# Usage-based theory and the gestalt language processor: an integrative perspective on language processing

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https://doi.org/10.1590/SciELOPreprints.15002

Submitted on: 2026-01-31
Posted on: 2026-03-02 (version 1)
(YYYY-MM-DD)

# USAGE-BASED THEORY AND THE GESTALT LANGUAGE PROCESSOR: AN INTEGRATIVE PERSPECTIVE ON LANGUAGE PROCESSING

**Type of contribution**
Literature Review

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**ABSTRACT**: This study presents a scoping review aimed at mapping the existing literature on Usage-Based Theory and Gestalt Language Processing, analyzing their convergences and divergences in the language acquisition of children with typical and atypical developmental trajectories. The review was conducted following the Joanna Briggs Institute (JBI) guidelines. The databases PsycINFO, Web of Science, Scopus, LILACS, EMBASE, and PubMed were consulted, complemented by hand searching. The search strategy followed the PCC model (Population, Concept, Context), with no temporal restrictions. Out of 12,104 retrieved articles, 20 met the inclusion criteria; hand searching added 23 texts, totaling 43 analyzed studies. The results show that Usage-Based Theory and Gestalt Language Processing converge in describing acquisition as starting from holistic units (chunks/gestalts), which are gradually analyzed and recombined. The main divergence lies in their structure: Usage-Based Theory proposes a continuum with a broad empirical basis, whereas Gestalt Language Processing organizes development into clinical stages focused on echolalia in Autism Spectrum Disorder, relying primarily on qualitative descriptions and clinical reports. It is concluded that Gestalt Language Processing represents a developmental trajectory in autism aligned with the cognitive principles of Usage-Based Theory, reframing echolalia as a communicative starting point and supporting a more individualized and evidence-based clinical practice.

**KEYWORDS**: Language development; Gestalt theory; Echolalia; Child language.

**NON-SPECIALIST SUMMARY:** This study investigated how two language theories explain the development of speech in children. On one hand, Usage-Based Theory posits that all children learn to speak starting from whole "chunks" of sound they hear in daily life, such as "howareyou?" or "whereisit?", and then gradually break down and recombine these units. On the other hand, the Gestalt Processing model, created to understand language in autism, also starts from this idea but focuses specifically on echolalia – which is when a child repeats segments of speech they have heard, such as lines from cartoons or phrases from other people.

The review showed that these two perspectives are in dialogue. The way Gestalt Processing describes the developmental stages of autistic children – beginning with echolalia and progressing to more spontaneous speech – fits with the general principles of Usage-Based Theory. This is important because it helps reframe echolalia: far from being meaningless behavior, it is a crucial starting point for communication. This understanding supports more respectful and individualized clinical and educational practices, which start from each child's own way of expressing themselves to help them develop their language.

## Introduction

This article was developed from a master's research in Human Communication Disorders, completed in 2026. During the dissertation development, we sought to understand the similarities and differences between two theories of language acquisition: Usage-Based Theory and the Gestalt Language Processor.

Language acquisition is a complex phenomenon, studied by different fields of knowledge, such as linguistics, psychology, and neuroscience. Over time, various theories have emerged to explain how it develops. Some emphasize innate aspects (Chomsky, 1965; Pinker, 1994), others highlight social interaction (Bruner, 1983; Snow, 1977), communicative function (Halliday, 1975, 1978), or the capacity to perceive patterns in heard sounds (Thiessen; Hill; Saffran; 1978).

Among these perspectives, the idea that language emerges from use is gaining strength. This is the case of Usage-Based Theory (UBT), primarily associated with Tomasello (2003). According to this perspective, we are not born with pre-existing grammatical rules, but rather construct them gradually from concrete communication experiences.

Concurrently, in the clinical field, the Gestalt Language Processing (GLP) model emerged to understand atypical developmental profiles, such as in Autism Spectrum Disorder (ASD) (Blanc, 2005a, 2005b, 2005c, 2005d).

