypothesis, ungrammatical for speakers of the local language. Speakers of the local language do not utter such expressions and note that they are unacceptable to language learners. Universal grammar offers a solution to the poverty of the stimulus problem by making certain restrictions universal characteristics of human languages. Language learners are consequently never tempted to generalize in an illicit fashion.

**Presence of creole languages**

The presence of creole languages is sometimes cited as further support for this theory, especially by Bickerton’s controversial language bioprogram theory. Creoles are languages that are developed and formed when different societies come together and are forced to devise their own system of communication. The system used by the original speakers is typically an inconsistent mix of vocabulary items known as a pidgin. As these speakers' children begin to acquire their first language, they use the pidgin input to effectively create their own original language, known as a creole. Unlike pidgins, creoles have native speakers and make use of a full grammar.

According to Bickerton, the idea of universal grammar is supported by creole languages because certain features are shared by virtually all of these languages. For example, their default point of reference in time (expressed by bare verb stems) is not the present moment, but the past. Using pre-verbal auxiliaries, they uniformly express tense, aspect, and mood. Negative concord occurs, but it affects the verbal subject (as opposed to the object, as it does in languages like Spanish). Another similarity among creoles is that questions are created simply by changing a declarative sentence’s intonation, not its word order or content.
However, extensive work by Carla Hudson-Kam and Elissa Newport suggests that creole languages may not support a universal grammar, as has sometimes been supposed. In a series of experiments, Hudson-Kam and Newport looked at how children and adults learn artificial grammars. Notably, they found that children tend to ignore minor variations in the input when those variations are infrequent, and reproduce only the most frequent forms. In doing so, they tend to standardize the language that they hear around them. Hudson-Kam and Newport hypothesize that in a pidgin situation (and in the real life situation of a deaf child whose parents were disfluent signers), children are systematizing the language they hear based on the probability and frequency of forms, and not, as has been suggested on the basis of a universal grammar. Further, it seems unsurprising that creoles would share features with the languages they are derived from and thus look similar "grammatically."

Criticism

Since their inception, universal grammar theories have been subjected to vocal and sustained criticism. In recent years, with the advent of more sophisticated brands of computational modeling and more innovative approaches to the study of language acquisition, these criticisms have multiplied.

Geoffrey Sampson maintains that universal grammar theories are not falsifiable and are therefore pseudoscientific theory. He argues that the grammatical "rules" linguists posit are simply post-hoc observations about existing languages, rather than predictions about what is possible in a language. Similarly, Jeffrey Elman argues that the unlearnability of languages assumed by Universal Grammar is based on a too-strict, "worst-case" model of grammar, that is not in keeping with any actual grammar. In keeping with these points, James Hurford argues that the postulate of a language acquisition device (LAD) essentially amounts to the trivial claim that languages are learnt by humans, and thus, that the LAD is less a theory than an explanandum looking for theories.

Sampson, Roediger, Elman and Hurford are hardly alone in suggesting that several of the basic assumptions of Universal Grammar are unfounded. Indeed, a growing number of language acquisition researchers argue that the very idea of a strict rule-based grammar in any language flies in the face of what is known about how languages are spoken and how languages evolve over time. For instance, Morten Christiansen and Nick Chater have argued that the relatively fast-changing nature of language would prevent the slower-changing genetic structures from ever catching up, undermining the possibility of a genetically hard-wired universal grammar. In addition, it has been suggested that people learn about probabilistic patterns of word distributions in their language, rather than hard and fast rules (see the distributional hypothesis). It has also been proposed that the poverty of the stimulus problem can be largely avoided, if we assume that children employ similarity-based generalization strategies in language learning: generalizing about the usage of new words from similar words that they already know how to use.

Another way of defusing the poverty of the stimulus argument is to assume that if language learners notice the absence of classes of expressions in the input, they will hypothesize a restriction (a solution closely related to Bayesian reasoning). In a similar vein, language
acquisition researcher Michael Ramscar has suggested that when children erroneously expect an ungrammatical form that then never occurs, the repeated failure of expectation serves as a form of implicit negative feedback that allows them to correct their errors over time. This implies that word learning is a probabilistic, error-driven process, rather than a process of fast mapping, as many nativists assume.

Finally, in the domain of field research, the Pirahã language is claimed to be a counterexample to the basic tenets of Universal Grammar. Among other things, this language is alleged to lack all evidence for recursion, including embedded clauses, as well as quantifiers and color terms. Some other linguists have argued, however, that some of these properties have been misanalyzed, and that others are actually expected under current theories of Universal Grammar. While most languages studied in that respect do indeed seem to share common underlying rules, research is hampered by considerable sampling bias. Linguistically, most diverse areas such as tropical Africa and America, as well as the diversity of Indigenous Australian and Papuan languages, have been insufficiently studied. Furthermore, language extinction has disproportionately affected areas where the most unconventional languages are found.

Examples

Universal Grammar is made up of a set of rules that apply to most or all natural human languages. Most of these rules come in the form of "if a language has a feature X, it will also have the feature Y." Rules that are widely considered as part of UG include:

If a language is head-initial (like English), it will have prepositional phrases; if and only if it is head-final (like Japanese) will it have post-positional phrases.
If a language has a word for purple, it will have a word for red.

Language acquisition device

The Language Acquisition Device (LAD) is a postulated "organ" of the brain that is supposed to function as a congenital device for learning symbolic language (i.e., language acquisition). First proposed by Noam Chomsky, the LAD concept is an instinctive mental capacity which enables an infant to acquire and produce language. It is component of the nativist theory of language. This theory asserts that humans are born with the instinct or "innate facility" for acquiring language. Chomsky has gradually abandoned the LAD in favour of a parameter-setting model of language acquisition (principles and parameters).

Chomsky motivated the LAD hypothesis by what he perceived as intractable complexity of language acquisition, citing the notion of "infinite use of finite means" proposed by Wilhelm von Humboldt. At the time it was conceived (1957–1965), the LAD concept was in strict contrast to B.F. Skinner's behavioral psychology which emphasized principles of learning theory such as classical and operant conditioning and imitation over biological predisposition. The interactionist theory of Jerome Bruner and Jean Piaget later
emphasized the importance of the interaction between biological and social (nature and nurture) aspects of language acquisition.

Differing from the behaviorists who emphasize the importance of social interactions in language acquisition, Chomsky (1965) set out an innate language schema which provides the basis for the child’s acquisition of a language. The acquisition process takes place in an infant’s mind because of this mental organ which enables him/her to speak despite the limited nature of the Primary Linguistic Data (PLD, the input signals received) and the degenerate nature (frequent incorrect usage, utterances of partial sentences) of that data. Given this poverty of the stimulus, a language acquisition model requires a number of components. Firstly, the child must have a technique for representing input signals and, secondly, a way of representing structural information about them. Thirdly, there must be some initial delimitation of the class of possible language structure hypotheses. Fourthly, the child requires a method for determining what each of these hypotheses implies with respect to each sentence. Finally, an additional method is needed by which the child can select which hypothesis is compatible with the PLD.

Equipped with this endowment, first language learning is explained as performed by a Language Acquisition Device progressing through the following stages:

- The device searches the class of language structure hypotheses and selects those compatible with input signals and structural information drawn from the PLD.
- The device then tests the compatibility using the knowledge of implications of each hypothesis for the sentences.
- One hypothesis of ‘grammar’ is selected as being compatible with the PLD.
- This grammar provides the device with a method of interpreting sentences (by virtue of its capacity for internally representing structural information and applying the grammar to sentences).

Through this process the device constructs a theory of the language of which the PLD are a sample. Chomsky argues that in this way, the child comes to know a great deal more than she has ‘learned’, acquiring a knowledge of language, which "goes far beyond the presented primary linguistic data and is in no sense an 'inductive generalization' from these data."

In some views of language acquisition, the LAD is thought to become unavailable after a certain age — the critical period hypothesis (i.e., is subject to maturational constraints). Feral children cases such as Genie provide key examples for the LAD aspect of the nativist theory and that it becomes unavailable after a certain age.

**Generative grammar**

In theoretical linguistics, generative grammar refers to a particular approach to the study of syntax. A generative grammar of a language attempts to give a set of rules that will correctly predict which combinations of words will form grammatical sentences. In most
approaches to generative grammar, the rules will also predict the morphology of a sentence.

Generative grammar originates in the work of Noam Chomsky, beginning in the late 1950s. Early versions of Chomsky’s theory were called transformational grammar, and this term is still used as a collective term that includes his subsequent theories. There are a number of competing versions of generative grammar currently practiced within linguistics. Chomsky’s current theory is known as the Minimalist program. Other prominent theories include or have included head-driven phrase structure grammar, lexical functional grammar, categorial grammar, relational grammar, link grammar and tree-adjoining grammar.

Chomsky has argued that many of the properties of a generative grammar arise from an "innate" universal grammar. Proponents of generative grammar have argued that most grammar is not the result of communicative function and is not simply learned from the environment (see poverty of the stimulus argument). In this respect, generative grammar takes a point of view different from cognitive grammar, functional and behaviorist theories.

Most versions of generative grammar characterize sentences as either grammatically correct (also known as well formed) or not. The rules of a generative grammar typically function as an algorithm to predict grammaticality as a discrete (yes-or-no) result. In this respect, it differs from stochastic grammar, which considers grammaticality as a probabilistic variable. However, some work in generative grammar (e.g. recent work by Joan Bresnahan) uses stochastic versions of optimality theory.

Historical development of models of transformational grammar

The oldest known generative grammar that is still extant and in common use is the Sanskrit grammar of Pāṇini, called the Ashtadhyayi, composed by the middle of the 1st millennium BCE.

Generative grammar has been under development since the late 1950s, and has undergone many changes in the types of rules and representations that are used to predict grammaticality. In tracing the historical development of ideas within generative grammar, it is useful to refer to various stages in the development of the theory.

Chomsky hierarchy

Within the field of computer science, specifically in the area of formal languages, the Chomsky hierarchy (occasionally referred to as Chomsky–Schützenberger hierarchy) is a containment hierarchy of classes of formal grammars.

This hierarchy of grammars was described by Noam Chomsky in 1956. It is also named after Marcel-Paul Schützenberger who played a crucial role in the development of the theory of formal languages.
Formal grammars

A formal grammar of this type consists of:

- a finite set of terminal symbols
- a finite set of nonterminal symbols
- a finite set of production rules with a left and a right-hand side consisting of a sequence of these symbols
- a start symbol

A formal grammar defines (or generates) a formal language, which is a (usually infinite) set of finite-length sequences of symbols (i.e. strings) that may be constructed by applying production rules to another sequence of symbols which initially contains just the start symbol. A rule may be applied to a sequence of symbols by replacing an occurrence of the symbols on the left-hand side of the rule with those that appear on the right-hand side. A sequence of rule applications is called a derivation. Such a grammar defines the formal language: all words consisting solely of terminal symbols which can be reached by a derivation from the start symbol.

Nonterminals are usually represented by uppercase letters, terminals by lowercase letters, and the start symbol by S. For example, the grammar with terminals \{a,b\}, nonterminals \{S,A,B\}, production rules

\[
\begin{align*}
S & \to \text{ABS} \\
S & \to \epsilon \text{ (where } \epsilon \text{ is the empty string)} \\
BA & \to \text{AB} \\
BS & \to b \\
Bb & \to bb \\
Ab & \to \text{ab} \\
Aa & \to \text{aa}
\end{align*}
\]

and start symbol S, defines the language of all words of the form anbn (i.e. n copies of a followed by n copies of b). The following is a simpler grammar that defines the same language: Terminals \{a,b\}, Nonterminals \{S\}, Start symbol S, Production rules

\[
\begin{align*}
S & \to aSb \\
S & \to \epsilon
\end{align*}
\]

The hierarchy
The Chomsky hierarchy consists of the following levels:

**Type-0 grammars** (unrestricted grammars) include all formal grammars. They generate exactly all languages that can be recognized by a Turing machine. These languages are also known as the recursively enumerable languages. Note that this is different from the recursive languages which can be decided by an always-halting Turing machine.

**Type-1 grammars** (context-sensitive grammars) generate the context-sensitive languages. These grammars have rules of the form $\alpha A \beta \rightarrow \alpha \gamma \beta$ with $A$ a nonterminal and $\alpha$, $\beta$ and $\gamma$ strings of terminals and nonterminals. The strings $\alpha$ and $\beta$ may be empty, but $\gamma$ must be nonempty. The rule $S \rightarrow \varepsilon$ is allowed if $S$ does not appear on the right side of any rule. The languages described by these grammars are exactly all languages that can be recognized by a linear bounded automaton (a nondeterministic Turing machine whose tape is bounded by a constant times the length of the input.)

**Type-2 grammars** (context-free grammars) generate the context-free languages. These are defined by rules of the form $A \rightarrow \gamma$ with $A$ a nonterminal and $\gamma$ a string of terminals and nonterminals. These languages are exactly all languages that can be recognized by a nondeterministic pushdown automaton. Context-free languages are the theoretical basis for the syntax of most programming languages.
Type-3 grammars (regular grammars) generate the regular languages. Such a grammar restricts its rules to a single nonterminal on the left-hand side and a right-hand side consisting of a single terminal, possibly followed (or preceded, but not both in the same grammar) by a single nonterminal. The rule $S \rightarrow \epsilon$ is also allowed here if $S$ does not appear on the right side of any rule. These languages are exactly all languages that can be decided by a finite state automaton. Additionally, this family of formal languages can be obtained by regular expressions. Regular languages are commonly used to define search patterns and the lexical structure of programming languages.

Note that the set of grammars corresponding to recursive languages is not a member of this hierarchy.

Every regular language is context-free, every context-free language, not containing the empty string, is context-sensitive and every context-sensitive language is recursive and every recursive language is recursively enumerable. These are all proper inclusions, meaning that there exist recursively enumerable languages which are not context-sensitive, context-sensitive languages which are not context-free and context-free languages which are not regular.

X-bar theory

X-bar theory is a component of linguistic theory which attempts to identify syntactic features presumably common to all those human languages that fit in a presupposed (1965) framework. It claims that among their phrasal categories, all those languages share certain structural similarities, including one known as the "X-bar", which does not appear in traditional phrase structure rules for English or other natural languages. X-bar theory was first proposed by Chomsky (1970) and further developed by Jackendoff (1977).

The letter $X$ is used to signify an arbitrary lexical category (part of speech); when analyzing a specific utterance, specific categories are assigned. Thus, the $X$ may become an $N$ for noun, a $V$ for verb, an $A$ for adjective, or a $P$ for preposition.

The term X-bar is derived from the notation representing this new structure. Certain structures are represented by $X$ (an $X$ with an overbar). Because this is difficult to typeset, this is often written as $X'$, using the prime symbol. In English, however, this is still read as "X bar". The notation $XP$ stands for $X$ Phrase, and is equivalent to $X$-bar-bar ($X$ with a double overbar), written $X''$, usually read aloud as $X$ double bar.

Core concepts

There are three "syntax assembly" rules which form the basis of X-bar theory. These rules can be expressed in English, as immediate dominance rules for natural language (useful for example for programmers in the field of NLP—natural language processing), or visually as parse trees. All three representations are presented below.
1. An X Phrase consists of an optional specifier and an X-bar, in any order:

\[
XP \rightarrow \text{(specifier)}, \ X' \\
\text{XP} \quad \text{XP} \\
/ \quad \text{or} \quad / \\
\text{spec} \quad X' \quad X \quad \text{spec}
\]

2. One kind of X-bar consists of an X-bar and an adjunct, in either order:

\[
(X' \rightarrow X', \text{adjunct})
\]

Not all XPs contain X's with adjuncts, so this rewrite rule is "optional".

\[
X' \quad X'
/ \quad / \\
/ \quad / \\
X' \quad \text{adjunct} \quad \text{adjunct} \quad X'
\]

3. Another kind of X-bar consists of an X (the head of the phrase) and any number of complements (possibly zero), in any order:

\[
X' \rightarrow X, \ (\text{complement}...)
\]

\[
X' \quad X'
/ \quad / \\
/ \quad / \\
X \quad \text{complement} \quad \text{complement} \quad X
\]

(a head-first and a head-final example showing one complement)

**How the rules combine**

The following diagram illustrates one way the rules might be combined to form a generic XP structure. Because the rules are recursive, there is an infinite number of possible structures that could be generated, including smaller trees that omit optional parts, structures with multiple complements, and additional layers of XPs and X's of various types.

\[
\text{XP} \\
/ \quad / \\
\text{spec} \quad X' \\
/ \quad / \\
X' \quad \text{adjunct} \\
/ \quad / \\
X \quad \text{complement} \\
| \\
\text{head}
\]
Because all of the rules allow combination in any order, the left-right position of the branches at any point may be reversed from what is shown in the example. However, in any given language, usually only one handedness for each rule is observed. The above example maps naturally onto the left-to-right phrase order used in English.

Note that a complement-containing X' may be distinguished from an adjunct-containing X' by the fact that the complement has an X (head) as a sibling, whereas an adjunct has X-bar as a sibling.

**A simple noun phrase**

The noun phrase "the cat" might be rendered like this:

```
NP
 / \
Det N'
|   |  
the N
|   |
cat
```

The word the is a determiner (specifically an article), which at first was believed to be a type of specifier for nouns. The head is the determiner (D) which projects into a determiner phrase (DP or DetP). The word cat is the noun phrase (NP) which acts as the complement of the determiner phrase. More recently, it has been suggested that D is the head of the noun phrase.

Note that branches with empty specifiers, adjuncts, complements, and heads are often omitted, to reduce visual clutter. The DetP and NP above have no adjuncts or complements, so they end up being very linear.

In English, specifiers precede the X-bar that contains the head. Thus, determiners always precede their nouns if they are in the same noun phrase. Other languages use different orders. See word order.

**A full sentence**

For more complex utterances, different theories of grammar assign X-bar theory elements to phrase types in different ways. Consider the sentence He studies linguistics at the university. A transformational grammar theory might parse this sentence as the following diagram shows:
The "IP" is an inflectional phrase. Its specifier is the noun phrase (NP) which acts as the subject of the sentence. The complement of the IP is the predicate of the sentence, a verb phrase (VP). There is no word in the sentence which explicitly acts as the head of the inflectional phrase, but this slot is usually considered to contain the unspoken "present tense" implied by the tense marker on the verb "studies".

A head-driven phrase structure grammar might parse this sentence differently. In this theory, the sentence is modeled as a verb phrase (VP). The noun phrase (NP) that is the subject of the sentence is located in the specifier of the verb phrase. The predicate parses the same way in both theories.

Substitution test
Though X-bar clauses may seem arbitrary and unneeded, their existence can be confirmed by substitution. To the above sentence, "He studies linguistics at the university," someone could reply, "Oh, she does, too." The word "does," here, stands for the entire V-bar phrase, "studies linguistics at the university", thus implying the existence of this phrase as a complete unit of the whole sentence. In other words: if the V-bar phrase above were not defined as such, the sentence would have three separate phrases directly underneath S: the Noun phrase, the Verb phrase, and the Prepositional phrase. To substitute for two of them, together, as shown, implies that these two, together, make up one phrase within the sentence.

**Reduction**

In 1981, Tim Stowell tried to derive X-bar theory from more general principles in his MIT thesis Origins of phrase structure, a pathbreaking but ultimately unsuccessful effort according to Andras Kornai and Geoffrey Pullum. In the mid 1990s, there were two major attempts to deduce versions of X-bar theory from independent principles. Richard Kayne's theory of Antisymmetry derived X-bar theory from the assumption that there was a tight relation between structure and linear order. Noam Chomsky's paper Bare Phrase Structure attempted to eliminate labelling (i.e. bar-levels) from syntax and deduce their effects from other principles of the grammar.

**Principles and parameters**

Principles and parameters is a framework within generative linguistics in which the syntax of a natural language is described in accordance with general principles (i.e. abstract rules or grammars) and specific parameters (i.e. markers, switches) that for particular languages are either turned on or off. For example, the distinction between whether a language is head-initial or head-final is regarded as a parameter which is either on or off for particular languages (i.e. English is head-initial, whereas Japanese is head-final).

Principles and parameters was largely formulated by the linguists Noam Chomsky and Howard Lasnik. Today, many linguists have adopted this framework, and it is considered the dominant form of mainstream generative linguistics.

**Framework**

The central idea of principles and parameters is that a person's syntactic knowledge can be modelled with two formal mechanisms:

A finite set of fundamental principles that are common to all languages; e.g., that a sentence must always have a subject, even if it is not overtly pronounced.

A finite set of parameters that determine syntactic variability amongst languages; e.g., a binary parameter that determines whether or not the subject of a sentence must be overtly pronounced (this example is sometimes referred to as the Pro-drop parameter).
Within this framework, the goal of linguistics is to identify all of the principles and parameters that are universal to human language (called: Universal Grammar). As such, any attempt to explain the syntax of a particular language using a principle or parameter is cross-examined with the evidence available in other languages. This leads to continual refinement of the theoretical machinery of generative linguistics in an attempt to account for as much syntactic variation in human language as possible.

**Language acquisition**

The Principles and Parameters approach is the postulated answer to Plato’s Problem: how can a children with different linguistic environments arrive at an accurate grammar that exhibits universal and non-obvious similarities, relatively rapidly, and with finite input. According to this framework, principles and parameters are part of a genetically innate universal grammar (UG) which all humans possess, barring any genetic disorders. As such, principles and parameters do not need to be learned by exposure to language. Rather, exposure to language merely triggers the parameters to adopt the correct setting. The problem is simplified considerably if children are innately equipped with mental apparatus that reduces and in a sense directs the search space amongst possible grammars. The P&P approach is an attempt to provide a precise and testable characterization of this innate endowment which consists of universal, language-specific "Principles" and universal, binary "Parameters" that can be set in various ways. The interaction of the principles and the parameter settings produces all known languages while excluding non-natural languages.