This model proposes that the child begins by using whole, memorized expressions (the "gestalts" or echolalias), which are only later broken down into smaller parts and analyzed (Blanc, 2005a, 2023). UBT (with a socio-pragmatic basis) and GLP (of clinical origin) have different roots, but converge on a crucial point: both describe the onset of language as anchored in concrete use, in the frequency of what is heard, and in the initial processing of complete linguistic units (holophrases or gestalts), prior to internal analysis (Bybee, 2010; Blanc, 2023).

This convergence offers a valuable opportunity for dialogue between theories. Therefore, this article aims to examine and compare these two models, exploring their

similarities and differences and the potential of this integration for understanding language development.

## 1. Gestalt Language Processor

The term *gestalt* originally comes from psychology, originating in Germany in the early 20th century. It posits that human perception organizes itself into meaningful patterns and wholes, prioritizing the global form over the sum of isolated parts (Köhler, 1929; Wertheimer, 1923). This principle of "the whole before the parts" later influenced the field of language acquisition, providing a basis for the idea that some children initially process speech in integral units (such as memorized phrases or segments), and only later segment them into smaller, combinable elements (Blanc, 2005a; Prizant, 1983).

In the 1970s and 1980s, scholars proposed the concept of Gestalt Language Processing (GLP), initially as a description of a typical developmental profile (Peters, 1983, 1977). According to this view, language acquisition would begin with multi-word utterances learned as memorized chunks, which would later be analyzed into smaller constituents (Peters, 1983, 1977).

Barry Prizant (1983) associated GLP with language acquisition by autistic children with predominant echolalia, proposing four stages in this processing: (1) predominant use of echolalia, serving as turn-taking or self-stimulation, with little comprehension; (2) echolalia gains more functions (requests, self-regulation), and the analysis of echolalic phrases begins; (3) transition to spontaneous speech through novel combinations, and a decrease in echolalia; (4) spontaneous and flexible speech with creative language use, with residual echolalia during fatigue or distraction. Prizant (1983) emphasized, however, the need for further investigation of the model.

Building on these studies, Marge Blanc (2012) developed the "Natural Language Acquisition" (NLA) model, aimed at supporting autistic individuals or those with significant echolalia, termed "gestalt processors." This work will adopt the term GLP to also encompass the NLA framework. Blanc expanded on Prizant's (1983) proposal, describing two additional stages in her model (totaling six stages) that advance toward complete grammar, including the use of verb tenses, pronouns, complex structures, and conjunctions. This progression is not rigidly tied to specific ages but follows an expected sequential order.

Recently, GLP has gained significant visibility in the context of autism, especially in debates concerning delayed echolalia (Blanc, 2023). However, Hutchins et al. (2024) question

its conceptual and empirical validity, arguing that categorizing autistic individuals as "GLP" is imprecise and lacks robust substantiation. The authors also contest the plausibility of the NLA stages and the generalization of the model to the entire autism spectrum, highlighting the diversity in linguistic developmental trajectories.

For a contextualized analysis of GLP, it is relevant to consider its intersections with the characteristics of ASD, which will be addressed next.

### 1.1 Autism Spectrum Disorder

The first systematic clinical descriptions of Autism Spectrum Disorder (ASD) date back to the 1940s, with the work of Kanner (1943) and Asperger (1944). While Kanner described a condition characterized by impairments in social interaction, communication, and repetitive behaviors, Asperger reported profiles with similar social difficulties but with apparently preserved formal linguistic skills. This historical duality already pointed to the diversity that would become a central hallmark of the disorder.

Over the decades, with integrated advances in neuroscience, developmental psychology, and psychiatry, the understanding of ASD solidified as a neurodevelopmental disorder with a neurobiological basis (Lord, 2018), moving away from previous psychogenic explanations (Lord, 2020).