**Minimalist program**

In linguistics, the Minimalist Program (MP) is a major line of inquiry that has been developing inside Generative Grammar since the early nineties. It started with a 1993 paper by Noam Chomsky.

Chomsky presents MP as a program, not as a theory, following Imre Lakatos’s distinction. The MP seeks to be a mode of inquiry characterized by the flexibility of the multiple directions that its minimalism enables. Ultimately, the MP provides a conceptual framework used to guide the development of grammatical theory. For Chomsky, there are minimalist questions, but the answers can be framed in any theory. Of all these questions, the one that plays the most crucial role is this: why language has the properties it has. That said, the MP lays out a very specific view of the basis of syntactic grammar that, when compared to other formalisms, is often taken to look very much like a theory.

**Theoretical goals**

**Perfection**

The MP appeals to the idea that the language ability in humans shows signs of being incorporated under an optimal design with exquisite organization, which seems to suggest
that the inner workings conform to a very simple computational law or a particular mental
organ. In other words, the MP works on the assumption that Universal Grammar
constitutes a perfect design in the sense that it contains only what is necessary to meet our
conceptual, and physical (phonological) needs.

From a theoretical standpoint, and in the context of generative grammar, the MP draws on
the minimalist approach of the Principles and Parameters program, considered to be the
ultimate standard theoretical model that generative linguistics has developed since the
eighties. What this approach suggests is the existence of a fixed set of principles valid for all
languages, which, when combined with settings for a finite set of binary switches
(parameters), may describe the specific properties that characterize the language system a
child eventually comes to attain.

The MP aims to get to know how much of the Principles and Parameters model can be
taken as a result of this hypothetical optimal and computationally efficient design of the
human language faculty. In turn, more developed versions of the Principles and Parameters
approach provide technical principles from which the MP can be seen to follow.

**Economy**

The MP aims at the further development of ideas involving economy of derivation and
economy of representation, which had started to become significant in the early 1990s, but
were still peripheral aspects of Transformational grammar.

Economy of derivation is a principle stating that movements (i.e. transformations) only
occur in order to match interpretable features with uninterpretable features. An example
of an interpretable feature is the plural inflection on regular English nouns, e.g. dogs. The
word dogs can only be used to refer to several dogs, not a single dog, and so this inflection
contributes to meaning, making it interpretable. English verbs are inflected according to
the number of their subject (e.g. "Dogs bite" vs "A dog bites"), but this information is only
interpretable once a relationship is formed between the subject and the verb, so movement
of the subject is required.

Economy of representation is the principle that grammatical structures must exist for a
purpose, i.e. the structure of a sentence should be no larger or more complex than required
to satisfy constraints on grammaticality, which are equivalent to constraints on the
mapping between the conceptual/intensional and sensori-motor interfaces in the optimal
system that minimalism seeks to explore.

**Technical innovations**

The exploration of minimalist questions has led to several radical changes in the technical
apparatus of transformational generative grammatical theory. Some of the most important
are:

- The generalization of X-bar Theory into Bare Phrase Structure (see below).
The simplification of representational levels in the grammatical model, eliminating the distinction between Deep Structure and Surface Structure in favor of more explicitly derivational approach.

- The elimination of the notion of government.
- The inclusion of a single point of interaction between syntax and the interfaces (conceptual/intensional and sensori-motor), commonly called the point of Spell-Out.
- The idea that syntactic derivations proceed by clearly delineated stages called phases (see below).

**Bare Phrase Structure**

A major development of MP inquiry is Bare Phrase Structure (BPS), a theory of phrase structure (sentence building prior to movement) developed by Noam Chomsky.

This theory contrasts with X-bar theory, which preceded it, in four important ways:

- BPS is explicitly derivational. That is, it is built from the bottom up, bit by bit. In contrast, X-Bar Theory is representational - a structure for a given construction is built in one fell swoop, and lexical items are inserted into the structure.
- BPS does not have a preconceived phrasal structure, while in X-Bar Theory, every phrase has a specifier, a head, and a complement.
- BPS permits only binary branching, while X-Bar Theory permits both binary and unary branching.
- BPS does not distinguish between a "head" and a "terminal", while some versions of X-Bar Theory require such a distinction.

BPS incorporates two basic operations: Merge and Move. Although there is active debate on exactly how Move should be formulated, the differences between the current proposals are relatively minute. The following description follows Chomsky's original proposal.

Merge is a function that takes two objects (say $\alpha$ and $\beta$) and merges them into an unordered set with a label (either $\alpha$ or $\beta$, in this case $\alpha$). The label identifies the properties of the phrase.

$\text{Merge} (\alpha, \beta) \rightarrow \{\alpha, \{\alpha, \beta\}\}$

For example, Merge can operate on the lexical items 'drink' and 'water' to give 'drink water'. Note that the phrase 'drink water' behaves more like the verb 'drink' than like the noun 'water'. That is, wherever we can put the verb 'drink' we can usually put the phrase 'drink water':

I like to ________ (drink)/(drink water).

(Drinking/Drinking water) ________ is fun.
Furthermore, we typically can't put the phrase 'drink water' in places where we can put the noun 'water':

We can say "There's some water on the table", but not "There's some drink water on the table".

So, we identify the phrase with a label. In the case of 'drink water', the label is 'drink' since the phrase acts as a verb. For simplicity, we call this phrase a verb phrase or VP. Now if we were to Merge 'cold' and 'water' to get 'cold water', then we would have a noun phrase or NP with the label 'water'. The reader can verify that the phrase 'cold water' can appear in the same environments as the noun 'water' in the three test sentences above. So, for 'drink water' we have the following:

Merge (drink, water) \rightarrow \{drink, \{drink, water\}\}

We can represent this in a typical syntax tree as follows:

```
   drink
     / \
    drink water
```

or, with more technical terms, as:

```
   VP
     / \
    drink water
```

Merge can also operate on structures already built. If it couldn't, then such a system would predict only two-word utterances to be grammatical. Say we Merge a new head with a previously formed object (a phrase).

Merge (\gamma, \{\alpha, \{\alpha, \beta\}\}) \rightarrow \{\gamma, \{\gamma, \{\alpha, \{\alpha, \beta\}\}\}\}\}

Here, \gamma is the label, so we say that \gamma 'projects' from the label of the head. This corresponds to the following tree structure:

```
   \gamma
     / \n    \gamma \alpha
      / \n     \gamma \beta
```

Note crucially that Merge operates blindly, projecting labels in all possible combinations. The subcategorization features of the head then license certain label projections and eliminate all derivations with alternate projections.
Phases

A phase is a syntactic domain first hypothesized by Noam Chomsky in 1998. A simple sentence is often decomposed into two phases, CP and vP (see X-bar theory). Movement of a constituent out of a phase is (in the general case) only permitted if the constituent has first moved to the left edge of the phase. This condition is described in the Phase Impenetrability Condition, which has been variously formulated within the literature. In its original conception, only the vP in transitive and unergative verbs constitute phases. The vP in passives and unaccusative verbs (if even present) are not phases. This topic is, however, currently under debate in the literature.

Criticism

In the late 1990s, David E. Johnson and Shalom Lappin published the first detailed critiques of Chomsky’s minimalist program. This technical work was followed by a lively debate with proponents of minimalism on the scientific status of the program. The original article provoked several replies and two further rounds of replies and counter-replies in subsequent issues of the same journal. Lappin et al. argue that the Minimalist Program is a radical departure from earlier Chomskian linguistic practice that is not motivated by any new empirical discoveries, but rather by a general appeal to "perfection" which is both empirically unmotivated and so vague as to be unfalsifiable. They compare the adoption of this paradigm by linguistic researchers to other historical paradigm shifts in natural sciences and conclude that the adoption of the Minimalist Program has been an "unscientific revolution", driven primarily by Chomsky’s authority in linguistics. The several replies to the article in Natural Language and Linguistic Theory Volume 18 number 4 (2000) make a number of different defenses of the Minimalist Program. Some claim that it is not in fact revolutionary or not in fact widely adopted, while others agree with Levine and Johnson on these points, but defend the vagueness of its formulation as not problematic in light of its status as a research program rather than a theory (see above).

Critical period hypothesis

The critical period hypothesis is the subject of a long-standing debate in linguistics and language acquisition over the extent to which the ability to acquire language is biologically linked to age. The hypothesis claims that there is an ideal ‘window’ of time to acquire language in a linguistically rich environment, after which further language acquisition becomes much more difficult and effortful.

The critical period hypothesis states that the first few years of life is the crucial time in which an individual can acquire a first language if presented with adequate stimuli. If language input doesn’t occur until after this time, the individual will never achieve a full command of language—especially grammatical systems.
The evidence for such a period is limited, and support stems largely from theoretical arguments and analogies to other critical periods in biology such as visual development, but nonetheless is widely accepted. The nature of this phenomenon, however, has been one of the most fiercely debated issues in psycholinguistics and cognitive science in general for decades. Some writers have suggested a "sensitive" or "optimal" period rather than a critical one; others dispute the causes (physical maturation, cognitive factors). The duration of the period also varies greatly in different accounts. In second language acquisition, the strongest evidence for the critical period hypothesis is in the study of accent, where most older learners do not reach a native-like level. However, under certain conditions, native-like accent has been observed, suggesting that accent is affected by multiple factors, such as identity and motivation, rather than a critical period biological constraint (Moyer, 1999; Bongaerts et al., 1995; Young-Scholten, 2002).

**History**

The critical period hypothesis was first proposed by Montreal neurologist Wilder Penfield and co-author Lamar Roberts in a 1959 paper Speech and Brain Mechanisms, and was popularised by Eric Lenneberg in 1967 with Biological Foundations of Language.

Lenneberg states that there are maturational constraints on the time a first language can be acquired. First language acquisition relies on neuroplasticity. If language acquisition does not occur by puberty, some aspects of language can be learnt but full mastery cannot be achieved. This was called the "critical period hypothesis."

An interesting example of this is the case of Genie. A thirteen-year-old victim of lifelong child abuse, Genie was discovered in her home on November 4, 1970, strapped to a potty chair and wearing diapers. She appeared to be entirely without language. Her father had judged her retarded at birth and had chosen to isolate her, and so she had remained until her discovery.

It was an ideal opportunity to test the theory that a nurturing environment could somehow make up for a total lack of language past the age of 12. She was unable to acquire language completely, although the degree to which she acquired language is disputed.

Detractors of the "Critical Period Hypothesis" point out that in this example and others like it (see Feral children), the child is hardly growing up in a nurturing environment, and that the lack of language acquisition in later life may be due to the results of a generally abusive environment rather than being specifically due to a lack of exposure to language.

Recently, it has been suggested that if a critical period does exist, it may be due at least partially to the delayed development of the prefrontal cortex in human children. Researchers have suggested that delayed development of the prefrontal cortex and a concomitant delay in the development of cognitive control may facilitate convention learning, allowing young children to learn language far more easily than cognitively mature adults and older children. This pattern of prefrontal development is unique to humans.
among similar mammalian (and primate) species, and may explain why humans—and not chimpanzees—are so adept at learning language.

**Second language acquisition**

The theory has often been extended to a critical period for second language acquisition (SLA), although this is much less widely accepted. Certainly, older learners of a second language rarely achieve the native-like fluency that younger learners display, despite often progressing faster than children in the initial stages. David Singleton states that in learning a second language, "younger = better in the long run," but points out that there are many exceptions, noting that five percent of adult bilinguals master a second language even though they begin learning it when they are well into adulthood—long after any critical period has presumably come to a close.

While the window for learning a second language never completely closes, certain linguistic aspects appear to be more affected by the age of the learner than others. For example, adult second-language learners nearly always retain an immediately identifiable foreign accent, including some who display perfect grammar (Oyama 1976). Some writers have suggested a younger critical age for learning phonology than for syntax. Singleton (1995) reports that there is no critical period for learning vocabulary in a second language. Robertson (2002) observed that factors other than age may be even more significant in successful second language learning, such as personal motivation, anxiety, input and output skills, settings and time commitment.

On reviewing the published material, Bialystok and Hakuta (1994) conclude that second-language learning is not necessarily subject to biological critical periods, but "on average, there is a continuous decline in ability [to learn] with age."

**Experimental and observational studies**

How children acquire native language (L1) and the relevance of this to foreign language (L2) learning has long been debated. Although evidence for L2 learning ability declining with age is controversial, a common notion is that children learn L2s easily, whilst older learners rarely achieve fluency. This assumption stems from ‘critical period’ (CP) ideas. A CP was popularised by Eric Lenneberg in 1967 for L1 acquisition, but considerable interest now surrounds age effects on second language acquisition (SLA). SLA theories explain learning processes and suggest causal factors for a possible CP for SLA, mainly attempting to explain apparent differences in language aptitudes of children and adults by distinct learning routes, and clarifying them through psychological mechanisms. Research explores these ideas and hypotheses, but results are varied: some demonstrate pre-pubescent children acquire language easily, and some that older learners have the advantage, whilst others focus on existence of a CP for SLA. Recent studies (e.g. Mayberry and Lock, 2003) have recognised certain aspects of SLA may be affected by age, whilst others remain intact. The objective of this study is to investigate whether capacity for vocabulary acquisition decreases with age.
Other work has challenged the biological approach; Krashen (1975) re-analysed clinical data used as evidence and concluded cerebral specialisation occurs much earlier than Lenneberg calculated. Therefore, if a CP exists, it does not coincide with lateralisation. Despite concerns with Lenneberg’s original evidence and the dissociation of lateralisation from the language CP idea, however, the concept of a CP remains a viable hypothesis, which later work has better explained and substantiated.

**Effects of aging**

A review of SLA theories and their explanations for age-related differences is necessary before considering empirical studies. The most reductionist theories are those of Penfield and Roberts (1959) and Lenneberg (1967), which stem from L1 and brain damage studies; children who suffer impairment before puberty typically recover and (re-)develop normal language, whereas adults rarely recover fully, and often do not regain verbal abilities beyond the point reached five months after impairment. Both theories agree that children have a neurological advantage in learning languages, and that puberty correlates with a turning point in ability. They assert that language acquisition occurs primarily, possibly exclusively, during childhood as the brain loses plasticity after a certain age. It then becomes rigid and fixed, and loses the ability for adaptation and reorganisation, rendering language (re-)learning difficult. Penfield and Roberts (1959) claim children under nine can learn up to three languages: early exposure to different languages activates a reflex in the brain allowing them to switch between languages without confusion or translation into L1 (Penfield, 1964). Lenneberg (1967) asserts that if no language is learned by puberty, it cannot be learned in a normal, functional sense. He also supports Penfield and Roberts’ (1959) proposal of neurological mechanisms responsible for maturational change in language learning abilities. This, Lenneberg maintains, coincides with brain lateralisation and left-hemispherical specialisation for language around age thirteen: infants’ motor and linguistic skills develop simultaneously, but by age thirteen the cerebral hemispheres’ functions separate and become set, making language acquisition extremely difficult (Lenneberg, 1967).

**Deaf and feral children**

Cases of deaf and feral children provide evidence for a biologically determined CP for L1. Feral children are those not exposed to language in infancy/childhood due to being brought up in the wild, in isolation and/or confinement. A classic example is ‘Genie’, who was deprived of social interaction from birth until discovered aged thirteen (post-pubescent). She was completely without language, and after seven years of rehabilitation still lacked linguistic competence. Another case is ‘Isabelle’, who was incarcerated with her deaf-mute mother until the age of six and a half (pre-pubescent). She also had no language skills, but, unlike Genie, quickly acquired normal language abilities through systematic specialist training.

Such studies are however problematic; isolation can result in general retardation and emotional disturbances, which may confound conclusions drawn about language abilities. Studies of deaf children learning American Sign Language (ASL) have fewer methodological
weaknesses. Newport and Supalla (1987) studied ASL acquisition in deaf children differing in age of exposure; few were exposed to ASL from birth, most of them first learned it at school.

Results showed a linear decline in performance with increasing age of exposure; those exposed to ASL from birth performed best, and ‘late learners’ worst, on all production and comprehension tests. Their study thus provides direct evidence for language learning ability decreasing with age, but it does not add to Lennerberg’s CP hypothesis as even the oldest children, the ‘late learners’, were exposed to ASL by age four, and had therefore not reached puberty, the proposed end of the CP. In addition, the declines were shown to be linear, with no sudden ‘drop off’ of ability at a certain age, as would be predicted by a strong CP hypothesis. That the children performed significantly worse, however, suggests the CP may end earlier than originally postulated.

**Behavioural approaches**

Contrary to biological views, behavioural approaches assert that languages are learned as any other behaviour, through conditioning. Skinner (1957) details how operant conditioning forms connections with the environment through interaction and, alongside O. Hobart Mower (1960), applies the ideas to language acquisition. Mower hypotheses that languages are acquired through rewarded imitation of ‘language models’; the model must have an emotional link to the learner (e.g. parent, spouse), as imitation then brings pleasant feelings which function as positive reinforcement. Because new connections between behaviour and the environment are formed and reformed throughout life, it is possible to gain new skills, including language(s), at any age.

To accommodate observed language learning differences between children and adults, Felix (1985) describes that children, whose brains create countless new connections daily, may handle the language learning process more effectively than do adults. This assumption, however, remains untested and is not a reliable explanation for children’s aptitude for L2 learning. Problematic of the behaviourist approach is its assumption that all learning, verbal and non-verbal, occurs through the same processes. A more general problem is that, as Pinker (1995) notes, almost every sentence anybody voices is an original combination of words, never previously uttered, therefore a language cannot consist only of word combinations learned through repetition and conditioning; the brain must contain innate means of creating endless amounts of grammatical sentences from a limited vocabulary. This is precisely what Chomsky (1965) argues with his proposition of a Universal Grammar (UG).

**Universal Grammar**

Chomsky (1965) asserts that environmental factors must be relatively unimportant for language emergence, as so many different factors surround children acquiring L1. Instead, Chomsky claims language learners possess innate principles building a ‘language acquisition device’ (LAD) in the brain. These principles denote restricted possibilities for variation within the language, and enable learners to construct a grammar out of ‘raw
input’ collected from the environment. Input alone cannot explain language acquisition because it is degenerated by characteristic features such as stutters, and lacks corrections from which learners discover incorrect variations.

Singleton and Newport (2004) demonstrate the function of UG in their study of ‘Simon’. Simon learned ASL as his L1 from parents who had learned it as an L2 after puberty and provided him with imperfect models. Results showed Simon learned normal and logical rules and was able to construct an organised linguistic system, despite being exposed to inconsistent input. Chomsky developed UG to explain L1 acquisition data, but maintains it also applies to L2 learners who achieve near-native fluency not attributable solely to input and interaction (Chomsky, 1965).

Although it does not describe an optimal age for SLA, the theory implies that younger children can learn languages more easily than older learners, as adults must reactivate principles developed during L1 learning and forge an SLA path: children can learn several languages simultaneously as long as the principles are still active and they are exposed to sufficient language samples (Pinker, 1995). The parents of Singleton and Newport’s (2004) patient also had linguistic abilities in line with these age-related predictions; they learned ASL after puberty and never reached complete fluency.

**Problems within UG Theory for L2 acquisition**

There are, however, problems with the extrapolation of the UG theory to SLA: L2 learners go through several phases of types of utterance that are not similar to their L1 or the L2 they hear. Other factors include the cognitive maturity of most L2 learners, that they have different motivation for learning the language, and already speak one language fluently. Other studies also highlight these problems: Dehaene (1999) investigates how cerebral circuits used to handling one language adapt for the efficient storage of two or more. He reports observations of cerebral activation when reading and translating two languages. They found the most activated brain areas during the tasks were not those generally associated with language, but rather those related to mapping orthography to phonology. They conclude that the left temporal lobe is the physical base of L1, but the L2 is ‘stored’ elsewhere, thus explaining cases of bilingual aphasia where one language remains intact. They maintain that only languages learned simultaneously from birth are represented, and cause activity, in the left hemisphere: any L2 learned later is stored separately (possibly in the right hemisphere), and rarely activates the left temporal lobe.

This suggests that L2 may be qualitatively different from L1 due to its dissociation from the ‘normal’ language brain regions, thus the extrapolation of L1 studies and theories to SLA is placed in question. A further disadvantage of UG is that supporting empirical data are taken from a limited sample of syntactic phenomena: a general theory of language acquisition should cover a larger range of phenomena. Despite these problems, several other theorists have based their own models of language learning on it; amongst others Felix’ (1985) ‘competing cognitive systems’ idea. These ideas are supported by empirical evidence, which consequently supports Chomsky’s ideas. Due to this support and its descriptive and
explanatory strength, many theorists regard UG as the best explanation of language, and particularly grammar, acquisition.

**UG and the critical period hypothesis**

A key question about the relationship of UG and SLA is: is the language acquisition device posited by Chomsky and his followers still accessible to learners of a second language? Research suggests that it becomes inaccessible at a certain age (see Critical Period Hypothesis), and learners increasingly depended on explicit teaching (see pedagogical effects above, and age below). In other words, although all of language may be governed by UG, older learners might have great difficulty in gaining access to the target language’s underlying rules from positive input alone.