According to the Diagnostic and Statistical Manual of Mental Disorders – DSM-5-TR (2022), ASD is defined by persistent deficits in social communication and social interaction, associated with restricted, repetitive patterns of behavior, interests, or activities, with onset in the early developmental years. Its main manifestations include difficulties in socio-emotional reciprocity, in the communicative use of gestures and facial expressions, in developing relationships, and the presence of repetitive behaviors, inflexible adherence to routines, and particularities in sensory processing (DSM-5-TR, 2022). These characteristics result in significant impairments in social, academic, or occupational functioning, the intensity and presentation of which vary considerably (Kim, 2024).

Heterogeneity is, therefore, a fundamental characteristic of ASD, justifying the notion of a "spectrum." Individuals with the disorder exhibit a wide range of intellectual functioning, linguistic competencies, levels of autonomy, and support needs (Georgiades, 2012; Bishop et al., 2017). ASD does not constitute a single, homogeneous condition, but rather a broad construct encompassing a diversity of developmental profiles (Lord, 2020).

This variability poses significant challenges to research. Symptomatic diversity and the frequent occurrence of co-occurring conditions complicate the identification of consistent phenotypes and the search for unified causal mechanisms (Lord, 2020). Studies show, for example, that different early developmental trajectories are associated with distinct linguistic and social outcomes (Landa et al., 2012). Similarly, neuroimaging investigations reveal heterogeneous patterns of brain development in early childhood, which predict subsequent variations in cognitive and adaptive skills (Hazlett et al., 2017).

This complexity translates into concrete methodological challenges. Differences in participant recruitment criteria, their levels of functioning, the age ranges studied, and the assessment instruments used complicate the generalization of findings and the construction of universal theoretical models about development within the spectrum (Bishop et al., 2017). Furthermore, the variability of individuals over time, influenced by factors such as early interventions, family support, and educational contexts, makes defining normative trajectories complex (Lord, 2020; Pickles et al., 2022).

Given this phenotypic and methodological variability, many studies have focused on the pragmatic aspects of language (social use), as these are often the most evident in the clinical presentation. However, a significant gap persists in the literature regarding the understanding of the underlying mechanisms for the acquisition of the form (grammar) and content (semantics) of language by individuals on the spectrum.

## 2. Usage-Based Theory

In UBT, acquisition is described as a process that begins with the production of linguistic chunks (holophrases or whole phrases) that the child frequently hears in specific contexts (Tomasello, 2000). These units are initially memorized as wholes, to later be decomposed. Grammatical rules then emerge from the abstraction of patterns based on contextual meaning (semantics and pragmatics), rather than from learning isolated words and rules (Tomasello, 2003).

This focus on the real use of language as the foundation of linguistic knowledge has philosophical roots, dating back to Wittgenstein (1953) and other thinkers in pragmatics, who investigated how language use establishes patterns for social interactions (Langacker, 1987, 1991; Croft, 1991; Givón, 1995; Tomasello, 2003; Bybee, 2010; Goldberg, 2006). In this view, linguistic complexity does not result from an innate internal device, but from the

dynamic interaction between general cognitive capacities and experience of use (Tomasello, 2003).

This proposal directly contrasts with nativist views, especially with Chomsky's Universal Grammar (UG), which postulates the existence of a specialized cognitive module containing innate grammatical principles and rules (Chomsky, 2014; Novák, 2022).

Tomasello (2003) structures UBT on two fundamental principles: meaning is use, meaning children use language as a practical tool to achieve social and communicative goals; and structure comes from use, meaning grammatical rules and syntactic patterns are not pre-existing but develop from exposure to and daily use of language.

To achieve this, the child needs two central cognitive abilities: intention-reading and pattern-finding (Tomasello, 2009). These abilities are already observable in the pointing gesture, which acquires meaning only within a context of shared attention (joint attentional frames).

Linguistic development, according to Tomasello (2003, 2009), begins with the production of whole utterances, laden with communicative intention. From these initial structures, the child identifies patterns and abstracts elements, progressing through predictable phases. These are: pivot schemas, with fixed, non-generalizable combinations (e.g., "more water", "daddy gone"); item-based constructions, which are structures with syntax but tied to specific words (e.g., "throw ball"), replicated as they were heard; and abstract constructions, which are generalizable structures that allow the creation of novel utterances, resulting from the abstraction of regularities from the input.