**Piaget**

Piaget (1926) is one psychologist reluctant to ascribe specific innate linguistic abilities to children: he considers the brain a homogeneous computational system, with language acquisition being one part of general learning. He agrees this development may be innate, but claims there is no specific language acquisition module in the brain. Instead, he suggests external influences and social interaction trigger language acquisition: information collected from these sources constructs symbolic and functional schemata (thought or behaviour patterns). According to Piaget, cognitive development and language acquisition are life-long active processes that constantly update and re-organise schemata. He proposes children develop L1 as they build a sense of identity in reference to the environment, and describes phases of general cognitive development, with processes and patterns changing systematically with age. Piaget assumes language acquisition is part of this complex cognitive development, and that these developmental phases are the basis for an optimal period for language acquisition in childhood. Interactionist approaches derived from Piaget’s ideas supports his theory. Some studies (e.g. Newport and Supalla, 1987) show that, rather than abrupt changes in SLA ability after puberty, language ability declines with age, coinciding with declines in other cognitive abilities, thus supporting Piaget.

**Felix**

Several researchers, however, remain unconvinced that language acquisition is part of general development: Felix (1985) claims cognitive abilities alone are useless for language learning, as only vocabulary and meaning are connected to cognition; lexicology and related meanings have conceptual bases. Felix’ criticism of the assumption that L2 fluency simply requires skilful applications of the correct rules is supported by the lack of psychological empirical evidence for Piaget’s idea.

**Krashen**

Although Krashen (1975) also criticises this theory, neither he nor Felix discredit the importance of age for second language acquisition. Krashen (1975), and later Felix (1985), proposed theories for the close of the CP for L2 at puberty, based on Piaget’s cognitive
stage of formal operations beginning at puberty, as the ‘ability of the formal operational thinker to construct abstract hypotheses to explain phenomena’ inhibits the individual’s natural ability for language learning.

The term "language acquisition" became commonly used after Stephen Krashen contrasted it with formal and non-constructive "learning." Today, most scholars use "language learning" and "language acquisition" interchangeably, unless they are directly addressing Krashen’s work. However, "second language acquisition" or "SLA" has become established as the preferred term for this academic discipline.

Though SLA is often viewed as part of applied linguistics, it is typically concerned with the language system and learning processes themselves, whereas applied linguistics may focus more on the experiences of the learner, particularly in the classroom. Additionally, SLA has mostly examined naturalistic acquisition, where learners acquire a language with little formal training or teaching.

Other directions of research

Impact of illiteracy

Virtually all research findings on SLA to date build on data from literate learners. Tarone, Bigelow and Hansen (2009) find significantly different results when replicating standard SLA studies with low literate L2 learners. Specifically, learners with lower alphabetic literacy levels are significantly less likely to notice corrective feedback on form or to perform elicited imitation tasks accurately. These findings are consistent with research in cognitive psychology showing significant differences in phonological awareness between literate and illiterate adults (Reis and Castro-Caldas 1997; Castro-Caldas et al. 1998). An important direction for SLA research must therefore involve the exploration of the impact of alphabetic literacy on cognitive processing in second language acquisition.

Empirical research has attempted to account for variables detailed by SLA theories and provide an insight into L2 learning processes, which can be applied in educational environments. Recent SLA investigations have followed two main directions: one focuses on pairings of L1 and L2 that render L2 acquisition particularly difficult, and the other investigates certain aspects of language that may be maturationally constrained. Flege, Mackay and Piske (2002) looked at bilingual dominance to evaluate two explanations of L2 performance differences between bilinguals and monolingual-L2 speakers, i.e. a maturationally defined CP or interlingual interference.

Bilingual dominance

Flege, Mackay and Piske investigated whether the age at which participants learned English affected dominance in Italian-English bilinguals, and found the early bilinguals were English (L2) dominant and the late bilinguals Italian (L1) dominant. Further analysis showed that dominant Italian bilinguals had detectable foreign accents when speaking
English, but early bilinguals (English dominant) had no accents in either language. This suggests that, though interlingual interference effects are not inevitable, their emergence, and bilingual dominance, may be related to a CP.

Sebastián-Gallés, Echeverría and Bosch (2005) also studied bilinguals and highlight the importance of early language exposure. They looked at vocabulary processing and representation in Spanish-Catalan bilinguals exposed to both languages simultaneously from birth in comparison to those who had learned L2 later and were either Spanish- or Catalan-dominant. Findings showed ‘from birth bilinguals’ had significantly more difficulty distinguishing Catalan words from non-words differing in specific vowels than Catalan-dominants did (measured by reaction time).

These difficulties are attributed to a phase around age eight months where bilingual infants are insensitive to vowel contrasts, despite the language they hear most. This affects how words are later represented in their lexicons, highlighting this as a decisive period in language acquisition and showing that initial language exposure shapes linguistic processing for life. Sebastián-Gallés et al. (2005) also indicate the significance of phonology for L2 learning; they believe learning an L2 once the L1 phonology is already internalised can reduce individuals’ abilities to distinguish new sounds that appear in the L2.

**Age effects on grammar learning**

Most studies into age effects on specific aspects of SLA have focused on grammar, with the common conclusion that it is highly constrained by age, more so than semantic functioning. B. Harley (1986) compared attainment of French learners in early and late immersion programs. She reports that after 1000 exposure hours, late learners had better control of French verb systems and syntax. However, comparing early immersion students (average age 6.917 years) with age-matched native speakers identified common problem areas, including third person plurals and polite ‘vous’ forms. This suggests grammar (in L1 or L2) is generally acquired later, possibly because it requires abstract cognition and reasoning (B. Harley, 1986).

B. Harley also measured eventual attainment and found the two age groups made similar mistakes in syntax and lexical selection, often confusing French with the L1. The general conclusion from these investigations is that different aged learners acquire the various aspects of language with varying difficulty. Some variation in grammatical performance is attributed to maturation (discussed in B. Harley, 1986), however, all participants began immersion programs before puberty and so were too young for a strong critical period hypothesis to be directly tested.

This corresponds to Noam Chomsky’s UG theory; which states that while language acquisition principles are still active, it is easy to learn a language, and the principles developed through L1 acquisition are vital for learning an L2.

Scherag, Demuth, Rösler, Neville and Röder (2004) also suggest learning some syntactic processing functions and lexical access may be limited by maturation, whereas semantic
functions are relatively unaffected by age. They studied the effect of late SLA on speech comprehension by German immigrants to the U.S.A. and American immigrants to Germany. They found that native-English speakers who learned German as adults were disadvantaged on certain grammatical tasks but performed at near-native levels on lexical tasks. These findings are consistent with work by Hahne (2001, cited in Scherag et al., 2004).

**Semantic functions acquisition**

One study that specifically mentions semantic functions acquisition is that of Weber-Fox and Neville (1996). Their results showed that Chinese-English bilinguals who had been exposed to English after puberty, learned vocabulary to a higher competence level than syntactic aspects of language. They do, however, report that the judgment accuracies in detecting semantic anomalies were altered in subjects who were exposed to English after sixteen years of age, but were affected to a lesser degree than were grammatical aspects of language. It has been speculated (Neville and Bavelier, 2001, and Scherag et al., 2004) that semantic aspects of language are founded on associative learning mechanisms, which allow life-long learning, whereas syntactical aspects are based on computational mechanisms, which can only be constructed during certain age periods. Consequently, it is reasoned, semantic functions are easier to access during comprehension of an L2 and therefore dominate the process: if these are ambiguous, understanding of syntactic information is not facilitated. These suppositions would help explain the results of Scherag et al.’s (2004) study.

**Advantages of bilingual education for children**

It is commonly believed that children are better suited to learn a second language than are adults. However, general second language research has failed to support the critical period hypothesis in its strong form (i.e., the claim that full language acquisition is impossible beyond a certain age). According to Linda M. Espinosa, especially in the United States the number of children growing up with a home language that is not English but Spanish is constantly increasing. Therefore these children have to learn the English language before kindergarten as a second language. It is better to dispose young children to maintain both, their home language and their second language. Cultivating his home language, the child creates his own cultural identity and becomes aware of his roots. This fact leads to the question whether having the ability to speak two languages helps or harms young children. Research shows that the acquisition of a second language in early childhood confers several advantages, especially a greater awareness of linguistic structures. Furthermore it is advantageous for young children to grow up bilingually because they do not need to be taught systematically but learn languages intuitively. How fast a child can learn a language depends on several personal factors, such as interest and motivation, and its learning environment. Communication should be facilitated rather than a child should be forced to learn a language with strict rules. Education in early childhood can lead to an effective educational achievement for children from various cultural environments.
Another aspect that is worth considering is that bilingual children are often doing code switching which does not mean that the child is not able to separate the languages. The reason for code switching is the child’s lack of vocabulary in a certain situation. The acquisition of a second language in early childhood broadens the children’s minds and enriches them more than it harms them. Thus they are not only able to speak two languages in spite of being very young but they also acquire knowledge about the different cultures and environments. It is possible that one language can dominate. This depends on how much time is spent on learning each language.

Evolutionary Explanations for the Critical Period in First and Second Language Acquisition

**Hurford’s Model**

In order to provide evidence for the evolutionary functionality of the critical period in language acquisition, Hurford (1991) generated a computer simulation of plausible conditions of evolving generations, based on three central assumptions:

1. Language is an evolutionary adaptation that is naturally selected for. 2. Any given individual’s language can be quantified or measured. 3. Various aspects of maturation and development are under genetic control, which would extend to determine the timing for critical periods for certain capacities (i.e. polygenic inheritance).

According to Hurford’s evolutionary model, language acquisition is an adaptation that has survival value for humans, and that knowing a language correlated positively with an individual’s reproductive advantage. This finding is in line with views of other researchers such as Chomsky (1982) and Pinker & Bloom (1990). For example, Steven Pinker and Paul Bloom argue that due to the fact that language is a complex design that serves a specific function that cannot be replaced by any other existing capacity, the trait of language acquisition can be attributed to natural selection.

However, while arguing that language itself is adaptive and “did not ‘just happen’” (p.172), Hurford suggests that the critical period is not an adaptation, but rather a constraint on language that emerged due to a lack of selection pressures that reinforce acquiring more than one language. In other words, Hurford explains the existence of a critical period with genetic drift, the idea that when there are no selection pressures on multiple alleles acting on the same trait, one of the alleles will gradually diminish through evolution. Because the simulation reveals no evolutionary advantage of acquiring more than one language, Hurford suggests that the critical period evolved simply as a result of a lack of selection pressure.

**Komarova and Nowak’s Dynamical System**

Komarova and Nowak (2001) supported Hurford’s model, yet pointed out that it was limited in the sense that it did not take into account the costs of learning a language. Therefore, they created their own algorithmic model, with the following assumptions:
1. Language ability correlates with an individual’s reproductive fitness. 2. The ability to learn language is inherited. 3. There are costs to learning a language.

Their model consists of a population with constant size, where language ability is a predictor of reproductive fitness. The learning mechanism in their model is based on Chomsky’s (1980, 1993) language acquisition device (LAD) and the notion of universal grammar. The results of their model show that the critical period for language acquisition is an “evolutionarily stable strategy (ESS)” (Komarova & Nowak, 2001, p. 1190). They suggest that this ESS is due to two competing selection pressures. First, if the period for learning is short, language does not develop as well, and thus decreases the evolutionary fitness of the individual. Alternatively, if the period for learning language is long, it becomes too costly to the extent that it reduces reproductive opportunity for the individual, and therefore limits reproductive fitness. Therefore, the critical period is an adaptive mechanism that keeps these pressures at equilibrium, and aims at optimal reproductive success for the individual.

**Process of Communication**

**Communication**

Communication is the activity of conveying meaningful information. Communication requires a sender, a message, and an intended recipient, although the receiver need not be present or aware of the sender’s intent to communicate at the time of communication; thus communication can occur across vast distances in time and space. Communication requires that the communicating parties share an area of communicative commonality. The communication process is complete once the receiver has understood the sender.

**Human communication**

Human spoken and picture languages can be described as a system of symbols (sometimes known as lexemes) and the grammars (rules) by which the symbols are manipulated. The word "language" also refers to common properties of languages. Language learning normally occurs most intensively during human childhood. Most of the thousands of human languages use patterns of sound or gesture for symbols which enable communication with others around them. Languages seem to share certain properties, although many of these include exceptions. There is no defined line between a language and a dialect. Constructed languages such as Esperanto, programming languages, and various mathematical formalisms are not necessarily restricted to the properties shared by human languages.

A variety of verbal and non-verbal means of communicating exists such as body language, eye contact, sign language, paralanguage, haptic communication, chronemics, and media such as pictures, graphics, sound, and writing.
Convention on the Rights of Persons with Disabilities also defines the communication to include the display of text, Braille, tactile communication, large print, accessible multimedia, as well as written and plain language, human reader, and accessible information and communication technology.

**Nonverbal communication**

Nonverbal communication describes the process of conveying meaning in the form of non-word messages. Research shows that the majority of our communication is non-verbal, also known as body language. Some of non-verbal communication includes gesture, body language or posture; facial expression and eye contact, object communication such as clothing, hairstyles, architecture, symbols infographics, and tone of voice as well as through an aggregate of the above. Non-verbal communication is also called silent language and plays a key role in human day to day life from employment relations to romantic engagements.

Speech also contains nonverbal elements known as para-language. These include voice quality, emotion and speaking style as well as prosodic features such as rhythm, intonation and stress. Likewise, written texts include nonverbal elements such as handwriting style, spatial arrangement of words and the use of emoticons to convey emotional expressions in pictorial form.

**Visual communication**

Visual communication is the conveyance of ideas and information through creation of visual representations. Primarily associated with two dimensional images, it includés: signs, typography, drawing, graphic design, illustration, colours, and electronic resources, video and TV. Recent research in the field has focused on web design and graphically oriented usability. Graphic designers use methods of visual communication in their professional practice.

**Oral communication**

Oral communication, while primarily referring to spoken verbal communication, typically relies on both words, visual aids and non-verbal elements to support the conveyance of the meaning. Oral communication includes discussion, speeches, presentations, interpersonal communication and many other varieties. In face to face communication the body language and voice tonality plays a significant role and may have a greater impact on the listener than the intended content of the spoken words.

A great presenter must capture the attention of the audience and connect with them. For example, out of two persons telling the same joke one may greatly amuse the audience due to his body language and tone of voice while the second person, using exactly the same words, bores and irritates the audience. Visual aid can help to facilitate effective communication and is almost always used in presentations for an audience.
A widely cited and widely misinterpreted figure used to emphasize the importance of delivery states that "communication comprise 55% body language, 38% tone of voice, 7% content of words", the so-called "7%-38%-55% rule". This is not however what the cited research shows – rather, when conveying emotion, if body language, tone of voice, and words disagree, then body language and tone of voice will be believed more than words. For example, a person saying "I'm delighted to meet you" while mumbling, hunched over, and looking away will be interpreted as insincere. (Further discussion at Albert Mehrabian: Three elements of communication.)

Written communication and its historical development

Over time the forms of and ideas about communication have evolved through progression of technology. Advances include communications psychology and media psychology; an emerging field of study. Researchers divide the progression of written communication into three revolutionary stages called "Information Communication Revolutions" (Source needed).

During the 1st stage written communication first emerged through the use of pictographs. The pictograms were made in stone, hence written communication was not yet mobile.

During the 2nd stage writing began to appear on paper, papyrus, clay, wax, etc. Common alphabets were introduced and allowed for the uniformity of language across large distances. A leap in technology occurred when the Gutenberg printing-press was invented in the 15th century.

The 3rd stage is characterised by the transfer of information through controlled waves and electronic signals.

Communication is thus a process by which meaning is assigned and conveyed in an attempt to create shared understanding. This process, which requires a vast repertoire of skills in interpersonal processing, listening, observing, speaking, questioning, analyzing, gestures, and evaluating enables collaboration and cooperation.

Barriers to successful communication include message overload (when a person receives too many messages at the same time), and message complexity.

Misunderstandings can be anticipated and solved through formulations, questions and answers, paraphrasing, examples, and stories of strategic talk. Written communication can be clear by planning follow-up talk on critical written communication as part of the normal way of doing business. Minutes spent talking now will save time later having to clear up misunderstandings later on. Then, take what was heard and reiterate in your own words, and ask them if that's what they meant.

Nonhuman communication
Every information exchange between living organisms — i.e. transmission of signals that involve a living sender and receiver can be considered a form of communication; and even primitive creatures such as corals are competent to communicate. Nonhuman communication also include cell signaling, cellular communication, and chemical transmissions between primitive organisms like bacteria and within the plant and fungal kingdoms.

**Animal communication**

The broad field of animal communication encompasses most of the issues in ethology. Animal communication can be defined as any behavior of one animal that affects the current or future behavior of another animal. The study of animal communication, called zoosemiotics (distinguishable from anthrososemiotics, the study of human communication) has played an important part in the development of ethology, sociobiology, and the study of animal cognition. Animal communication, and indeed the understanding of the animal world in general, is a rapidly growing field, and even in the 21st century so far, many prior understandings related to diverse fields such as personal symbolic name use, animal emotions, animal culture and learning, and even sexual conduct, long thought to be well understood, have been revolutionized.

**Plants and fungi(phantom)**

Communication is observed within the plant organism, i.e. within plant cells and between plant cells, between plants of the same or related species, and between plants and non-plant organisms, especially in the root zone. Plant roots communicate in parallel with rhizome bacteria, with fungi and with insects in the soil. These parallel sign-mediated interactions are governed by syntactic, pragmatic and semantic rules, and are possible because of the decentralized "nervous system" of plants. The original meaning of the word "neuron" in Greek is "vegetable fiber" and recent research has shown that most of the intraorganismatic plant communication processes are neuronal-like. Plants also communicate via volatiles when exposed to herbivory attack behavior to warn neighboring plants. In parallel they produce other volatiles to attract parasites which attack these herbivores. In Stress situations plants can overwrite the genetic code they inherited from their parents and revert to that of their grand- or great-grandparents.

Fungi communicate to coordinate and organize their growth and development such as the formation of mycelia and fruiting bodies. Fungi communicate with same and related species as well as with nonfungal organisms in a great variety of symbiotic interactions, especially with bacteria, unicellular eukaryotes, plants and insects through semiochemicals of biotic origin. The semiochemicals trigger the fungal organism to react in a specific manner, while if the same chemical molecules are not part of biotic messages, they do not trigger the fungal organism to react. This implies that fungal organisms can differ between molecules taking part in biotic messages and similar molecules being irrelevant in the situation. So far five different primary signalling molecules are known to coordinate different behavioral patterns such as filamentsation, mating, growth, and pathogenicity. Behavioral coordination and production of signalling substances is achieved through
interpretation processes that enables the organism to differ between self or non-self, abiotic indicator, biotic message from similar, related, or non-related species, and even filter out "noise", i.e. similar molecules without biotic content.

**Communication cycle**

![Shannon and Weaver Model of Communication](image)

- **content**
  - Tree

- **form**
  - **emisor**
  - **destination**

**Communication major dimensions scheme**
Communication code scheme

1 CODIFYING

2 Sending the message

3 DECODIFYING

Linear Communication Model

Interactional Model of Communication
The first major model for communication came in 1949 by Claude Shannon and Warren Weaver for Bell Laboratories. The original model was designed to mirror the functioning of radio and telephone technologies. Their initial model consisted of three primary parts: sender, channel, and receiver. The sender was the part of a telephone a person spoke into, the channel was the telephone itself, and the receiver was the part of the phone where one could hear the other person. Shannon and Weaver also recognized that often there is static that interferes with one listening to a telephone conversation, which they deemed noise.
In a simple model, often referred to as the transmission model or standard view of communication, information or content (e.g. a message in natural language) is sent in some form (as spoken language) from an emisor/ sender/ encoder to a destination/ receiver/ decoder. This common conception of communication simply views communication as a means of sending and receiving information. The strengths of this model are simplicity, generality, and quantifiability. Social scientists Claude Shannon and Warren Weaver structured this model based on the following elements:

- An information source, which produces a message.
- A transmitter, which encodes the message into signals
- A channel, to which signals are adapted for transmission
- A receiver, which 'decodes' (reconstructs) the message from the signal.
- A destination, where the message arrives.

Shannon and Weaver argued that there were three levels of problems for communication within this theory.

- The technical problem: how accurately can the message be transmitted?
- The semantic problem: how precisely is the meaning 'conveyed'?
- The effectiveness problem: how effectively does the received meaning affect behavior?

Daniel Chandler critiques the transmission model by stating:

- It assumes communicators are isolated individuals.
- No allowance for differing purposes.
- No allowance for differing interpretations.
- No allowance for unequal power relations.
- No allowance for situational contexts.

In 1960, David Berlo expanded on Shannon and Weaver’s (1949) linear model of communication and created the SMCR Model of Communication. The Sender-Message-Channel-Receiver Model of communication separated the model into clear parts and has been expanded upon by other scholars.

Communication is usually described along a few major dimensions: Message (what type of things are communicated), source / emisor / sender / encoder (by whom), form (in which form), channel (through which medium), destination / receiver / target / decoder (to whom), and Receiver. Wilbur Schram (1954) also indicated that we should also examine the impact that a message has (both desired and undesired) on the target of the message. Between parties, communication includes acts that confer knowledge and experiences, give advice and commands, and ask questions. These acts may take many forms, in one of the various manners of communication. The form depends on the abilities of the group communicating. Together, communication content and form make messages that are sent
towards a destination. The target can be oneself, another person or being, another entity (such as a corporation or group of beings).

Communication can be seen as processes of information transmission governed by three levels of semiotic rules:

- **Syntactic** (formal properties of signs and symbols),
- **Pragmatic** (concerned with the relations between signs/expressions and their users) and
- **Semantic** (study of relationships between signs and symbols and what they represent).