A crucial phase around three years of age is the verb island stage (Tomasello, 2001, 2009). In it, each verb is an "island" used in specific contexts. From these, the child begins making generalizations, broadening their grammatical abstraction. This process, however, is regulated by cognitive mechanisms such as entrenchment and preemption (Tomasello, 2001, 2009), which prevent overgeneralizations and align their use with adult conventions.

Although proposed for distinct contexts (UBT for typical development, GLP for autism), both models show similarities. They converge in describing acquisition as starting from holistic units (gestalts/chunks), which are progressively segmented by the child. This process is guided by the frequency and use of input in communicative contexts, advancing to stages of recombination and creative use. This convergence suggests that UBT may explain the cognitive mechanisms of GLP, while observations from GLP may test and enrich the application of UBT in atypical trajectories.

## 3. Methods

A scoping review was conducted. The study followed the methodological framework of the Joanna Briggs Institute (JBI) and the reporting recommendations of PRISMA-ScR. The protocol for this scoping review was registered on the Open Science Framework platform under the registration: https://doi.org/10.17605/OSF.IO/4HTNW.

The guiding question was defined according to the PCC structure (Population, Concept, Context). The population comprised children with typical and atypical (autism) development; the concept encompassed UBT and GLP/NLA theories; and the context was left open. Therefore, the question is: "What are the similarities and differences between Usage-Based Theory (UBT) and the Gestalt Language Processing (GLP) model in explaining the linguistic development of children with typical and atypical development?"

### 3.2. Search Strategy

A systematic search strategy was initially developed for the PubMed database with the assistance of a specialized librarian. Subsequently, the same strategy was adapted for the PsycINFO, Web of Science, Scopus, LILACS, and EMBASE databases.

The inclusion criteria were: studies addressing UBT and/or GLP in the context of language acquisition (typical or atypical), including original articles and reviews, published in Portuguese, English, or Spanish.

The exclusion criteria were: works that did not explicitly mention the theoretical models or their main authors, or that did not focus on language development.

### 3.3. Selection and Data Extraction

The selection process (screening of titles, abstracts, and full texts) was conducted by the author and independently verified by a research assistant. Disagreements were resolved by consensus with the master's thesis advisor. To ensure comprehensiveness, 23 additional texts (including grey literature) were identified through manual searching (hand searching).

Data from the included studies were extracted into a standardized spreadsheet, containing: bibliographic information, study type, objectives, sample characteristics, theoretical definitions adopted for UBT/GLP, and description of developmental stages when present.

### 3.4. Data Synthesis

The analysis was descriptive and narrative, aiming to map the scope of the literature, compare definitions and stages between the two approaches, and identify gaps in knowledge. Missing data were recorded as "not applicable" (N/A). This design did not include a formal risk of bias assessment of the studies, consistent with the exploratory purpose of a scoping review.