Therefore, communication is social interaction where at least two interacting agents share a common set of signs and a common set of semiotic rules. This commonly held rules in some sense ignores autocommunication, including intrapersonal communication via diaries or self-talk, both secondary phenomena that followed the primary acquisition of communicative competences within social interactions.

In light of these weaknesses, Barlund (2008) proposed a transactional model of communication. The basic premise of the transactional model of communication is that individuals are simultaneously engaging in the sending and receiving of messages.

In a slightly more complex form a sender and a receiver are linked reciprocally. This second attitude of communication, referred to as the constitutive model or constructionist view, focuses on how an individual communicates as the determining factor of the way the message will be interpreted. Communication is viewed as a conduit; a passage in which information travels from one individual to another and this information becomes separate from the communication itself. A particular instance of communication is called a speech act. The sender's personal filters and the receiver's personal filters may vary depending upon different regional traditions, cultures, or gender; which may alter the intended meaning of message contents. In the presence of "communication noise" on the transmission channel (air, in this case), reception and decoding of content may be faulty, and thus the speech act may not achieve the desired effect. One problem with this encode-transmit-receive-decode model is that the processes of encoding and decoding imply that the sender and receiver each possess something that functions as a codebook, and that these two code books are, at the very least, similar if not identical. Although something like code books is implied by the model, they are nowhere represented in the model, which creates many conceptual difficulties.

Theories of coregulation describe communication as a creative and dynamic continuous process, rather than a discrete exchange of information. Canadian media scholar Harold Innis had the theory that people use different types of media to communicate and which one they choose to use will offer different possibilities for the shape and durability of society (Wark, McKenzie 1997). His famous example of this is using ancient Egypt and looking at the ways they built themselves out of media with very different properties stone and papyrus. Papyrus is what he called 'Space Binding', it made possible the transmission
of written orders across space, empires and enables the waging of distant military campaigns and colonial administration. The other is stone and 'Time Binding', through the construction of temples and the pyramids can sustain their authority generation to generation, through this media they can change and shape communication in their society (Wark, McKenzie 1997).

Bernard Luskin, UCLA, 1970, advanced computer assisted instruction and began to connect media and psychology into what is now the field of media psychology. In 1998, the American Association of Psychology, Media Psychology Division 46 Task Force report on psychology and new technologies combined media and communication as pictures, graphics and sound increasingly dominate modern communication.

**Communication noise**

In any communication model, noise is interference with the decoding of messages sent over a channel by an encoder. There are many examples of noise:

**Environmental Noise**: Noise that physically disrupts communication, such as standing next to loud speakers at a party, or the noise from a construction site next to a classroom making it difficult to hear the professor.

**Physiological-Impairment Noise**: Physical maladies that prevent effective communication, such as actual deafness or blindness preventing messages from being received as they were intended.

**Semantic Noise**: Different interpretations of the meanings of certain words. For example, the word "weed" can be interpreted as an undesirable plant in your yard, or as a euphemism for marijuana.

**Syntactical Noise**: Mistakes in grammar can disrupt communication, such as abrupt changes in verb tense during a sentence.

**Organizational Noise**: Poorly structured communication can prevent the receiver from accurate interpretation. For example, unclear and badly stated directions can make the receiver even more lost.

**Cultural Noise**: Stereotypical assumptions can cause misunderstandings, such as unintentionally offending a non-Christian person by wishing them a "Merry Christmas".

**Psychological Noise**: Certain attitudes can also make communication difficult. For instance, great anger or sadness may cause someone to lose focus on the present moment. Disorders such as Autism may also severely hamper effective communication.

**Communication as academic discipline**
Communication as an academic discipline, sometimes called "communicology," relates to all the ways we communicate, so it embraces a large body of study and knowledge. The communication discipline includes both verbal and nonverbal messages. A body of scholarship all about communication is presented and explained in textbooks, electronic publications, and academic journals. In the journals, researchers report the results of studies that are the basis for an ever-expanding understanding of how we all communicate.

Communication happens at many levels (even for one single action), in many different ways, and for most beings, as well as certain machines. Several, if not all, fields of study dedicate a portion of attention to communication, so when speaking about communication it is very important to be sure about what aspects of communication one is speaking about. Definitions of communication range widely, some recognizing that animals can communicate with each other as well as human beings, and some are more narrow, only including human beings within the different parameters of human symbolic interaction.

**Communication theory**

Human communication is understood in various ways by those who identify with the field. This diversity is the result of communication being a relatively young field of study, composed of a very broad constituency of disciplines. It includes work taken from scholars of Rhetoric, Journalism, Sociology, Psychology, Anthropology, and Semiotics, among others. Cognate areas include biocommunication, which investigates communicative processes within and among non-humans such as bacteria, animals, fungi and plants, and information theory, which provides a mathematical model for measuring communication within and among systems.

Generally, human communication is concerned with the making of meaning and the exchange of understanding. One model of communication considers it from the perspective of transmitting information from one person to another. In fact, many scholars of communication take this as a working definition, and use Lasswell’s maxim, "who says what to whom in which channel with what effect," as a means of circumscribing the field of communication theory. Among those who subscribe to the transmission model are those who identify themselves with the communication sciences, and finds its roots in the studies of propaganda and mass media of the early 20th century.
A simple communication model with a sender transferring a message containing information to a receiver.

Other commentators claim that a ritual process of communication exists, one not artificially divorcible from a particular historical and social context. This tradition is largely associated with early scholars of symbolic interactionism as well as phenomenologists.

Constructionist Models

There is an additional working definition of communication to consider that authors like Richard A. Lanham (2003) and as far back as Erving Goffman (1959) have highlighted. This is a progression from Lasswell’s attempt to define human communication through to this century and revolutionized into the constructionist model. Constructionists believe that the process of communication is in itself the only messages that exist. The packaging can not be separated from the social and historical context from which it arose, therefore the substance to look at in communication theory is style for Richard Lanham and the performance of self for Erving Goffman.

Lanham chose to view communication as the rival to the over encompassing use of CBS model (which pursued to further the transmission model). CBS model argues that clarity, brevity, and sincerity are the only purpose to prose discourse, therefore communication. Lanham wrote, “If words matter too, if the whole range of human motive is seen as animating prose discourse, then rhetoric analysis leads us to the essential questions about prose style” (Lanham 10). This is saying that rhetoric and style are fundamentally important; they are not errors to what we actually intend to transmit. The process which we construct and deconstruct meaning deserves analysis.

Erving Goffman sees the performance of self as the most important frame to understand communication. Goffman wrote, “What does seem to be required of the individual is that he learn enough pieces of expression to be able to ‘fill in’ and manage, more or less, any part that he is likely to be given” (Goffman 73) Goffman is highlighting the significance of expression. The truth in both cases is the articulation of the message and the package as one. The construction of the message from social and historical context is the seed as is the pre-existing message is for the transmission model. Therefore any look into communication theory should include the possibilities drafted by such great scholars as Richard A. Lanham and Erving Goffman that style and performance is the whole process.

Communication stands so deeply rooted in human behaviors and the structures of society that scholars have difficulty thinking of it while excluding social or behavioral events. Because communication theory remains a relatively young field of inquiry and integrates itself with other disciplines such as philosophy, psychology, and sociology, one probably cannot yet expect a consensus conceptualization of communication across disciplines.

Communication Model Terms as provided by Rothwell (11-15):

- **Noise**: interference with effective transmission and reception of a message.
For example;

- physical noise or external noise which are environmental distractions such as poorly heated rooms, startling sounds, appearances of things, music playing somewhere else, and someone talking really loudly near you.
- physiological noise are biological influences that distract you from communicating competently such as sweaty palms, pounding heart, butterfly in the stomach, induced by speech anxiety, or feeling sick, exhausted at work, the ringing noise in your ear, being really hungry, and if you have a runny nose or a cough.
- psychological noise are the preconception bias and assumptions such as thinking someone who speaks like a valley girl is dumb, or someone from a foreign country can't speak English well so you speak loudly and slowly to them.
- semantic noise are word choices that are confusing and distracting such as using the word tri-syllabic instead of three syllables.

- Sender; the initiator and encoder of a message
- Receiver; the one that receives the message (the listener) and the decoder of a message
- Decode; translates the senders spoken idea/message into something the receiver understands by using their knowledge of language from personal experience.
- Encode; puts the idea into spoken language while putting their own meaning into the word/message.
- Channel; the medium through which the message travels such as through oral communication (radio, television, phone, in person) or written communication (letters, email, text messages)
- Feedback; the receivers verbal and nonverbal responses to a message such as a nod for understanding (nonverbal), a raised eyebrow for being confused (nonverbal), or asking a question to clarify the message (verbal).
- Message; the verbal and nonverbal components of language that is sent to the receiver by the sender which conveys an idea.

**Linear Model** – is a one way model to communicate with others. It consists of the sender encoding a message and channeling it to the receiver in the presence of noise. Draw backs – the linear model assumes that there is a clear cut beginning and end to communication. It also displays no feedback from the receiver.

For example; a letter, email, text message, lecture.
A Linear Model of Communication

Interactive Model – is two linear models stacked on top of each other. The sender channels a message to the receiver and the receiver then becomes the sender and channels a message to the original sender. This model has added feedback, indicates that communication is not a one way but a two way process. It also has “field of experience” which includes our cultural background, ethnicity geographic location, extend of travel, and general personal experiences accumulated over the course of your lifetime. Draw backs – there is feedback but it is not simultaneous.
An Interactive Model of Communication

For example – instant messaging. The sender sends an IM to the receiver, then the original sender has to wait for the IM from the original receiver to react. Or a question/answer session where you just ask a question then you get an answer.

Transactional Model – assumes that people are connected through communication; they engage in transaction. Firstly, it recognizes that each of us is a sender-receiver, not merely a sender or a receiver. Secondly, it recognizes that communication affects all parties involved. So communication is fluid/simultaneous. This is how most conversation are like. The transactional model also contains ellipses that symbolize the communication environment (how you interpret the data that you are given). Where the ellipses meet is the most effect communication area because both communicators share the same meaning of the message.

For example – talking/listening to friends. While your friend is talking you are constantly giving them feedback on what you think through your facial expression verbal feedback without necessarily stopping your friend from talking.
A Transactional Model of Communication

History of Communication Theory

The Academic Study of Communication

Communication has existed since the beginning of human beings, but it was not until the 20th century that people began to study the process. As communication technologies developed, so did the serious study of communication. When World War I ended, the interest in studying communication intensified. The social-science study was fully recognized as a legitimate discipline after World War II.

Before becoming simply communication, or communication studies, the discipline was formed from three other major studies: psychology, sociology, and anthropology. Psychology is the study of human behavior. Sociology is the study of society and social process, and anthropology is the study of communication as a factor which develops, maintains, and changes culture. Communication studies focus on communication as central to the human experience, which involves understanding how people behave in creating, exchanging, and interpreting messages.

Communication Theory has one universal law posited by S. E. Scudder (1980). The Universal Communication Law states that, "All living entities, beings and creatures communicate." All life communicates through movements, sounds, reactions, physical changes, gestures, languages, and breath. Communication is a means of survival. Examples - the cry of a child (communicating that it is hungry, hurt, or cold); the browning of a leaf (communicating that it is dehydrated, thirsty per se, or dying); the cry of an animal
(communicating that it is injured, hungry, or angry). Everything living communicates in its quest for survival."

**Communication Theory Framework**

It is helpful to examine communication and communication theory through one of the following viewpoints:

**Mechanistic**: This view considers communication as a perfect transaction of a message from the sender to the receiver. (as seen in the diagram above)

**Psychological**: This view considers communication as the act of sending a message to a receiver, and the feelings and thoughts of the receiver upon interpreting the message.

**Social Constructionist** (Symbolic Interactionist): This view considers communication to be the product of the interactants sharing and creating meaning. The Constructionist View can also be defined as, how you say something determines what the message is. The Constructionist View assumes that "truth" and "ideas" are constructed or invented through the social process of communication. Robert T. Craig saw the Constructionist View or the constitutive view as it's called in his article, as "...an ongoing process that symbolically forms and re-forms our personal identities." (Craig, 125). The other view of communication, the Transmission Model, sees communication as robotic and computer-like. The Transmission Model sees communication as a way of sending or receiving messages and the perfection of that. But, the Constructionist View sees communications as, "...in human life, info does not behave as simply as bits in an electronic stream. In human life, information flow is far more like an electric current running from one landmine to another" (Lanham, 7). The Constructionist View is a more realistic view of communication because it involves the interacting of human beings and the free sharing of thoughts and ideas. Daniel Chandler looks to prove that the Transmission Model is a lesser way of communicating by saying “The transmission model is not merely a gross oversimplification but a dangerously misleading representation of the nature of human communication” (Chandler, 2). Humans do not communicate simply as computers or robots so that’s why it’s essential to truly understand the Constructionist View of Communication well. We do not simply send facts and data to one another, but we take facts and data and they acquire meaning through the process of communication, or through interaction with others.

**Systemic**: This view considers communication to be the new messages created via "through-put", or what happens as the message is being interpreted and re-interpreted as it travels through people.

**Critical**: This view considers communication as a source of power and oppression of individuals and social groups.
Inspection of a particular theory on this level will provide a framework on the nature of communication as seen within the confines of that theory.

Theories can also be studied and organized according to the ontological, epistemological, and axiological framework imposed by the theorist.

**Ontology** essentially poses the question of what, exactly, it is the theorist is examining. One must consider the very nature of reality. The answer usually falls in one of three realms depending on whether the theorist sees the phenomena through the lens of a realist, nominalist, or social constructionist. Realist perspective views the world objectively, believing that there is a world outside of our own experience and cognitions. Nominalists see the world subjectively, claiming that everything outside of one’s cognitions is simply names and labels. Social constructionists straddle the fence between objective and subjective reality, claiming that reality is what we create together.

**Epistemology** is an examination of how the theorist studies the chosen phenomena. In studying epistemology, particularly from a positivist perspective, objective knowledge is said to be the result of a systematic look at the causal relationships of phenomena. This knowledge is usually attained through use of the scientific method. Scholars often think that empirical evidence collected in an objective manner is most likely to reflect truth in the findings. Theories of this ilk are usually created to predict a phenomenon. Subjective theory holds that understanding is based on situated knowledge, typically found using interpretative methodology such as ethnography and also interviews. Subjective theories are typically developed to explain or understand phenomena in the social world.

**Axiology** is concerned with what values drive a theorist to develop a theory. Theorists must be mindful of potential biases so that they will not influence or skew their findings (Miller, 21-23).

**Mapping the theoretical landscape**

A discipline gets defined in large part by its theoretical structure. Communication studies often borrow theories from other social sciences. This theoretical variation makes it difficult to come to terms with the field as a whole. That said, some common taxonomies exist that serve to divide up the range of communication research. Two common mappings involve contexts and assumptions.

**Contexts**

Many authors and researchers divide communication by what they sometimes called "contexts" or "levels", but which more often represent institutional histories. The study of communication in the US, while occurring within departments of psychology, sociology, linguistics, and anthropology (among others), generally developed from schools of rhetoric and from schools of journalism. While many of these have become "departments of communication", they often retain their historical roots, adhering largely to theories from speech communication in the former case, and from mass media in the latter. The great
divide between speech communication and mass communication becomes complicated by
a number of smaller sub-areas of communication research, including intercultural and
international communication, small group communication, communication technology,
policy and legal studies of communication, telecommunication, and work done under a
variety of other labels. Some of these departments take a largely social-scientific
perspective, others tend more heavily toward the humanities, and still others gear
themselves more toward production and professional preparation.

These "levels" of communication provide some way of grouping communication theories,
but inevitably, some theories and concepts leak from one area to another, or fail to find a
home at all.

**The Constitutive Metamodel**

Another way of dividing up the communication field emphasizes the assumptions that
undergird particular theories, models, and approaches. Robert T. Craig suggests that the
field of communication as a whole can be understood as several different traditions who
have a specific view on communication. By showing the similarities and differences
between these traditions, Craig argues that the different traditions will be able to engage
each other in dialogue rather than ignore each other. Craig proposes seven different
traditions which are:

- **Rhetorical**: views communication as the practical art of discourse.
- **Semiotic**: views communication as the mediation by signs.
- **Phenomenological**: communication is the experience of dialogue with others.
- **Cybernetic**: communication is the flow of information.
- **Socio-psychological**: communication is the interaction of individuals.
- **Socio-cultural**: communication is the production and reproduction of the social
  order.
- **Critical**: communication is the process in which all assumptions can be challenged.

Craig finds each of these clearly defined against the others, and remaining cohesive
approaches to describing communicative behavior. As a taxonomic aid, these labels help to
organize theory by its assumptions, and help researchers to understand why some theories
may seem incommensurable.

While communication theorists very commonly use these two approaches, theorists
decentralize the place of language and machines as communicative technologies. The idea
(as argued by Vygotsky) of communication as the primary tool of a species defined by its
tools remains on the outskirts of communication theory. It finds some representation in the
Toronto School of communication theory (alternatively sometimes called medium theory)
as represented by the work of Innis, McLuhan, and others. It seems that the ways in which
individuals and groups use the technologies of communication — and in some cases are
used by them — remain central to what communication researchers do. The ideas that
surround this, and in particular the place of persuasion, remain constants across both the
"traditions" and "levels" of communication theory.
Toronto School of communication theory

"Faced with information overload, we have no alternative but pattern recognition."—Marshall McLuhan

The Toronto School is a school of thought in communication theory and literary criticism, the principles of which were developed chiefly by scholars at the University of Toronto. It is characterized by exploration of Ancient Greek literature and the theoretical view that communication systems create psychological and social states. The school originated from the works of Eric A. Havelock and Harold Innis in the 1930s, and grew to prominence with the contributions of Edmund Snow Carpenter, Northrop Frye and Marshall McLuhan.

Since 1963, the McLuhan Program in Culture and Technology at the University of Toronto Faculty of Information has carried the mandate for teaching and advancing the school. Notable contemporary scholars associated with the Toronto School include Derrick de Kerckhove, Robert K. Logan and Barry Wellman.

History and development

The Toronto School has been described as "the theory of the primacy of communication in the structuring of human cultures and the structuring of the human mind." Eric Havelock's studies in the transitions from orality to literacy, as an account of communication, profoundly affected the media theories of Harold Innis and Marshall McLuhan. Harold Innis’ theories of political economy, media and society had a significant influence on critical media theory and communications and with McLuhan, offered groundbreaking Canadian perspectives on the function of communication technologies as key agents in social and historical change. Together, their works advanced a theory of history in which
communication is central to social change and transformation.

In the early 1950s, McLuhan began the Communication and Culture seminars, funded by the Ford Foundation, at the University of Toronto. As his reputation grew, he received a growing number of offers from other universities and, to keep him, the university created the Centre for Culture and Technology in 1963. He published his first major work during this period: The Mechanical Bride (1951) was an examination of the effect of advertising on society and culture. He also produced an important journal, Explorations, with Edmund Carpenter, throughout the 1950s. With Innis, Havelock, Derrick de Kerckhove and Barry Wellman, McLuhan and Carpenter have been characterized as the Toronto School of Communication. McLuhan remained at the University of Toronto through 1979, spending much of this time as head of his Centre for Culture and Technology.

**Key works**

**Empire and Communications**

Published in 1950 by Harold Innis's Empire and Communications is based on six lectures he delivered at Oxford University in 1948. The series, known as the Beit Lectures, was dedicated to exploring British imperial history. Innis however, decided to undertake a sweeping historical survey of how communications media influence the rise and fall of empires. He traced the effects of media such as stone, clay, papyrus, parchment and paper from ancient to modern times.

Innis argued that the "bias" of each medium either toward space or toward time helps determine the nature of the civilization in which that medium dominates. "Media that emphasize time are those that are durable in character such as parchment, clay and stone," he writes in his introduction. These media tend to favour decentralization. "Media that emphasize space are apt to be less durable and light in character, such as papyrus and paper." These media generally favour large, centralized administrations. Innis believed that to persist in time and to occupy space, empires needed to strike a balance between time-biased and space-biased media. Such a balance is likely to be threatened however, when monopolies of knowledge exist favouring some media over others.

**The Bias of Communication**

In his 1947 presidential address to the Royal Society of Canada, Innis remarked: "I have attempted to suggest that Western civilization has been profoundly influenced by communication and that marked changes in communications have had important implications." He went on to mention the evolution of communications media from the cuneiform script inscribed on clay tablets in ancient Mesopotamia to the advent of radio in the 20th century. "In each period I have attempted to trace the implications of the media of communication for the character of knowledge and to suggest that a monopoly or oligopoly of knowledge is built up to the point that equilibrium is disturbed." Innis argued, for example, that a "complex system of writing" such as cuneiform script resulted in the growth of a "special class" of scribes. The long training required to master such writing
 ensured that relatively few people would belong to this privileged and aristocratic class. As Paul Heyer explains:

In the beginning, which for Innis means Mesopotamia, there was clay, the reed stylus used to write on it, and the wedge-shaped cuneiform script. Thus did civilization arise, along with an elite group of scribe priests who eventually codified laws. Egypt followed suit, using papyrus, the brush, and hieroglyphic writing.

**The Gutenberg Galaxy (1962)**

Marshall McLuhan’s The Mechanical Bride: Folklore of Industrial Man (1951) is a study in the field now known as popular culture. His interest in the critical study of popular culture was influenced by the 1933 book Culture and Environment by F.R. Leavis and Denys Thompson, and the title The Mechanical Bride is derived from a piece by the Dadaist artist, Marcel Duchamp.

The Gutenberg Galaxy: The Making of Typographic Man (written in 1961, first published in Canada by University of Toronto Press in 1962) is a study in the fields of oral culture, print culture, cultural studies, and media ecology. Throughout the book, McLuhan takes pains to reveal how communication technology (alphabetic writing, the printing press, and the electronic media) affects cognitive organization, which in turn has profound ramifications for social organization:

...[I]f a new technology extends one or more of our senses outside us into the social world, then new ratios among all of our senses will occur in that particular culture. It is comparable to what happens when a new note is added to a melody. And when the sense ratios alter in any culture then what had appeared lucid before may suddenly become opaque, and what had been vague or opaque will become translucent.

**Understanding Media: The Extensions of Man (1964)**

McLuhan’s most widely known work, Understanding Media: The Extensions of Man (1964), is a study in media theory. In it McLuhan proposed that media themselves, not the content they carry, should be the focus of study — popularly quoted as "the medium is the message". McLuhan’s insight was that a medium affects the society in which it plays a role not by the content delivered over the medium, but by the characteristics of the medium itself. McLuhan pointed to the light bulb as a clear demonstration of this concept. A light bulb does not have content in the way that a newspaper has articles or a television has programs, yet it is a medium that has a social effect; that is, a light bulb enables people to create spaces during nighttime that would otherwise be enveloped by darkness. He describes the light bulb as a medium without any content. McLuhan states that "a light bulb creates an environment by its mere presence." More controversially, he postulated that content had little effect on society — in other words, it did not matter if television broadcasts children’s shows or violent programming, to illustrate one example — the effect of television on society would be identical. He noted that all media have characteristics that
engage the viewer in different ways; for instance, a passage in a book could be reread at will, but a movie had to be screened again in its entirety to study any individual part of it.

**Medium theory**

Medium theory is the name assigned to a variety of approaches used to examine how the means of expression of human communication impact the meaning(s) of human communication(s).

Joshua Meyrowitz originated the term in his 1985 book, No Sense of Place. Other scholars with work relevant to "medium theory" include Marshall McLuhan (1963, 1966, 1988) and Neil Postman (1985). Currently, medium theory occupies a marginal position within U.S. communication and media studies (Croteau & Hoynes, 2003:305). The majority of U.S. communication and media studies place their emphasis on the content of communication (e.g., sex and violence) not the medium of communications. In Canada and elsewhere, the theory continues to inform studies that assess large-scale social changes that follow the adoption of a new medium. German Media Theory operates along similar lines and draws some influence from McLuhan, though it occupies a more central location in German academia.

Joshua Meyrowitz (1985) uses the term 'medium theory' to refer to the body of literature that focuses on the technological aspects of media beyond their content. It aims to look beyond the content to the medium which reveals the key to its social impact (Croteau & Hoynes, 2003:305).

**McLuhan's Message**

Marshall McLuhan is the most widely read literary theorist and is best known for his claim "the medium is the message". McLuhan believed that we should observe not only the media itself but 'the ways in which each new medium disrupts tradition and reshapes social life' (Croteau & Hoynes 2003:307). McLuhan believed that the social impact of the media was that they became 'an extension of our senses, and alter our social world' (Croteau & Hoynes, 2003:307). In his book The Gutenberg Galaxy (1962) he argued that when new media technologies were introduced into society, the balance of our senses were reworked, highlighting some at the expense of others. For example, print intensified the visual and separated it from our other senses; in particular sound. "McLuhan even argued that print media helped create a sensory environment that produced Western capitalist societies - an environment that was bureaucratic and organized around mass production, an ideology of individualism, and a commitment to the nation-state as the fundamental social unit."
Types of Communication

Interpersonal communication

Interpersonal communication is usually defined by communication scholars in numerous ways, usually describing participants who are dependent upon one another and have a shared history. It can involve one on one conversations or individuals interacting with many people within a society. It helps us understand how and why people behave and communicate in different ways to construct and negotiate a social reality. While interpersonal communication can be defined as its own area of study, it also occurs within other contexts like groups and organizations.

Interpersonal communication includes message sending and message reception between two or more individuals. This can include all aspects of communication such as listening, persuading, asserting, nonverbal communication, and more. A primary concept of interpersonal communication looks at communicative acts when there are few individuals involved unlike areas of communication such as group interaction, where there may be a large number of individuals involved in a communicative act.

Individuals also communicate on different interpersonal levels depending on who they are engaging in communication with. For example, if an individual is communicating with a family member, that communication will more than likely differ from the type of communication used when engaged in a communicative act with a friend or significant other.

Overall, interpersonal communication can be conducted using both direct and indirect mediums of communication such as face-to-face interaction, as well as computer-mediated-communication. Successful interpersonal communication assumes that both the message senders and the message receivers will interpret and understand the messages being sent on a level of understood meanings and implications.

Communication channels

Communication channels, the conceptualization of media that carry messages from sender to receiver, take two distinct forms: direct and indirect. It can be one of them.

Direct channels

Direct channels are obvious and easily recognized by the receiver. Both verbal and non-verbal information is completely controlled by the sender. Verbal channels rely on words, as in written or spoken communication. Non-verbal channels encompass facial expressions, controlled body movements (police present hand gestures to control traffic), color (red signals 'stop', green signals 'go'), and sound (warning sirens).
Indirect channels

Indirect channels are usually recognized subconsciously by the receiver, and are not always under direct control of the sender. Body language, comprising most of the indirect channel, may inadvertently reveal one's true emotions, and thereby either unintentionally taint or bolster the believability of any intended verbal message. Subconscious reception and interpretation of these signals is often described with arbitrary terms like gut-feeling, hunch, or premonition.

Context

Context refers to the conditions that precede or surround the communication. It consists of present or past events from which the meaning of the message is derived, though it may also, in the case of written communications, depend upon the statements preceding and following the quotation in question. Immediate surroundings may also color the perceived meaning of words; normally safe discourse may easily become contextually ambiguous or offensive in a restroom or shower hall. These influences do not constitute the message by themselves, but rather these extraneous nuances subtly change the message's effective meaning. Ultimately, context includes the entire world, but usually refers to salient factors such as the following:

- Physical milieu: the season or weather, current physical location and environment
- Situational milieu: classroom, military conflict, supermarket checkout
- Cultural and linguistic backgrounds
- Developmental progress (maturity) or emotional state
- Complementary or contrasting roles: boss and employee; teacher and student; parent, child, and spouse; friend or enemy; partner or competitor

Theories

Uncertainty reduction theory

Uncertainty reduction theory comes from the sociopsychological perspective. It addresses the basic process of how we gain knowledge about other people. According to the theory people have difficulty with uncertainty, they want to be able to predict behavior and therefore they are motivated to seek more information about people.

The theory argues that strangers, upon meeting, go through certain steps and checkpoints in order to reduce uncertainty about each other and form an idea of whether one likes or dislikes the other. As we communicate we are making plans to accomplish our goals. At highly uncertain moments we become more vigilant and rely more on data available in the situation. When we are less certain we lose confidence in our own plans and make contingency plans. The theory also says that higher levels of uncertainty create distance between people and that non-verbal expressiveness tends to help reduce uncertainty.
Constructs include level of uncertainty, nature of the relationship and ways to reduce uncertainty. Underlying assumptions include that an individual will cognitively process the existence of uncertainty and take steps to reduce it. The boundary conditions for this theory are that there must be some kind of outside social situation triggering and internal cognitive process.

According to the theory we reduce uncertainty in three ways:

1. Passive strategies: observing the person.
2. Active strategies: asking others about the person or looking up info.
3. Interactive strategies: asking questions, self-disclosure.

**Social exchange theory**

Social exchange theory falls under the symbolic interaction perspective. The theory predicts, explains and describes when and why people reveal certain information about themselves to others. Social exchange theory argues the major force in interpersonal relationships is the satisfaction of both people’s self-interest. Theorists say self-interest is not necessarily a bad thing and that it can actually enhance relationships.

According to the theory human interaction is like an economic transaction, in that you may seek to maximize rewards and minimize costs. You will reveal information about yourself when the cost-rewards ratio is acceptable to you. As long as rewards continue to outweigh costs a couple will become increasingly intimate by sharing more and more personal information. The constructs of this theory include discloser, relational expectations, and perceived rewards or costs in the relationship.

The underlying assumptions include that humans weigh out rewards versus costs when developing a relationship. The boundary conditions for this theory are that at least two people must be having some type of interaction.

Social exchange also ties in closely with social penetration theory.

**Symbolic interaction**

Symbolic interaction comes from the sociocultural perspective in that it relies on the creation of shared meaning through interactions with others. This theory focuses on the ways in which people form meaning and structure in society through interactions. People are motivated to act based on the meanings they assign to people, things, and events.

Symbolic interaction argues the world is made up of social objects that are named and have socially determined meanings. When people interact over time they come to shared meaning for certain terms and actions and thus come to understand events in particular ways. There are three main concepts in this theory: society, self and mind.
Society: Social acts (which create meaning) involve an initial gesture from one individual, a response to that gesture from another and a result.

Self: Self image comes from interaction with others based on others perceptions. A person makes sense of the world and defines their “self” through social interactions. One ‘s self is a significant object and like all social objects it is defined through social interactions with others.

Mind: Your ability to use significant symbols to respond to yourself makes thinking possible. You define objects in terms of how you might react to them. Objects become what they are through our symbolic minding process.

Constructs for this theory include creation of meaning, social norms, human interactions, and signs and symbols. An underlying assumption for this theory is that meaning and social reality are shaped from interactions with others and that some kind of shared meaning is reached. The boundary conditions for this theory are there must be numerous people communicating and interacting and thus assigning meaning to situations or objects.

Relational dialectics theory

In order to understand relational dialectics theory, we must first understand specifically what encompasses the term discourse. Therefore, discourses are “systems of meaning that are uttered whenever we make intelligible utterances aloud with others or in our heads when we hold internal conversations”. Now, taking the term discourse and coupling it with Relational Dialectics Theory, it is assumed that this theory “emerges from the interplay of competing discourses”.

This theory also poses the primary assumption that, “Dialogue is simultaneously unity and difference”. Therefore, these assumptions insinuate the concept of creating meaning within ourselves and others when we communicate, however, it also shows how the meanings within our conversations may be interpreted, understood, and of course misunderstood. Hence, the creation and interpretations we find in our communicative messages may create strains in our communicative acts that can be termed as ‘dialectical tensions.’

So, if we assume the stance that all of our discourse, whether in external conversations or internally within ourselves, has competing properties, then we can take relational dialectics theory and look at what the competing discourses are in our conversations, and then analyze how this may have an effect on various aspects of our lives. Numerous examples of this can be seen in the daily communicative acts we participate in. However, dialectical tensions within our discourses can most likely be seen in interpersonal communication due to the close nature of interpersonal relationships. The well known proverb “opposites attract, but Birds of a feather flock together” exemplifies these dialectical tensions.

The three relational dialectics:
In order to understand relational dialectics theory, one must also be aware of the assumption that there are three different types of relational dialectics. These consist of connectedness and separateness, certainty and uncertainty, and openness and closedness.

**Connectedness and separateness**

Most individuals naturally desire to have a close bond in the interpersonal relationships we are a part of. However, it is also assumed that no relationship can be enduring without the individuals involved within it also having their time alone to themselves. Individuals who are only defined by a specific relationship they are a part of can result in the loss of individual identity.

**Certainty and uncertainty**

Individuals desire a sense of assurance and predictability in the interpersonal relationships they are a part of. However, they also desire having a variety in their interactions that come from having spontaneity and mystery within their relationships as well. Much research has shown that relationships which become bland and monotonous are not desirable.

**Openness and closedness**

In close interpersonal relationships, individuals may often feel a pressure to reveal personal information. This assumption can be supported if one looks at the postulations within social penetration theory, which is another theory used often within the study of communication. This tension may also spawn a natural desire to keep an amount of personal privacy from other individuals. The struggle in this sense, illustrates the essence of relational dialectics.

**Coordinated management of meaning**

Coordinated management of meaning is a theory assuming that two individuals engaging in an interaction are each constructing their own interpretation and perception behind what a conversation means. A core assumption within this theory includes the belief that all individuals interact based on rules that are expected to be followed while engaging in communication. “Individuals within any social situation first want to understand what is going on and apply rules to figure things out”.

There are two different types of rules that individuals can apply in any communicative situation. These include constitutive and regulative rules.

**Constitutive rules** – “are essentially rules of meaning used by communicators to interpret or understand an event or message”.

**Regulative rules** – “are essentially rules of action used to determine how to respond or behave”.

Compiled by Amit Shekhar   Email: numerons@gmail.com   Contact: +91-9560344245
An example of this can be seen if one thinks of a hypothetical situation in which two individuals are engaging in conversation. If one individual sends a message to the other, the message receiver must then take that interaction and interpret what it means. Oftentimes this can be done on an almost instantaneous level because the interpretation rules applied to the situation are immediate and simple. However, there are also times when one may have to search for an appropriate interpretation of the ‘rules’ within an interaction. This simply depends on each communicator’s previous beliefs and perceptions within a given context and how they can apply these rules to the current communicative interaction. Important to understand within the constructs of this theory is the fact that these ‘rules’ of meaning “are always chosen within a context”. Furthermore, the context of a situation can be understood as a framework for interpreting specific events.

The authors of this theory believe that there are a number of different context an individual can refer to when interpreting a communicative event. These include the relationship context, the episode context, the self-concept context, and the archetype context.

**Relationship context** – This context assumes that there are mutual expectations between individuals who are members of a group.

**Episode context** – This context simply refers to a specific event in which the communicative act is taking place.

**Self-concept context** – This context involves one’s sense of self, or an individual’s personal ‘definition’ of him/herself.

**Archetype context** – This context is essentially one’s image of what his or her belief consists of regarding general truths within communicative exchanges.

Furthermore, Pearce and Cronen believe that these specific contexts exist in a hierarchical fashion. This theory assumes that the bottom level of this hierarchy consists of the communicative act. Next, the hierarchy exists within the relationship context, then the episode context, followed by the self-concept context, and finally the archetype context.

**Social penetration theory**

Oftentimes, when a relationship begins to develop, it is customary for the individuals within the relationship to undergo a process of self-disclosure. Self disclosure is “sharing information with others that they would not normally know or discover. Self-disclosure involves risk and vulnerability on the part of the person sharing the information”. The reason that self disclosure is labeled as risky is because oftentimes, individuals undergo a sense of uncertainty and susceptibility in revealing personal information that has the possibility of being judged in a negative way by the receiver. Hence the reason that face-to-face communication must evolve in stages when an initial relationship develops.
There are four different stages that social penetration theory encompasses. These include the orientation, exploratory affective exchange, affective exchange, and stable exchange.

**Orientation stage:** Within the orientation stage, individuals exchange very little amounts of information and they are very cautious in their interactions.

**Exploratory affective stage:** Next, in the exploratory affective stage, individuals become somewhat more friendly and relaxed with their communication styles.

**Affective exchange:** In the third stage, the affective exchange, there is a high amount of open communication between individuals and typically these relationships consist of close friends or even romantic partners.

**Stable stage:** The final stage, the stable stage, simply consists of continued expressions of open and personal types of interaction.

Also important to note, is the fact that due to current communicative exchanges involving a high amount of computer mediated contexts in which communication occurs, this area of communication should be addressed in regard to Social Penetration Theory as well. Online communication seems to follow a different set of rules. Because much of online communication between people occurs on an anonymous level, individuals are allowed the freedom of foregoing the interpersonal ‘rules’ of self disclosure. Rather than slowly disclosing personal thoughts, emotions, and feelings to others, anonymous individuals online are able to disclose personal information immediately and without the consequence of having their identity revealed.

Furthermore, this theory assumes the stance that the decision making process of how much information an individual chooses to self disclose is ultimately rooted in an analysis of the costs and rewards that an individual may acquire when choosing to share personal information.

An example of Social Penetration theory can be seen when one thinks of a hypothetical situation such as meeting someone for the first time. When two individuals meet for the first time, it is the cultural expectation that only impersonal information will be exchanged. This could include information such as names, occupations, age of the conversation participants, as well as various other impersonal information. However, if both members participating in the dialogic exchange decide that they would like to continue or further the relationship; with the continuation of message exchanges, the more personal the information exchanged will become.

**Relational patterns of interaction theory**

Relational Patterns of Interaction Theory of the cybernetic tradition, studies how relationships are defined by peoples’ interaction during communication. Gregory Bateson, Paul Watzlawick, et al. laid the groundwork for this theory and went on to become known
as the Palo Alto Group. Their theory became the foundation from which scholars in the field of communication approached the study of relationships.

**Ubiquitous communication** - The Palo Alto Group maintains that a person’s presence alone results in them, consciously or not, expressing things about themselves and their relationships with others (i.e., communicating). A person cannot avoid interacting, and even if they do, their avoidance may be read as a statement by others. This ubiquitous interaction leads to the establishment of “expectations” and “patterns” which are used to determine and explain relationship types.

**Expectations** - Individuals enter communication with others having established expectations for their own behavior as well as the behavior of those they are communicating with. These expectations are either reinforced during the interaction, or new expectations are established which will be used in future interactions. These new expectations are created by new patterns of interaction, established expectations are a result of established patterns of interaction.

**Patterns of interaction** - Established patterns of interaction are created when a trend occurs regarding how two people interact with each other. There are two patterns of particular importance to the theory which form two kinds of relationships. These relationships are, symmetrical relationships and complementary relationships.

**Symmetrical relationships** - These relationships are established when the pattern of interaction is defined by two people responding to one and other in the same way. This is a common pattern of interaction within power struggles.

**Complementary relationships** - These relationships are established when the pattern of interaction is defined by two people responding to one and other in opposing ways. An example of such a relationship would be when one person is argumentative while the other is quiet.

**Relational control** - Relational control refers to who, within a relationship, is in control of it. The pattern of behavior between partners over time, not any individual’s behavior, defines the control within a relationship. Patterns of behavior involve individuals’ responses to others’ assertions. There are three kinds of responses: One-down responses are submissive to, or accepting of, another’s assertions. One-up responses are in opposition to, or counter, another’s assertions. One-across responses are neutral in nature.

**Complementary exchanges** - A complementary exchange occurs when a partner asserts a one-up message which the other partner responds to with a one-down response. When complementary exchanges are frequently occurring within a relationship, and the parties at each end of the exchange tend to remain uniform, it is a good indication of a complementary relationship existing.

**Symmetrical exchanges** - Symmetrical exchanges occur when one partner’s assertion is countered with a reflective response. So, when a one-up assertion is met with a one-up
response, or when a one-down assertions is met with a one-down response, a symmetrical exchange occurs. When symmetrical exchanges are frequently occurring within a relationship, it is a good indication of a symmetrical relationship existing.

Identity management theory

Falling under the Socio-Cultural tradition and developed by Tadasu Todd Imahori and William R. Cupach, identity-management theory explains the establishment, development, and maintenance of identities within relationships, as well as changes which occur to identities due to relationships.

Establishing identities - People establish their identities (or faces), and their partners, through a process referred to as “facework”. Everyone has a desired identity which they’re constantly working towards establishing. This desired identity can be both threatened and supported by attempting to negotiate a relational identity (the identity one shares with their partner). So, our desired identity is directly influenced by our relationships, and our relational identity by our desired individual identity.

Cultural influence - Identity-management pays significant attention to intercultural relationships and how they affect the relational and individual identities of those involved. How partners of different cultures negotiate with each other, in an effort to satisfy desires for adequate autonomous identities and relational identities, is important to identity-management theory. People take different approaches to coping with this problem of cultural influence.

Tensions within intercultural relationships - Identity freezing occurs when one partner feels like they’re being stereotyped and not recognized as a complex individual. This tends to occur early on in relationships, prior to partners becoming well acquainted with each other, and threatens individuals’ identities. Showing support for oneself, indicating positive aspects of one’s cultural identity, and having a good sense of humor are examples of coping mechanisms used by people who feel their identities are being frozen. It is also not uncommon for people in such positions to react negatively, and cope by stereotyping their partner, or totally avoiding the tension.

When tension is due to a partner feeling that their cultural identity is being ignored it is referred to as a nonsupport problem. This is a threat to one’s face, and individuals often cope with it in the same ways people cope with identity freezing.

Self-other face dialectic occurs when one partner wants to, but has trouble with, supporting their partner’s cultural identity while also asserting their own. They cope with this by standing their ground, giving in, alternating in their support of each identity, and also by avoiding the issue completely.

Relational stages of identity management - Identity management is an ongoing process which Imahori and Cupach define as having three relational stages. Typically, each stage is dealt with differently by couples.
The trial stage occurs at the beginning of an intercultural relationship when partners are beginning to explore their cultural differences. During this stage each partner is attempting to determine what cultural identities they want for the relationship. At this stage cultural differences are significant barriers to the relationship and it is critical for partners to avoid identity freezing and nonsupport. During this stage individuals are more willing to risk face threats to establish a balance necessary for the relationship.

The enmeshment stage occurs when a relational identity emerges with established common cultural features. During this stage the couple becomes more comfortable with their collective identity and the relationship in general.

The renegotiation stage sees couples working through identity issues and drawing on their past relational history while doing so. A strong relational identity has been established by this stage and couples have mastered dealing with cultural differences. It is at this stage that cultural difference become part of the relationships and not a tension within them.

Communication privacy management theory

Of the socio-cultural tradition, communication privacy management theory is concerned with how people negotiate openness and privacy in concern to communicated information. This theory focuses on how people in relationships manage boundaries which separate the public from the private.