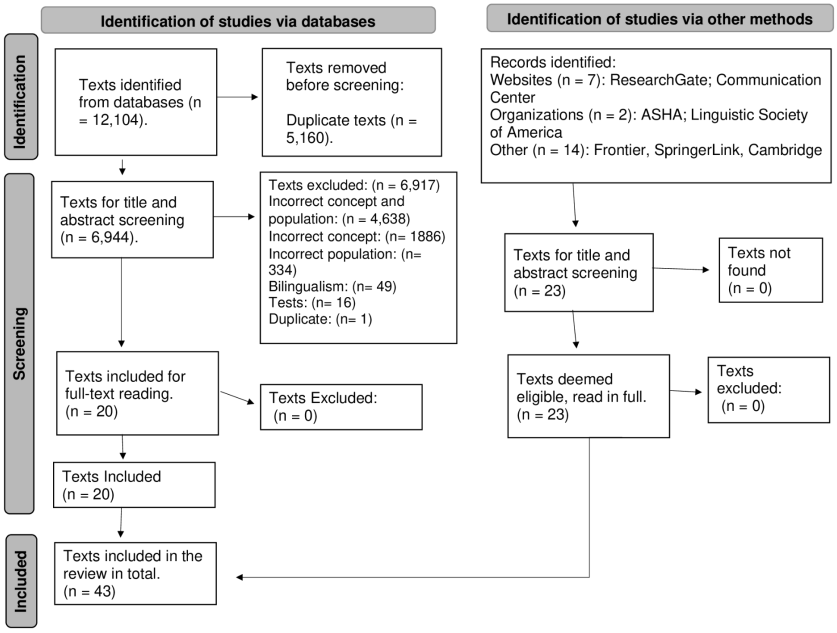
## 4. Results

### 4.1 Selection of Texts

The identification and selection process of the texts is summarized in the PRISMA-ScR flowchart (Figure 1). Initially, 12,104 records were retrieved from the databases. After the removal of 5,160 duplicates, 6,944 records were excluded based on title and abstract screening, primarily for not addressing the population (children) or the concept (UBT/GLP) of interest. This stage resulted in 20 eligible studies.

To ensure the comprehensiveness of the review, a supplementary manual search (hand searching) was conducted, identifying 23 additional documents (including grey literature) deemed relevant. All 23 were read in full and included. Therefore, the final corpus for analysis consisted of 43 documents: 20 from the systematic searches and 23 from the manual search.

**Figure 1.** PRISMA-ScR flowchart translated from Campião, 2016.




## 4.2 Identification of Articles

The 43 studies showed a wide temporal variation (publications from 1961 to 2025). Of the 20 articles from the databases, the majority were retrieved from PubMed (12), followed by Scopus (4), Embase (2), and LILACS (2). The documents from the manual search were predominantly from specialized websites, such as Cambridge Core (11) and ResearchGate (4).

## 4.3 Similarities and Differences between UBT and GLP Theories

The analysis of the 43 studies enabled a comparative mapping of the two approaches, highlighting convergences and divergences in categories such as core definitions, initial linguistic units, pre-syntactic and syntactic developmental processes, and the outline of the theoretical scope of both theories.

### 4.3.1 Definitions of Each Theory

According to the analyzed texts, UBT defines language acquisition as an emergent process in which grammatical structure is constructed from the exposure to and repeated use of linguistic "chunks" in communicative contexts. The authors emphasize general cognitive mechanisms (such as memory, chunking of recurring sequences, categorization, and analogy),

which are sensitive to the frequency of input (token frequency) and the variety of contexts (type frequency). Thus, grammar is seen as a dynamic network of constructions (pairings of form and meaning) (Wertheimer, 1923; Tomasello, 2000a, 2000b; Ibbotson, 2013; Ghalebi & Sadighi, 2015; Leclerc, 2023; Bybee, 2023, 2010).

GLP, in turn, describes an acquisition trajectory that begins with the use of whole, unanalyzed phrases ("gestalts" or "chunks"), memorized and reproduced as holistic units. Development progresses from the segmentation of these units to the production of analytic and spontaneous utterances (Blanc, 2005a, 2005b, 2005c, 2005d, 2012; Peters, 1983; Venker, 2024; Beals, 2024).

In the foundational texts of GLP, three fundamental concepts are established: "gestalt forms," which correspond to these "speech chunks"; the "gestalt style of language acquisition," a process in which the first productions consist mostly of these holistic units, requiring subsequent analysis and segmentation for the induction of linguistic rules; and the "gestalt mode of cognitive processing," referring to the retention of experiences as complete, non-analytic mental representations (Prizant, 1983).

Both perspectives share the premise that language emerges from use and interaction, rejecting initial abstract rules. Historically, only one study (Wray, 2013) explicitly connected Peters' ideas of "formulaic language" (the basis of GLP) to Tomasello's "item-based constructions" (UBT). The main difference lies in focus: while UBT seeks to explain typical development, GLP has been reinterpreted in the clinical context, particularly in ASD, with an emphasis on functional echolalia as the starting point (Blanc, 2005a, 2012).