Boundaries An individual’s private information is protected by the individual’s boundaries. The permeability of these boundaries are ever changing, and allow certain parts of the public, access to certain pieces of information belonging to the individual. This sharing occurs only when the individual has weighed their need to share the information against their need to protect themselves. This risk assessment is used by couples when evaluating their relationship boundaries. The disclosure of private information to a partner may result in greater intimacy, but it may also result in the discloser becoming more vulnerable.

Co-ownership of information When someone chooses to reveal private information to another person they are making that person a co-owner of the information. Co-ownership comes with rules, responsibilities, and rights which the discloser of the information and receiver of it negotiate. Examples of such rules would be: Can the information be disclosed? When can the information be disclosed? To whom can the information be disclosed? And how much of the information can be disclosed? The negotiation of these rules can be complex, the rules can be explicit as well as implicit, and they can be violated.

A rule based process Petronio views boundary management as a rule based process, not an individual decision. These rules, much like an individual’s decision to disclose information, are developed using the following criteria: risk assessment, cultural expectations, gender differences, personal motivations and situational demands. Certain criteria can be more prominent when managing boundaries depending on the context. For example, if you’re
called to testify in a court of law against the co-owner of information, and the cost of not testifying would be imprisonment, the situational demands are the primary criteria you’ll use for managing your boundaries. Some rules are more fixed than others but they’re all capable of changing under the right circumstances.

Boundary turbulence What Petronio refers to as “boundary turbulence” occurs when rules are not mutually understood by co-owners, and when a co-owner of information deliberately violates the rules. This usually results in some kind of conflict, is not uncommon, and often results in one party becoming more apprehensive about future revelation of information to the violator.

**Cognitive dissonance theory**

The theory of cognitive dissonance, part of the Cybernetic Tradition, explains how humans are consistency seekers and attempt to reduce their dissonance, or discomfort, in new situations. The theory was developed in the 1950s by Leon Festinger.

When individuals encounter new information or new experiences they categorize the information based on their preexisting attitudes, thoughts, and beliefs. If the new encounter does not coincide with their preexisting assumptions, then dissonance is likely to occur. When dissonance occurs, individuals are motivated to reduce the dissonance they experience by avoiding situations that would either cause the dissonance or increase the dissonance. For this reason, cognitive dissonance is considered a drive state that encourages motivation to achieve consonance and reduce dissonance. An example of cognitive dissonance would be if someone holds the belief that maintaining a healthy lifestyle is important, but they don’t regularly work out or eat healthy, they may experience dissonance between their beliefs and their actions. If there is a significant amount of dissonance, they may be motivated to change their attitudes and work out more or eat healthier foods. They may also be inclined to avoid situations that will point out the fact that their attitudes and beliefs are inconsistent, such as avoiding the gym or not reading health reports.

**The selection process**

1. Selective exposure- is a method for reducing dissonance that only seeking information that is consonant with ones current beliefs, thoughts, or actions.

2. Selective attention- is a method for reducing dissonance by only paying attention to particular information or parts of information that is consonant with current beliefs, thoughts, or actions.

3. Selective interpretation- is a method for reducing dissonance by interpreting ambiguous information so that it seems consistent with ones beliefs, thoughts, or actions.

4. Selective retention- when an individual only remembers information that is consistent with their current beliefs.
Types of cognitive relationships

According to cognitive dissonance theory there are three types of cognitive relationships: consonant relationships, dissonant relationships, and irrelevant relationships. Consonant relationships are when two elements, such as your beliefs and actions, are in equilibrium with each other or coincide. Dissonant relationships are when two elements are not in equilibrium and cause dissonance. Irrelevant relationships are when two elements do not possess a meaningful relationship with one another, they are unrelated and do not cause dissonance.

Attribution theory

Attribution Theory is part of the Sociopsychological Tradition and explains how individuals go through a process that makes inferences about observed behavior. Attribution theory assumes that we make attributions, or social judgments, as a way to clarify or predict behavior. Attribution theory assumes that we are sense-making creatures and that we draw conclusions of the actions that we observe.

Steps to the attribution process

1. The first step of the attribution process is to observe the behavior or action.

2. The second step is to make judgments of interactions and the intention of that particular action.

3. The last step of the attribution process is making the attribution which will be either internal, where the cause is related the person, or external, where the cause of the action is circumstantial.

An example of this process is when a student fails a test, an observer may choose to attribute their behavior to internal causes, such as they did not study because they are lazy or have poor work ethic. They might also attribute their behavior to external factors such as the test was too difficult or they had a lot of other stressful things going on in their life that caused them to be distracted. We also make attributions of our own behavior. Using this same example if it were you who received a failing test score you might make an internal attribution, such as “I just don’t understand this material” or you could make an external attribution, such as this test was just too difficult.

Fundamental attribution error

As we make attributions, we may fall victim to the fundamental attribution error which is when we overemphasize internal attributions for others and underestimate external attributions.
Actor-observer bias

Similar to the fundamental attribution error, we may overestimate external attributions for our own behavior and underestimate internal attributions.

Expectancy violations theory

Expectancy violations theory is part of the sociopsychological tradition, and explains the relationship between non-verbal message production and the interpretations people hold for those non-verbal behaviors. Individuals hold certain expectations for non-verbal behavior that is based on the social norms, past experience and situational aspects of that behavior. When expectations are either met or violated, we make assumptions of the behavior and judge them to be positive or negative.

Arousal

When a deviation of expectations occurs there is an increased interest in the situation, also known as arousal. There are two types of arousal: Cognitive arousal- our mental awareness of expectancy deviations Physical arousal- challenges our body faces as a result of expectancy deviations.

Reward valence

When an expectation is not met, we hold particular perceptions as to whether or not that violation is considered rewarding. How an individual evaluates the interaction will determine how they view the positive or negative impact of the violation.

Proxemics

A significant focus of expectancy violations theory is the concept of proxemics, or the study of individual use of personal space. There are four types of proxemic zones:

- Intimate distance- 0-18 inches
- Personal distance- 18 inches- 4 feet
- Social distance- 4-12 feet
- Public distance- 12 feet or more

Dyadic communication and Relationships

Dyadic communication is the part of a relationship that calls for "something to happen". Partners will either talk or argue with one another during this point of a relationship to bring about change. When partners talk or argue with one another the relationship may still survive at this point.
Intrapersonal communication

Intrapersonal communication is language use or thought internal to the communicator. It can be useful to envision intrapersonal communication occurring in the mind of the individual in a model which contains a sender, receiver, and feedback loop.

Although successful communication is generally defined as being between two or more individuals, issues concerning the useful nature of communicating with oneself and problems concerning communication with non-sentient entities such as computers have made some argue that this definition is too narrow.

In Communication: The Social Matrix of Psychiatry, Jurgen Ruesch and Gregory Bateson argue that intrapersonal communication is indeed a special case of interpersonal communication, as "dialogue is the foundation for all discourse."

Intrapersonal communication can encompass:

- Day-dreaming
- Nocturnal dreaming, including and especially lucid dreaming
- Speaking aloud (talking to oneself), reading aloud, repeating what one hears; the additional activities of speaking and hearing (in the third case of hearing again) what one thinks, reads or hears may increase concentration and retention. This is considered normal, and the extent to which it occurs varies from person to person. The time when there should be concern is when talking to oneself occurs outside of socially acceptable situations.
- Internal monologue, the semi-constant internal monologue one has with oneself at a conscious or semi-conscious level.
- Writing (by hand, or with a wordprocessor, etc.) one’s thoughts or observations: the additional activities, on top of thinking, of writing and reading back may again increase self-understanding ("How do I know what I mean until I see what I say?") and concentration. It aids ordering one’s thoughts; in addition it produces a record that can be used later again. Copying text to aid memorizing also falls in this category.
- Writing need not be limited to words in a natural or even formal language. Doodling also falls into this category. Children may be communicating intrapersonally when they doodle and adults sometimes argue that they do.
- Making gestures while thinking: the additional activity, on top of thinking, of body motions, may again increase concentration, assist in problem solving, and assist memory.
- Again, routinely observed in children, the equivalent of doodling without writing. Everyday images are transformed by gestures that form a new lens through which to view the images.
- Sense-making (see Karl Weick) e.g. interpreting maps, texts, signs, and symbols
- Interpreting non-verbal communication (see Albert Mehrabian) e.g. gestures, eye contact
Communication between body parts; e.g. "My stomach is telling me it's time for lunch."

Avoidance of silence

Joseph Jordania suggested that talking to yourself can be used to avoid silence. According to him, our ancestors, like many other social animals, used contact calls to maintain constant contact with the members of the group, and a signal of danger was communicated through becoming silent and freezing. Because of our evolutionary history prolonged silence is perceived as a sign of danger and triggers a feeling of uneasiness and fear. Jordania suggested talking to yourself is only one of the ways to fill in prolonged gaps of silence in humans. Other ways of filling in prolonged silence are humming, whistling, finger drumming, or having TV, radio or music on all the time.

Criticism of the concept

In 1992, a chapter in Communication Yearbook #15, argued that "intrapersonal communication" is a flawed concept. The chapter first itemized the various definitions. Intrapersonal communication, it appears, arises from a series of logical and linguistic improprieties. The descriptor itself, 'intrapersonal communication' is ambiguous: many definitions appear to be circular since they borrow, apply and thereby distort conceptual features (e.g., sender, receiver, message, dialogue) drawn from normal inter-person communication; unknown entities or person-parts allegedly conduct the 'intrapersonal' exchange; in many cases, a very private language is posited which, upon analysis, turns out to be totally inaccessible and ultimately indefensible. In general, intrapersonal communication appears to arise from the tendency to interpret the inner mental processes that precede and accompany our communicative behaviors as if they too were yet another kind of communication process. The overall point is that this reconstruction of our inner mental processes in the language and idioms of everyday public conversation is highly questionable, tenuous at best.

Business communication

Business Communication used to promote a product, service, or organization; relay information within the business; or deal with legal and similar issues. It is also a means of relaying between a supply chain, for example the consumer and manufacturer.

Business Communication is known simply as "Communications". It encompasses a variety of topics, including Marketing, Branding, Customer relations, Consumer behaviour, Advertising, Public relations, Corporate communication, Community engagement, Research & Measurement, Reputation management, Interpersonal communication, Employee engagement, Online communication, and Event management. It is closely related to the fields of professional communication and technical communication.
In business, the term communications encompasses various channels of communication, including the Internet, Print (Publications), Radio, Television, Ambient media, Outdoor, and Word of mouth.

Business Communication can also refer to internal communication. A communications director will typically manage internal communication and craft messages sent to employees. It is vital that internal communications are managed properly because a poorly crafted or managed message could foster distrust or hostility from employees.

Business Communication is a common topic included in the curricula of Masters of Business Administration (MBA) programs of many universities. As well, many community colleges and universities offer degrees in Communications.

There are several methods of business communication, including:

- Web-based communication - for better and improved communication, anywhere anytime ...
- video conferencing which allow people in different locations to hold interactive meetings;
- e-mails, which provide an instantaneous medium of written communication worldwide;
- Reports - important in documenting the activities of any department;
- Presentations - very popular method of communication in all types of organizations, usually involving audiovisual material, like copies of reports, or material prepared in Microsoft PowerPoint or Adobe Flash;
- telephoned meetings, which allow for long distance speech;
- forum boards, which allow people to instantly post information at a centralized location; and
- face-to-face meetings, which are personal and should be succeeded by a written followup.

Business communication is somewhat different and unique rather from other type of communication since the purpose of business is to get profit. Thus to make good way for profit the communicator should develop good communication skills. Everyone knows that in the present day trends the knowledge alone won't be a fruitful one to have sustainable development. By knowing the importance of communication many organisations started training their employees in betterment of Communication techniques.

Essentially due to globalisation the world has become a Global village. Thus here the importance of cross cultural communication plays a vital role. Since each and every nations has their own meaning for each and every non verbal actions.

The way we appear speaks a lot about us in business communication. A neat appearance is half done verbal communication. But developing communication is not a day work, it needs constant yearly practise. There are several ways to get trained in excelling business
communication such 1. by our own, 2. by practising from trainers, 3. by internet contents, 4. by books.

Organizations

Founded in 1936 by Shankar with the Association for Business Communication (ABC), originally called the Association of College Teachers of Business Writing, is “an international organization committed to fostering excellence in business communication scholarship, research, education, and practice.”

The IEEE Professional Communication Society (PCS) is dedicated to understanding and promoting effective communication in engineering, scientific, and other environments, including business environments. PCS’s academic journal, is one of the premier journals in Europe communication. The journal’s readers are engineers, writers, information designers, managers, and others working as scholars, educators, and practitioners who share an interest in the effective communication of technical and business information.

Corporate communication

Corporate communication is the message issued by a corporate organization, body, or institute to its publics. "Publics" can be both internal (employees, stakeholders, i.e. share and stock holders) and external (agencies, channel partners, media, government, industry bodies and institutes, educational and general public).

An organization must communicate the same message to all its stakeholders, to transmit coherence, credibility and ethic. If any of these essentials is missing, the whole organization may fail. Corporate Communications help organizations explain their mission, combine its many visions and values into a cohesive message to stakeholders.

According to the book Essentials of Corporate Communication by Cees van Riel and Charles Pombrun the term Corporate Communication can be defined as the set of activities involved in managing and orchestrating all internal and external communications aimed at creating favorable starting points with stakeholders on which the company depends. Corporate communication consists of the dissemination of information by a variety of specialists and generalists in an organization, with the common goal of enhancing the organization’s ability to retain its license to operate.

As Jackson (1987) remarks:

"Note that it is corporate communication — without a final "s". Tired of being called on to fix the company switchboard, recommend an answering machine or meet a computer salesman, I long ago adopted this form as being more accurate and left communications to the telecommunications specialists. It’s a small point but another attempt to bring clarity out of confusion."
The concept of corporate communication could be seen as an integrative communication structure linking stakeholders to the organization. A corporate communication structure is a system which enables organizations to strategically orchestrate all types of communication.

**Types of communication**

There are three principal clusters of task-related communication activity within organizations. They are typically classified as management communications, marketing communications, and organizational communications.

Management communications are communications between management and its internal and external audiences. To support management communications, organizations rely heavily on specialists in marketing communications and organizational communications. Marketing communications get the bulk of the budgets in most organizations, and consist of product advertising, direct mail, personal selling, and sponsorship activities. They are supported by organizational communications from specialists in public relations, public affairs, investor relations, environmental communications, corporate advertising, and employee communications. Corporate communication encompasses management communications, marketing communications, and organizational communications. Corporate communication implies a coherent approach to development of communications in organizations, so communication specialists can standardize communications by creating a common strategic framework.

**What corporate communication encodes and promotes**

- Strong corporate culture
- Coherent corporate identity
- Reasonable corporate philosophy
- Genuine sense of corporate citizenship
- An appropriate and professional relationship with the press, including quick, responsible ways of communicating in crises
- Understanding of communication tools and technologies
- Sophisticated approaches to global communications

How an organization communicates with its employees, its extended audiences, the press and its customers brings its values to life. Corporate communication is all about managing perceptions and ensuring:

- Effective and timely dissemination of information
- Positive corporate image
- Smooth and affirmative relationship with stakeholders

Be it a corporate body, company, organization, institution, non-governmental organization or governmental body, all need a respectable image and reputation. In today’s increasing competition, easy access to information and the media explosion, reputation management
has gained even more importance. Therefore, corporate communication has become a significant asset to corporate survival.

Gone are the days when corporate communication merely meant 'wining and dining the client' - it has now emerged as a science and art of perception management.

**Key tasks of corporate communication**

The responsibilities of corporate communication are:

- to flesh out the profile of the "company behind the brand" (corporate branding);
- to minimize discrepancies between the company's desired identity and brand features;
- to delegate tasks in communication;
- to formulate and execute effective procedures to make decisions on communication matters;
- to mobilize internal and external support for corporate objectives
- to coordinate with international business firms

**Tools of corporate communication**

Integrated communication can be achieved in various ways. The main four practices are:

- application of visual identity systems (sometimes referred to as "house style")
- use of integrated marketing communications;
- reliance on coordinating teams;
- adoption of a centralized planning system.

**An overview of the corporate communication function**

According to studies, over half of the heads of corporate communication departments oversee communications functions that include internal/external communications, managing corporate reputation and brand, recruiting and retaining top talent, product launches, developing company strategy, corporate social responsibility, boosting investor/analyst perception, and managing crises.

**Corporate branding**

A corporate brand is the internal perception of a company that unites a group of products or services for the public under a single name, a shared visual identity, and a common set of symbols. The process of corporate branding consists creating favorable associations and positive reputation with both internal and external stakeholders. The purpose of a corporate branding initiative is to generate a positive halo over the products and businesses of the company, imparting more favorable impressions of those products and businesses.
Corporate identity/organizational identity

There are two approaches for Identity, respectively Corporate Identity and Organizational Identity.

"Corporate identity is the reality and uniqueness of an organization, which is integrally related to its external and internal image and reputation through corporate communication" (Gray and Balmer, 1998)

"Organizational Identity comprises those characteristics of an organization that its members believe are central, distinctive and enduring. That is, organizational identity consists of those attributes that members feel are fundamental to (central) and uniquely descriptive of (distinctive) the organization and that persist within the organization over time (enduring)." (Pratt and Foreman, 2000)

Four types of identity can be distinguished (Balmer, 1997; Balmer and Wilson, 1998):

- Perceived identity: The collection of attributes that are seen as typical for the ‘continuity, centrality and uniqueness’ of the organization in the eyes of its members.
- Projected identity: The self presentations of the organization’s attributes manifested in the implicit and explicit signals which the organization broadcasts to internal and external target audiences through communications and symbols.
- Desired identity (also called ‘ideal’ identity): The idealized picture that top managers hold of what the organization could evolve into under their leadership.
- Applied identity: The signals that an organization broadcasts both consciously and unconsciously through behaviors and initiatives at all levels within the organization.

Corporate responsibility

Corporate responsibility (often referred to as corporate social responsibility), corporate citizenship, sustainability, and even conscious capitalism are some of the terms bandied about the news media and corporate marketing efforts as companies jockey to win the trust and loyalty of constituents. Corporate responsibility (CR) constitutes an organization’s respect for society’s interests, demonstrated by taking ownership of the effects its activities have on key constituencies including customers, employees, shareholders, communities, and the environment, in all parts of their operations. In short, CR prompts a corporation to look beyond its traditional bottom line, to the social implications of its business. (Argenti, 2009;)

Corporate reputation

Reputations are overall assessments of organizations by their stakeholders. They are aggregate perceptions by stakeholders of an organization’s ability to fulfill their expectations, whether these stakeholders are interested in buying the company’s products, working for the company, or investing in the company’s shares.
In 2000, the US-based Council of PR Firms identified seven programs developed by either media organizations or market research firms, used by companies to assess or benchmark their corporate reputations. Of these, only four are conducted regularly and have broad visibility:

"America’s Most Admired Companies" by Fortune Magazine;
The "Brand Asset Valuator" by Young & Rubicam;
"RepTrak" by Reputation Institute;
"Best Global Brands" by Interbrand.

Crisis communications

Corporate reputation is formed by the firm’s various publics based on information and experience. Different publics consider different informational cues, such as cues considered by customers of a beverage firm. Focus groups and surveys among consumers help assay corporate reputation. This assay can be used to track the evolution of the corporate reputation of a firm over time.

Internal/employee communications

Internal communications in the 21st century is more than the memos, publications, and broadcasts that comprise it; it’s about building a corporate culture on values that drive organizational excellence.

Investor relations

The investor relations (IR) function is used by companies which publicly trade shares on a stock exchange. In such companies, the purpose of the IR specialist is to interface with current and potential financial stakeholders—namely retail investors, institutional investors, and financial analysts.

Media relations

To build better relationships with the media, organizations must cultivate positive relations with influential members of the media. This task might be handled by employees within the company’s media relations department or handled by a public relations firm.

Company/spokesperson profiling

These "public faces" are considered authorities in their respective sector/field and ensure the company/organization is in the limelight.

- Managing content of corporate websites and/or other external touch points
- Managing corporate publications - for the external world
- Managing print media
**Corporate communication officers**

Recent research on the corporate communication function reports that corporate communication officers (CCOs) in Global Fortune 500 companies tend to have average tenures of about 4.5 years and that nearly one-half (48 percent) report to the Chief Executive Officer. CCOs say that approximately 42 percent of their job is strategic and 58 percent is tactical. Over the next year, they will be focusing more on social responsibility, social media and reputation. The research done by Weber Shandwick and Spencer Stuart found distinct differences between CCOs in Most Admired companies versus Contender companies.

**Mass communication**

Mass communication is the term used to describe the academic study of the various means by which individuals and entities relay information through mass media to large segments of the population at the same time. It is usually understood to relate to newspaper and magazine publishing, radio, television and film, as these are used both for disseminating news and for advertising.

**Field of study**

Mass communication research includes media institutions and processes such as diffusion of information, and media effects such as persuasion or manipulation of public opinion. In the United States, for instance, several university journalism departments were remodeled into schools or colleges of mass communication or "journalism and mass communication".

In addition to studying practical skills of journalism, public relations or advertising, they offer programs on "mass communication" or "mass communication research." The latter is often the title given to doctoral studies in such schools, whether the focus of the student’s research is journalism practice, history, law or media effects. Departmental structures within such colleges may separate research and instruction in professional or technical aspects of mass communication. With the increased role of the Internet in delivering news and information, mass communication studies and media organizations tend to focus on the convergence of publishing, broadcasting and digital communication. The academic mass communication discipline historically differs from media studies and communication studies programs with roots in departments of theatre, film or speech, and with more interest in "qualitative," interpretive theory, critical or cultural approaches to communication study. In contrast, many mass communication programs historically lean toward empirical analysis and quantitative research—from statistical content analysis of media messages to survey research, public opinion polling, and experimental research. Interest in "New Media" and "Computer Mediated Communication" is growing much faster than educational institutions can assimilate it. So far, traditional classes and degree programs have not been able to accommodate new shifts of the paradigm in communication technologies. Although national standards for the study of interactive
media have been present in the U.K since the mid-nineties, course work in these areas
tends to vary significantly from university to university. Graduates of Mass Communication
programs work in a variety of fields in traditional news media and publishing, advertising,
public relations and research institutes. Such programs are accredited by the Accrediting
Council on Education in Journalism and Mass Communication ACEJMC.

The Association for Education in Journalism and Mass Communication AEJMC, is the major
membership organization for academics in the field, offering regional and national
conferences and refereed publications. The International Communication Association ICA, and National Communication Association (formerly the Speech Communication Association) include divisions and publications that overlap with those of
AEJMC, but AEJMC historically has stronger ties to the mass communication professions in
the United States.

The terms 'Mass' and 'Communication'

The term 'mass' denotes great volume, range or extent (of people or production) and
reception of messages. McQuail: McQuail's Mass Communication Theory, p. 13. The
important point about 'mass' is not that a given number of individuals receives the
products, but rather that the products are available in principle to a plurality of

The term 'mass' suggests that the recipients of media products constitute a vast sea of
passive, undifferentiated individuals. This is an image associated with some earlier
critiques of 'mass culture' and Mass society, which generally assumed that the development
of mass communication has had a largely negative impact on modern social life, creating a
kind of bland and homogeneous culture which entertains individuals without challenging
them. Thompson: The Media and Modernity, pp. 13-14. However, with the advancement in
Media Technology, people are no longer receiving gratification without questioning the
are engaging themselves more with media products such as computers, cell phones and
Internet.

These have gradually became vital tools for communications in society today. The aspect of
'communication' refers to the giving and taking of meaning, the transmission and reception
of messages. The word 'communication' is really equated with 'transmission', as viewed by
the sender, rather than in the fuller meaning, which includes the notions of response,
are produced by one set of individuals and transmitted to others who are typically situated
in settings that are spatially and temporally remote from the original context of production.
Therefore, the term 'communication' in this context masks the social and industrial nature
of the media, promoting a tendency to think of them as interpersonal
communication. Hartley: "Mass communication". Furthermore, it is known that recipients
today do have some capacity to intervene in and contribute to the course and content of the
communicative process. Thompson: The Media and Modernity, p. 14. They are being both
active and creative towards the messages that they are conveyed of. With the complement
of the cyberspace supported by the Internet, not only that recipients are participants in a structured process of symbolic transmission. Thompson: The Media and Modernity, p. 14., constraints such as time and space are reordered and eliminated. 'Mass communication' can be seen as institutionalized production and generalized diffusion of symbolic goods via the fixation and transmission of information or symbolic content. It is known that the systems of information codification has shifted from analog to digital. Thompson: The Media and Modernity, pp. 14-15. This has indeed advanced the communication between individuals. With the existence of Infrared, Bluetooth and Wi-Fi, cell phones are no longer solely a tool for audio transmission. We can transfer photos, music documents or even games and email at any time and anywhere. The development of media technology has indeed advanced the transmission rate and stability of information exchange.

Characteristics of Mass Communication: Five characteristics of mass communication have been identified by Cambridge University's John Thompson.

Firstly, it "comprises both technical and institutional methods of production and distribution." Thompson: The Media and Modernity, p. 15. This is evident throughout the history of the media, from print to the Internet, each suitable for commercial utility.

Secondly, it involves the "commodification of symbolic forms", Thompson: The Media and Modernity, p. 16. as the production of materials relies on its ability to manufacture and sell large quantities of the work. Just as radio stations rely on its time sold to advertisements, newspapers rely for the same reasons on its space.

Mass communication's third characteristic is the "separate contexts between the production and reception of information", Thompson: The Media and Modernity, p. 17. while the fourth is in its "reach to those ‘far removed’ in time and space, in comparison to the producers". Thompson: The Media and Modernity

Mass communication, which involves "information distribution". This is a "one to many" form of communication, whereby products are mass produced and disseminated to a great quantity of audiences. Thompson: The Media and Modernity, p. 18.

**Public speaking**

Public speaking is the process of speaking to a group of people in a structured, deliberate manner intended to inform, influence, or entertain the listeners. It is closely allied to "presenting", although the latter has more of a commercial connotation.

In public speaking, as in any form of communication, there are five basic elements, often expressed as "who is saying what to whom using what medium with what effects?" The purpose of public speaking can range from simply transmitting information, to motivating people to act, to simply telling a story. Good orators should be able to change the emotions of their listeners, not just inform them. Public speaking can also be considered a discourse community. Interpersonal communication and public speaking have several components
that embrace such things as motivational speaking, leadership/personal development, business, customer service, large group communication, and mass communication. Public speaking can be a powerful tool to use for purposes such as motivation, influence, persuasion, informing, translation, or simply entertaining. A confident speaker is more likely to use this as excitement and create effective speech thus increasing their overall ethos.

In current times, public speaking for business and commercial events is often done by professionals, with speakers contracted either independently, through representation by a speakers bureau paid on commission of 25-30%, or via a new crowdsourced model such as the speakerwiki.org website.

**History**

The first known work on the subject was written over 3000 years ago, and the principles elaborated within it were drawn from the practices and experience of orators in ancient Greece. In ancient Greece and Rome, oratory was studied as a component of rhetoric (that is, composition and delivery of speeches), and was an important skill in public and private life. Aristotle and Quintilian discussed oratory, and the subject, with definitive rules and models, was emphasised as a part of a liberal arts education during the Middle Ages and Renaissance.

The art of public speaking was first developed by the ancient Greeks. Greek oration is known from the works of classical antiquity. Greek orators spoke as on their own behalf rather as representatives of either a client or a constituency, and so any citizen who wished to succeed in court, in politics, or in social life had to learn techniques of public speaking. These skills were taught first by a group of self-styled "sophists" who were known to charge fees, to "make the weaker argument the stronger," and to make their students "better" through instruction in excellence. Plato, Aristotle, and Isocrates all developed theories of public speaking in opposition to the Sophists, and their ideas took on institutional form through the development of permanent schools where public speaking was taught. Though Greece eventually lost political sovereignty, the Greek culture of training in public speaking was adopted virtually wholesale by the Romans.

After the ascension of Rome, Greek techniques of public speaking were copied and modified by the Romans. Under Roman influence, instruction in rhetoric developed into a full curriculum including instruction in grammar (study of the poets), preliminary exercises (progymnasmata), and preparation of public speeches (declamation) in both forensic and deliberative genres. The Latin style was heavily influenced by Cicero, and involved a strong emphasis on a broad education in all areas of humanistic study (in the liberal arts, including philosophy), as well as on the use of wit and humor, on appeal to the listener's emotions, and on digressions, often used to explore general themes related to the specific topic of the speech. Oratory in the Roman empire, though less central to political life, remained important in law, and became (under the second Sophistic) an important form of entertainment, with famous orators or declaimers gaining great wealth and prestige for their skills.
This Latin style was the primary form of oration in the world until the beginning of the 20th century. After World War II there began a gradual depreciation of the Latin style of oration. With the rise of the scientific method and the emphasis on a "plain" style of speaking and writing, even formal oratory has become less polished and ornate than in the Classical period, though politicians in democracies today can still make or break their careers on the basis of a successful (or unsuccessful) speech. Abraham Lincoln, Adolf Hitler, Marcus Garvey, John F. Kennedy, and Bill Clinton have all advanced their careers in large part due to their skills in oratory.

These basic principles have undergone modification as societies, and cultures have changed, yet remained surprisingly uniform. The technology and the methods of this form of communication have traditionally been through oratory structure and rely on a large or sometimes somewhat small audience. However, new advancements in technology have allowed for more sophisticated communication to occur for speakers and public orators. The technological and media sources that assist the public speaking atmosphere include both videoconferencing and telecommunications. Videoconferencing is among one of the more recent technologies that is in a way revolutionizing the way that public speakers communicate to the masses. David M. Fetterman of Stanford University printed in his 1997 article Videoconferencing over the Internet: "Videoconferencing technology allows geographically disparate parties to hear and see each other usually through satellite or telephone communication systems". This technology is helpful for large conference meetings and face to face communication context, and is becoming more widespread across the world.

Training

Effective public speaking can be developed by joining a club such as Rostrum, Toastmasters International, Association of Speakers Clubs (ASC), Speaking Circles, POWERtalk International or Speakeasy Inc.in which members are assigned exercises to improve their speaking skills. Members learn by observation and practice, and hone their skills by listening to constructive suggestions followed by new public speaking exercises. These include:

- Oratory
- The use of gestures
- Control of the voice (inflection)
- Vocabulary, register, word choice
- Speaking notes, pitches
- Using humor
- Developing a relationship with the audience

The new millennium has seen a notable increase in the number of training solutions offered in the form of video and on-line courses. Video can provide significant training potential by revealing to the student actual examples of behaviors to emulate in addition to
verbal knowledge transfer. There are also numerous agencies who offer one to one training in the delivery of a speech.

**General**

The objectives of a public speaker’s presentation can range from simply transmitting information, to motivating people to act, to simply telling a story. Professional public speakers often engage in ongoing training and education to refine their craft. This may include seeking guidance to improve their speaking skills—such as learning better storytelling techniques, for example, or learning how to effectively use humor as a communication tool—as well as continuous research in their topic area of focus.

People who speak publicly in a professional capacity are paid a speaking fee. Professional public speakers may include ex-politicians, sports stars and other public figures. In the case of high profile personalities, the sum can be extraordinary.

The common fear of public speaking is called glossophobia (or, informally, "stage fright"), although many people simply confuse normal nerves and anxiety with a genuine phobia.

Public speaking and oration are sometimes considered some of the most importantly valued skills that an individual can possess. This skill can be used for almost anything. Most great speakers have a natural ability to display the skills and effectiveness that can help to engage and move an audience for whatever purpose. Language and rhetoric use are among two of the most important aspects of public speaking and interpersonal communication. Having knowledge and understanding of the use and purpose of communication can help to make a more effective speaker communicate their message in an effectual way.

Leaders such as Martin Luther King, Jr., Sukarno, and Adolf Hitler are notable examples of effective orators who used oratory to have a significant impact on society. The speeches of politicians are often widely analysed by both their supporters and detractors.

**Training for Effective Communication**

**Communications training**

Communications training provides necessary skills for individuals to be effective in business. Effective communication is vital for the success of personal interactions and for organizational communication. Communication skills are particular to various situations. It is thus imperative to undergo communications training to develop and improve communication skills related to various roles in organizations. Communications training must balance both theoretical, and practical skills required for good communication.

**Purpose**
In organizations, it is necessary to communicate with different sub-groups and overcome difficulties in effective communication. Since each sub-group has a unique sub-culture, an effective communications trainer may assist organizational members in improving communications between sub-groups of the organization. It is necessary to ensure that communications between individuals the various sub-cultures serve to meet the mission and goals of the organization. Communications training can assist leaders to develop the ability to perceive how various individuals and subgroups relate to each other and make appropriate interventions.

Types of skill development

- Listening skills
- Influence Skills
- Responding to conflict
- Customer service
- Assertiveness skills
- Negotiation
- Facilitation
- Report writing; business and technical writing
- Public speaking, effective presentation
- Speaking skills

Benefits

Business communication training: It is possible for developing the skills needed for business networking and enhance their communication skills. It helps in communicating the apt message to the appropriate person at the most right time and to effectively manage and develop assertive skills. It enable candidates to manage competently, maintain long-term relationships, form new alliances, meet new people and establish contact with them and develop relationship with them.

Corporate communications training: It is useful for corporate events and help in dealing with other corporate participants, besides being helpful for routine dealings.

Executive communication training: It focus on how to conduct meetings by helping to develop facilitation skills and through exceptional executive communication coaching, candidates learn how to open, manage, as well as end meetings.

Crisis communication training: It enables candidates to communicate while dealing with the various difficulties and emergencies that can arise including conflict management and change management. With training, candidates will be fit to come up with beneficial solutions for solving the crisis or conflict or make change/transition easier.

Public speaking training: It is very useful to make presentations, for developing their verbal communication skills so that it is possible to express their facts publicly with great
confidence. This is useful for even sales and marketing personnel who need to express things in the best possible way.

After undergoing communications training, candidates can evolve communications strategy that integrates with business plans and achieve effective workplace communication, enhance productivity, relate to others more efficiently, improve customer service, deal with difficult customer situations satisfactorily, make changes effectively and efficiently, unite employees and motivate them to achieve goals, build successful performance-oriented team and effectively make and communicate performance assessment of employees.

**Effective Training**

In order to maximize the benefits of instruction, some key points such as management training, identifying your audience, and up to date use of technology can be used to fully profit the managers as well as the members of the organization.

Training for management must be done on a regular basis gives an advantage to any institution since they can provide ongoing feedback to personnel in order to ensure the good function of the different components of an association. Leadership instruction as well as communication skills education are some examples of management training.

Identifying your audience, in this case, the format of the organization such as family business, small business, event, charity group, or simply meetings enables you to apply the required techniques get the most out of your training and preparation sessions.

As technology grows, it's important to keep your preparation up-to-date by using all means necessary. The Internet, computers as well as E-learning provide new insights to effective training and can be adapted to fit different needs for different companies.

It's also very important to get constant feedback from the members as well as having assessment strategies to ensure that the training that is being provided is useful and productive to not waste time and resources.

**Communication skills training**

Various types and forms of the Group Communication Skills Training are used all over the world for those who are trying to improve their communication (social, interpersonal, negotiating etc.) skills. Thousands of books and articles devoted to these topics are published every year. The training scheme based on the holistic Social Pedagogical Concept developed by the Prussian educational thinker Friedrich Diesterweg in the middle of the 19th century and on the Technology of Instruction Theory created by the Russian psychologist Piotr Galperin in the middle of the 20th century and developed by their followers is widely spread in Europe and used by social workers and psychologists for
children and for adults to improve their communication skills. The following article describes practical implementation of this schema.

The concept of transforming personal behavior from impulsive to reflexive level forms the basis of active social psychological education. It is accomplished through objectifying and assimilating to a wider spectrum of daily life models, patterns and communication. As soon as a person realizes the inconsistencies that his everyday impulsive social behavior has brought, he or she becomes conducive to change learning new behavioral models, patterns, approaches, and ways. These models and patterns form the basis for new mental actions that ensure better communications in daily activities than previously for the student. After learning these new models and patterns of social behavior, they are gradually assimilated and adapted into a person’s consciousness and transferred back to his or her unconscious impulsive level. Such transformations are accomplished under the direction and influence of the referent group and trainer.

**Forms of Communication Skills Training**

Among Communication Skills Training (CST) programs there are:

- partner style communications programs,
- conflict control programs,
- conducting business discussions programs, and
- public presentation programs, along with others.

**Process and structure of CST**

The standard sequence of Group CST consists of four phases:

- "Warming-up" the group to the working level and implementing group norms and standards;
- Objectifying and creating conditions in which the person becomes more sensitive to the opinions and actions of referent group members who facilitate the change to new and more reflexive behaviors;
- Implementing and learning new social behavioral techniques;
- Participating in role-playing games, group discussions and public presentations that demonstrate and enforce the positive effects of the change and the training.

**Methods, means and techniques of CST**

The basic means of Group CST are conducting role-playing games, discussions and exercises in groups of two and three. Each participant makes his or her own analysis of the group member’s behavior and provides feedback to the others.

Both verbal reactions and the playback of video or audio records of nonverbal reactions (e.g. motions, gestures, poses, mimics, and eye contact, voice and speech patterns) are used as the means of feedback. Such techniques are utilized for the following applications:
Establishing personal contact,
Active listening,
Reducing emotional tensions with the partner,
Defending one’s opinion, position, or point of view,
Discussing organization and administration,
Public presentations.

The main methods that are used for objectification and creating positive behavioral change are:

- Group analysis of the participant’s behavior in the role-playing games with hidden motive and/or conflict embedded in it; analysis of discussions with distributed roles, which minimizes self interest and leads to the development of joint solutions; and analysis of public presentations.

- Analysis of playbacks of recorded role-playing games, discussions, and presentations.

The Group in CST

The basic medium for the CST is a small group. For this very reason sometimes this kind of learning is named "Social Psychological Training". The best size for this group learning is 8–12 people.

The Trainer's Work – Rules and Behavior

Usually each trainer (mediator, facilitator) includes his or her own components and techniques in the educational process.

The primary goals of Group CST trainers are:

- Creating the social environmental conditions that facilitate improved behavior of each group member.
- Aiding in learning and mastering the new techniques and tactics of behavior.

As such, the trainer organizes group work in a way which motivates each participant to consider and accept a wider spectrum of positive daily life models, patterns and communication. It provides an opportunity for each group member to come to his or her own conclusion on his or her past and future behavioral responses. In order to reach this state of mind in a group member's consciousness the trainer must adhere to the following principles:

- Predominance of the process of learning above the results,
- Organization of learning in a manner where every participant utilizes the feedback, obtained from other members and from the video/audio sources,
- Step-by-step technique training during the learning (i.e. no one "jumps over" or skips a stage of the process that proceeds gradually from the simple to more complex),
- Individual approach to each participant based on and solidified by the support of the group,
- Mediated influence of the group members towards each other – initiated and encouraged by the facilitator unnoticeably, indirectly, but constantly and consecutively.
Self-Presentation 2.0: Narcissism and Self-Esteem on Facebook

Soraya Mehdizadeh, B.Sc.

Abstract

Online social networking sites have revealed an entirely new method of self-presentation. This cyber social tool provides a new site of analysis to examine personality and identity. The current study examines how narcissism and self-esteem are manifested on the social networking Web site Facebook.com. Self-esteem and narcissistic personality self-reports were collected from 100 Facebook users at York University. Participant Web pages were also coded based on self-promotional content features. Correlation analyses revealed that individuals higher in narcissism and lower in self-esteem were related to greater online activity as well as some self-promotional content. Gender differences were found to influence the type of self-promotional content presented by individual Facebook users. Implications and future research directions of narcissism and self-esteem on social networking Web sites are discussed.

Introduction

The Internet officially gained public face in the early 1990s; since then, it has completely changed the way information is broadcast to the world.1 By means of the World Wide Web, any user with minimal knowledge of the Internet is able to relay information to a vast audience through personal blogging, videos, and photos via interactive Internet sites known as Web 2.0 applications.2 By means of these specific Web communities, individuals can post self-relevant information, link to other members, and interact with other members. Most notably, these Web sites offer a gateway for online identity constructions.2

While the impact of the Internet on identity production has been under investigation for over a decade, most of these studies have focused on anonymous online environments, including chat rooms and bulletin boards.3 More recently, researchers are shifting their attention to self-presentation in less anonymous online communities, known as social networking Web sites. These virtual settings cater to a specific population in which people of similar interest gather to communicate, share, and discuss ideas. In the early phase of this research, some studies examined the effect of Internet dating sites.4 A study of this phenomenon by Ellison et al.4 found that people act differently in social networking environments when compared to those interacting in anonymous settings. This finding had enormous implications in identity formation in the online world, as it indicated that online self-presentation varied according to the nature of the setting.

Along with dating sites, friend-networking sites such as MySpace and Facebook have become extremely popular among college and university students.5 These sites offer a highly controlled environment for self-presentational behavior, which provides an ideal setting for impression management.1

It is estimated that MySpace.com has over 20 million registered users, with a sign-up rate of over 230,000 users per day.5 Even more shockingly, Facebook.com6 reported a staggering 733% increase in the number of active Facebook users from 2007 to 2008. Today, the number of Facebook users is estimated at over 175 million worldwide. Despite the booming success of such friend-networking sites, peer-reviewed published research evaluating the impact of these sites on behavior and identity construction is scarce at best.5 Against this background, the main goal of this study is to address this dearth of research by examining the relationship between offline personality and online self-presentation.

Web 2.0 and online self-presentation

Identity is an important part of the self-concept. Rosenberg7 (1986; as cited in Zhao et al.3) defined self-concept as the totality of a person’s thoughts and feelings in reference to oneself as an object. Identity construction has been studied as a public process that involves both “identity announcement” made by the individual claiming the identity and “identity placement” made by others who endorse the claimed identity.3

Department of Psychology, York University, Toronto, Canada.
Face-to-face identity is constructed under a variety of constraints. Under these circumstances, identity announcement is influenced by physical characteristics (i.e., gender, ethnicity, attractiveness) and the shared knowledge of social backgrounds. Furthermore, personal attributes often control identity placement. It is therefore very difficult for individuals to claim identities and create impressions that are inconsistent with their projected traits. In contrast, online environments enable individuals to engage in a controlled setting where an ideal identity can be conveyed.

According to Markus and Nurius, a person’s conception of himself or herself can be distinguished by two categories: the “now self,” an identity established to others, and the “possible self,” an identity unknown to others. Users can achieve the latter state by withholding information, hiding undesirable physical features, and role-playing. This effect is most pronounced in anonymous online worlds, where accountability is lacking and the “true” self can come out of hiding. However, not all online worlds are completely anonymous. Facebook offers a “nonymous” (i.e., the opposite of anonymous) online setting where relationships are anchored in a number of ways, through institutions, residence, and mutual friends. Unlike anonymous online environments, nonymous settings place more constraints on the freedom of identity claims. However, they provide an ideal environment for the expression of the “hoped-for possible self,” a subgroup of the possible-self. This state emphasizes realistic socially desirable identities an individual would like to establish given the right circumstances.

While research on Web 2.0 applications are virtually scarce, studies suggest that the most important motive for hosting a personal homepage is impression management and self-expression. Given the theoretical rationale on the potential differences between face-to-face and online self-presentation, this exploratory study examines the effects of two personality traits known to influence self-presentation: narcissism and self-esteem.

Narcissism and online self-presentation

Narcissism is a pervasive pattern of grandiosity, need for admiration, and an exaggerated sense of self-importance. It is associated with positive self-views of agentic traits, including intelligence, physical attractiveness, and power. Central to most theoretical models of narcissism, the use of social relationships is employed in order to regulate narcissistic esteem. However, narcissists do not focus on interpersonal intimacy, warmth, or other positive aspects of relational outcomes. Instead, they use relationships to appear popular and successful, and they seek attractive, high status individuals as romantic partners. Despite their tendency to seek out many superficial, empty relationships, narcissists rarely pursue these commitments for long periods of time. Relationships are solely pursued when an opportunity for public glory presents itself.

Recently, there has been a tremendous amount of media attention surrounding the issue of narcissism and social-networking Web sites. These online communities have been targeted as a particularly fertile ground for narcissists to self-regulate for a number of reasons. First, this setting offers a gateway for hundreds of shallow relationships (i.e., virtual friends), and emotionally detached communication (i.e., wall posts, comments). While these sites do indeed serve a communicative purpose among friends, colleagues, and family, other registered users can initiate requests to be friends, and one’s social network often snowballs rapidly across institutions in this fashion. Second, social-networking Web pages are highly controlled environments that allow owners complete power over self-presentations. Users can convey desirable information about themselves (via features such as About Me, Notes, and Status Updates routinely found on social-networking sites) and can select attractive, self-promoting photographs. This type of virtual arena allows narcissists to pursue an infinite number of trivial friendships and further enables them to boast self-views of positive agentic traits.

These effects may be even more evident in nonymous Web sites, such as Facebook, where users can make public “identity statements” that they may not normally do offline. These statements can take both explicit (i.e., autobiographical descriptions) and implicit (i.e., photos) forms and ultimately enable people to stage a public display of their hoped-for possible selves. In accordance with this notion, research by Buffardi and Campbell confirmed that narcissism predicted higher levels of social activity in the online community and more self-promoting content in several aspects of the social networking Web pages.

Self-esteem and online self-presentation

In psychology, self-esteem is defined as a person’s overall self-evaluation of his or her worth. Implicit and explicit self-esteem are subtypes of self-esteem. Implicit self-esteem is an automatic, unreflective self-evaluation, explicit self-esteem is a more conscious, reflective self-evaluation. Regardless of the type of self-esteem, one of the most pervasive facts about this construct is that all humans have a vital need to maintain and/or raise it. Parallel to this line of thought, it can be expected that individuals will strive for positive self-presentations in both online and offline social settings. It is also likely that people with low self-esteem will be even more eager to engage in online activities that may raise their self-esteem. By doing so, it may provide an outlet for the hoped-for possible self to be expressed. However, with regard to online impression management, Krämer and Winter did not find any differences between self-presentation and low and high self-esteem users. These contradictory results warrant further research within the emerging field of online self-presentation.

Overview of the present study

The present study extends the existing research on self-presentation in online friend-networking Web pages. Although there are many online venues appropriate for this type of research (e.g., MySpace), Facebook was used in this investigation for two reasons. First, Facebook is the most commonly used site by individuals in our sample—university students. When this site was first created, a university e-mail address was required to set up an account. Although virtually anyone can now sign up for Facebook, this online community remains a popular site for college and university students. Second, Facebook profile pages have a structured, fixed format. This consistency allows for a controlled comparison among Web page users. This study examines the effects of
narcissism and self-esteem on online social activity and their associations with online self-promotional content. Gender differences are explored as moderators of types of self-promotional content presented on personal Web pages. The following hypotheses are tested:

H1: Individuals with high narcissism scores will be correlated with a greater amount of Facebook activity.

H2: Individuals with high narcissism scores will use more self-promoting content on Facebook.

H3: Males with high narcissism scores will display descriptive self-promotion, while females with high narcissism scores will display superficial self-promotion.

H4: Individuals with low self-esteem will be correlated with a greater amount of Facebook activity.

H5: Individuals with low self-esteem scores will use more self-promoting content on Facebook.

Note that descriptive self-promotion is conveyed by text (e.g., via About Me, Status Updates, and Notes features), and superficial self-promotion involves images (e.g., photos posted as “Main Photo” or in Web page photo albums).

Method

Participants

One hundred Facebook owners (50 male, 50 female) were randomly recruited at York University. They ranged in age from 18 to 25 years (M=22.21, SD=1.98). All participants gave permission to be added to Facebook and agreed to have their pages coded for the present research.

Rater

The rater of the participants’ Facebook page was the author of this study, a 22-year-old female undergraduate student at York University.

Materials

After agreeing to participate in this research study, Facebook owners were administered a brief four-part questionnaire. The first section required demographic information, including the participant’s age and gender. The second section addressed Facebook activity; it required respondents to indicate the number of times they check their Facebook page per day and the time spent on Facebook per session. The remaining sections assessed two psychological constructs: self-esteem and narcissism.

The Rosenberg Self-Esteem Scale was used to measure participant self-esteem. This 10-item test measured self-esteem using a 4-point Likert scale, ranging from strongly disagree to strongly agree. Example items include “On the whole, I am satisfied with myself” and “I take a positive attitude toward myself.” The original reliability of this scale is 0.72. This measure has gained acceptable internal consistency and test-retest reliability, as well as convergent and discriminant validity.1

Narcissism was assessed using the Narcissism Personality Inventory (NPI)-16. The NPI-16 is a shorter, unidimensional measure of the NPI-40. While the 40-item measure revealed an r = 0.84, the NPI-16 has an r = 0.72. Despite this discrepancy, the two measures are correlated at r = 0.90 (p < 0.001). This 16-item forced-choice format personality questionnaire also has notable face, internal, discriminant, and predictive validity.13 Example items include “I am more capable than other people” versus “There is a lot that I can learn from other people,” and higher scores on the NPI indicate more narcissistic personality. Overall, the NPI-16 is both a valid and reliable way to capture a range of different facets of this construct, particularly in situations where the use of a longer measure would be impractical.13

Procedure

Undergraduate students were randomly recruited on campus and asked to participate in a study exploring the use of Facebook. Participants were selected on the basis of whether or not they had an active Facebook account. Upon agreeing to participate in this research study, participants were presented with a waiver form to sign if they consented to being added to Facebook to have their page rated. Participants were also assured that all identifying information would be kept anonymous. Following their consent, participants were administered the four-part questionnaire. Upon completion, participants were immediately added to Facebook and were then fully debriefed.

Five features of the Facebook page were coded for the extent to which they were self-promoting: (a) the About Me section, (b) the Main Photo, (c) the first 20 pictures on the View Photos of Me section, (d) the Notes section, and (e) the Status Updates section. For the purpose of this study, self-promotion was distinguished as any descriptive or visual information that appeared to attempt to persuade others about one’s own positive qualities. For example, facial expression (e.g., striking a pose or making a face) and picture enhancement (e.g., using photo editing software) were coded in the Main Photo and View Photos of Me sections. The use of positive adjectives (e.g., nice, sexy, funny), self-promoting mottos (e.g., “I’m so glamorous I bleed glitter”), and metaphorical quotes (e.g., “A girl should always be two things: classy and fabulous—Coco Chanel”) were coded in the About Me section. Self-promotion in the Notes section could include posting results from Facebook applications including “My Celebrity Look-alikes,” which compares a photo of the user to celebrities, or vain online-quizz results, which often provide shallow descriptions of the user (e.g., You are very mysterious and sexy). Status Updates were also coded on the basis of self-promoting information provided by the user. Each section was rated on a 5-point Likert scale ranging from 1, not at all, to 5, very much. In cases where Facebook users kept these features private, the corresponding feature was not rated.

Results

A Pearson correlation addressed the relationship between narcissism (M=8.21, SD=4.81) and Facebook activity. As predicted, higher scores on the NPI-16 were positively correlated with the number of times Facebook was checked per day, r = 0.462, p < 0.01; and with the time spent on Facebook per session, r = 0.614, p < 0.01. Similarly, a Pearson correlation was used to test the relationship between self-esteem (M = 17.05, SD = 4.96) and Facebook activity. Results

Compiled by Amit Shekhar Email: numerons@gmail.com Contact: +91-9560344245
Table 1. Self-Promoting Facebook Correlates with Owners’ Self-Esteem Scores

<table>
<thead>
<tr>
<th>Facebook content</th>
<th>Pearson correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>About Me</td>
<td>−0.139</td>
</tr>
<tr>
<td>Main Photo</td>
<td>−0.374**</td>
</tr>
<tr>
<td>View Photos (20)</td>
<td>0.097</td>
</tr>
<tr>
<td>Status Updates</td>
<td>−0.103</td>
</tr>
<tr>
<td>Notes</td>
<td>0.007</td>
</tr>
</tbody>
</table>

**p < 0.01.

indicated a significant negative correlation between self-esteem and the number of times Facebook was checked per day, r = −0.458, p < 0.01; and with time spent on Facebook per session, r = −0.432, p < 0.01.

A series of Pearson correlation analyses were also used to assess the relation between owners’ self-esteem scores and self-promotional Facebook page content. Results showed a sole significant negative correlation between self-esteem and self-promotion in the Main Photo section, r = −0.374, p < 0.01. The results are summarized in Table 1. Similarly, the relation between owners’ narcissism scores and self-promotional Facebook page content was assessed using Pearson correlations. Results indicated significant positive correlations between narcissism and self-promotional content in the following areas: Main Photo, View Photos (20), Status Updates, and Notes. The results are shown in Table 2.

Using this information, a univariate analysis of variance was conducted to determine any gender differences that existed in the types of self-promotional behavior presented by narcissistic Facebook page owners. Unexpectedly, there were no significant interactions between narcissism, gender, and any of the coded self-promotional content. However, results indicated a main effect for gender and self-promotional information in the About Me section, F(1, 96) = 6.367, p = 0.013; the Notes section F(1, 96) = 17.074, p < 0.001; and the Main Photos section F(1, 96) = 5.731, p = 0.019. Specifically, males displayed more self-promotional content in About Me and Notes; see Figures 1 and 2. Females displayed more self-promotion in the Main Photo section; see Figure 3. No main effects were found for gender and self-promotional content in View Photos (20) or Status Updates. Results are presented in Table 3.

Discussion

Based on the literature review, it was postulated that online communities offer a gateway for identity construction and self-presentation. The goal of this exploratory study was to examine how particular offline personality traits manifested in noymous online social environments. Building on the limited existing research within this relatively new field, one of the focuses of this study was to examine the effects of offline narcissism on Facebook activity. Given that this Web site offers various outlets for self-promotion (e.g., via About Me, Main Photo) and also presents the opportunity to display large numbers of shallow relationships (friends are counted and sometimes reach the thousands), it was hypothesized that narcissists would engage in more Facebook activity.

As predicted, there was a significant positive correlation between individuals who scored higher on the NPI-16, the number of times Facebook was checked per day, and the time spent on Facebook per session. This result is consistent with the findings presented in another study that examined narcissism and Facebook activity.2

While the nononymity of this environment places constraint on the freedom of individual identity claims,3 this setting also enables users to control the information projected about themselves. In particular, users can select attractive photographs and write self-descriptions that are self-promoting in an effort to project an enhanced sense of self. Furthermore, Facebook users can receive public feedback on profile features from other users, which can act as a positive regulator of narcissistic esteem. Past research shows that narcissists, for example, are boastful and eager to talk about themselves,14 gain esteem from public glory,15 and are prevalent on reality television.16 Given these findings, it was hypothesized that narcissists would present a similar opportunity for self-promotion on Facebook. Results partially supported this hypothesis. Significant positive correlations were found between scores on the NPI-16 and self-promotion in the following areas: Main Photo, View Photos (20), Status Updates, and Notes. However, a Pearson correlation analysis failed to show a significant correlation between narcissism and About Me self-promotion. A study by Zhao et al.3 examining identity construction on Facebook also found that users were less likely to make positive self-descriptions in the About Me section yet were more apt to showcase themselves through photos. This preference for “show” versus “tell” can be attributed to the college sample, as the campus setting set the stage for offline socializing and thus a greater need to conceal socially undesirable narcissistic tendencies. Similarly, a study by Collins and Stukas17 found that college students who rated higher on the NPI-40 were more apt to present themselves in a self-enhancing manner through an external domain (e.g., physical attractiveness) than through an internal domain (e.g., intelligence). Although these studies support the findings in the About Me, Main Picture, and View Photos (20) sections, they are also paradoxical to the relation between narcissism and self-promotion in other implicit domains: Status Updates and Notes. This can be attributed to the distinctiveness of the Facebook environment and features. Status Updates are generally used to broadcast current states, and in this context, it is both acceptable and the norm to use this feature to boast. It should also be distinguished that the Notes feature of Facebook can include other information besides written text, such as images of My Celebrity Look-alikes. This application was common among this sample and was noted as self-promotional behavior.

Based on these findings, additional tests were also conducted to assess whether gender differences existed with regards to the types of self-promotional features that narcissists

Table 2. Self-Promoting Facebook Correlates with Owners’ Narcissism Scores

<table>
<thead>
<tr>
<th>Facebook content</th>
<th>Pearson correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>About Me</td>
<td>0.136</td>
</tr>
<tr>
<td>Main Photo</td>
<td>0.493**</td>
</tr>
<tr>
<td>View Photos (20)</td>
<td>0.408**</td>
</tr>
<tr>
<td>Status Updates</td>
<td>0.200*</td>
</tr>
<tr>
<td>Notes</td>
<td>0.315**</td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01.
were apt to include in their Facebook profiles. It was hypothesized that male narcissists would include more descriptive self-promotion, while female narcissists would include more superficial self-promotion. Although no significant interactions were found among narcissism, gender, and self-promotional content, there were some main effects between gender and self-promotional content. Males displayed more self-promotional information in the About Me and Notes sections than women. Conversely, women displayed more self-promotional Main Photos.

Although there has been no research examining gender differences in types of self-promotional domains, particularly in online settings, this premise supports simple socialization processes. Specifically, it is probable that gender roles influenced narcissistic females' tendencies to include revealing, flashy, and adorned photos of their physical appearance and

![Graph](image1)

**FIG. 1.** Estimated marginal means of About Me self-promotion.

![Graph](image2)

**FIG. 2.** Estimated marginal means of Notes self-promotion.
trends in narcissistic males to highlight descriptive self-promotion reflecting intelligence or wit in the About Me section.

Despite this notion, gender differences were not significant in the View Photos (20) or Status Updates sections. Although there is no empirical reasoning behind this finding, several hypotheses can be made to explain this result. First, self-promotional Status Updates are more widely accepted as normative behavior on Facebook. Thus, both males and females may be equally as likely to use it as a means of self-promotion. Second, View Photos (20) include photos of the user from other individuals’ albums. For this reason, there is less control of what pictures are being displayed and thus a lesser likelihood for self-promotional differences among males and females. However, given the exploratory nature of this study, future research is needed to explore gender differences.

### Table 3. The Effects of Gender on Self-Promotional Facebook Content

<table>
<thead>
<tr>
<th>Type</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>About Me</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>16.539</td>
<td>1</td>
<td>16.539</td>
<td>6.367</td>
<td>0.013</td>
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<td>Narcissism</td>
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<td>7.236</td>
<td>2.786</td>
<td>0.098</td>
</tr>
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<td>Gender &amp; narcissism</td>
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<td>1</td>
<td>1.883</td>
<td>0.725</td>
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<tr>
<td>Error</td>
<td>249.362</td>
<td>96</td>
<td>2.598</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>40.850</td>
<td>1</td>
<td>40.850</td>
<td>17.074</td>
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</tr>
<tr>
<td>Narcissism</td>
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<td>1</td>
<td>46.927</td>
<td>19.614</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender &amp; narcissism</td>
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<td>1</td>
<td>3.122</td>
<td>1.305</td>
<td>0.256</td>
</tr>
<tr>
<td>Error</td>
<td>229.680</td>
<td>96</td>
<td>2.393</td>
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<td></td>
</tr>
<tr>
<td>Main Photo</td>
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</tr>
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<td>Gender</td>
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<td>11.011</td>
<td>5.731</td>
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<td>62.403</td>
<td>32.479</td>
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<tr>
<td>Gender &amp; narcissism</td>
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<td>1</td>
<td>0.125</td>
<td>0.065</td>
<td>0.800</td>
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<tr>
<td>Error</td>
<td>184.449</td>
<td>96</td>
<td>1.921</td>
<td></td>
<td></td>
</tr>
<tr>
<td>View Photos (20)</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>0.695</td>
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<td>40.400</td>
<td>17.920</td>
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<td>Gender &amp; narcissism</td>
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<td>1</td>
<td>0.637</td>
<td>0.283</td>
<td>0.596</td>
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<tr>
<td>Error</td>
<td>216.430</td>
<td>96</td>
<td>2.254</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status Updates</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>6.158</td>
<td>1</td>
<td>6.158</td>
<td>2.899</td>
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<td>12.259</td>
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<td>203.944</td>
<td>96</td>
<td>2.124</td>
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</table>
in Web page self-promotional content and interactions between narcissism and gender in an online environment.

A popular view on the etiology of narcissism, rooted initially in psychoanalytic theory, proposes that narcissism is deep-seated in fragile self-esteem or vulnerability to shame.3 This hypothesis is widely accepted in clinical psychology, empirical evidence presents both equivocal and inverse findings with regards to this relationship.18 Despite this uncertainty, this association was used to hypothesize that individuals with low self-esteem would be correlated with a greater amount of Facebook activity.

As predicted, results indicated a significant negative correlation between self-esteem and Facebook activity. Specifically, individuals who rated lower on the Rosenberg Self-Esteem Scale were correlated with a greater amount of time spent on Facebook per session and a greater number of Facebook logins per day. These results are contradictory to those presented by Krämer and Winter,1 which found that self-esteem was unrelated to StudiVZ (a German Web 2.0 site) activity. Nevertheless, given the limited nature of research in this particular field, these results should not be viewed as conclusive.

The association between narcissism and self-esteem was also used to predict that individuals with low self-esteem would be correlated with a greater amount of self-promotional content on their Facebook pages. According to Markus and Nurius,3 the actualization of the hoped-for possible self can be blocked by the presence of physical gating features, such as an unattractive appearance or shyness.3 Using this theory, Zhao et al. suggested that nonymous online environments provide a fertile ground for these “gated” individuals to actualize the identities they hope to establish but are unable to achieve in face-to-face situations.3

In accordance with this notion, a significant negative correlation was found between participant self-esteem and Main Photo self-promotion. In this case, Main Photos could have been selected or enhanced to cover up undesirable features by individuals with low self-esteem in order to enable the actualization of their hoped-for possible selves. However, results failed to show any significant correlations between self-esteem and self-promotional content in View Photos (20), About Me, Status Updates, or Notes. These results can be explained by the context of the Facebook environment. The nonynomy of the environment, especially the anticipation of subsequent face-to-face encounters with Facebook friends, has been hypothesized to narrow the discrepancy between the actual selves and the ideal selves in people’s online self-presentation. Alternatively, a fully anonymous online environment might create a less inhibited environment for the fantasized ideal self to be projected (e.g., via About Me, Notes).3 In this case, self-enhanced written descriptions are less likely, while self-promoting Main Photos are normative and thus accepted in this particular online community.

Limitations

The central concern with this study was the subjectivity in Facebook page coding. This potential bias could have been avoided by having several raters who were different in age, gender, and race. Future studies should also include raters who are not strangers to the participant (i.e., friends, family) in order to get a more accurate assessment of self-promotion. Another limitation of this study was the subjectivity of self-promotional content. Future research should address this caveat by creating a more objective measure of self-promotion. This can be achieved by taking the mean of the coders’ ratings across several categories to measure self-promotion (e.g., Main Photo self-promotion could be created by taking the mean of the coders’ ratings of how provocative and vain the photo was).

Future directions

Aside from including a more objective measure of Facebook page coding and incorporating multiple page coders, future research should seek to expand these results across a larger sample that is more diverse in age and selected across a variety of settings. However, for the purpose of this study, a university student sample was most desirable, as they represent the majority of users on Facebook.6 The results presented in this study provide valuable insight in understanding how narcissism and self-esteem are constructed in a virtual environment. This research has several implications in marketing and advertisements in online communities. For example, it can be used to sell products that enhance physical attractiveness, a feature that is desired by narcissists and individuals with low self-esteem.

This research initiative was but a first step in clarifying online self-presentation. Future studies should investigate the social consequences of friend-networking sites. For example, if individuals with low self-esteem are indeed more apt to use these sites, will their use cause an indirect effect on social self-esteem and well-being? It would be fruitful to have further research designated in this field in order to bridge the gap between the online self and the offline individual.

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Address correspondence to:
Soraya Mehdizadeh
16 Foot Hills Rd.
Maple, Ontario L6A 2V6
Canada
E-mail: sorayam@yorku.ca