In summary, both perspectives converge in arguing that language emerges from concrete use and social interaction, not from initial abstract rules. Their main divergence lies in the application and interpretation of this process: while UBT and Peters (GLP) describe it as a typical developmental mechanism, the GLP approach applied to autism by Blanc and Prizant (Blanc, 2005a, 2005b, 2005c, 2005d, 2012; Prizant, 1983) emphasizes that the same phenomenon manifests through echolalias and linguistic gestalts, attributing specific communicative functions and varying degrees of underlying comprehension to them.

### 4.3.2 Continuum vs. Stages: Models of Development

The theories diverge in how they describe the trajectory of linguistic development. In UBT studies, development is described as a *continuum*, where it occurs as a gradual and continuous process. Grammatical complexity emerges through the progressive action of

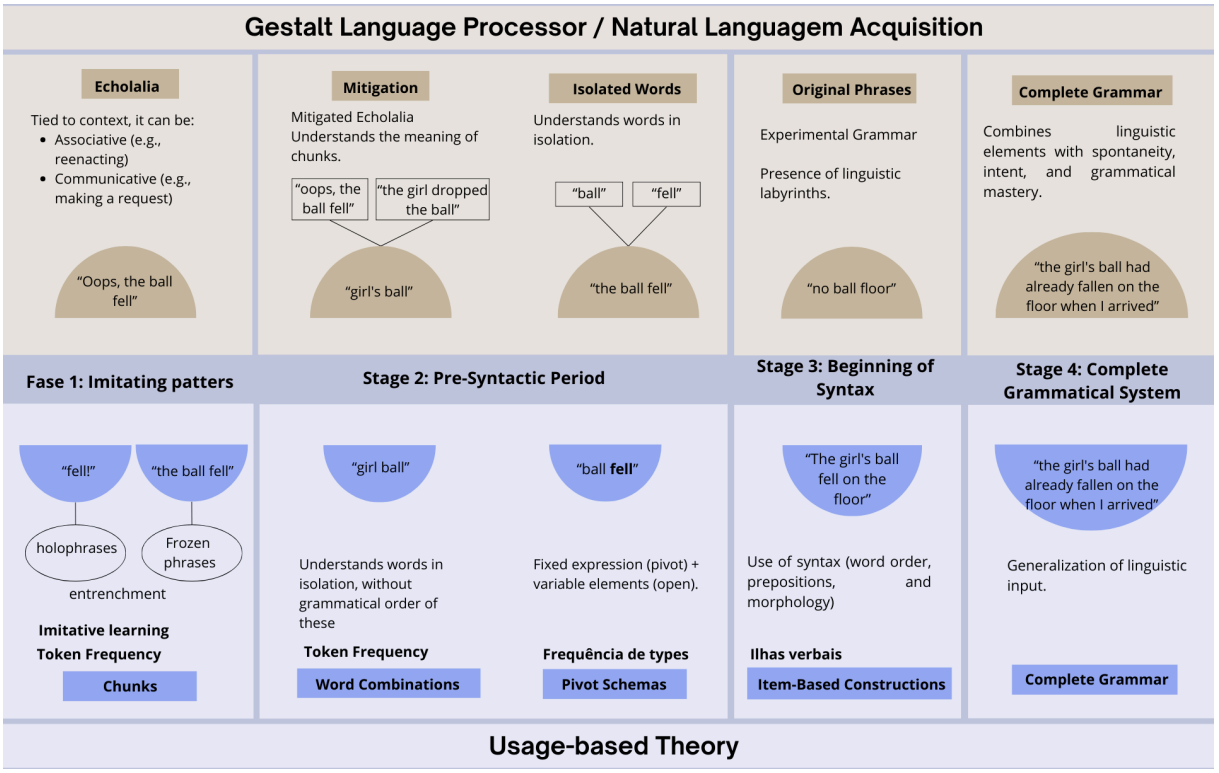
cognitive mechanisms on the input, without the delineation of fixed phases or specific ages in most of the reviewed studies (Tomasello, 2009; Croft, 2004; Bybee, 2010, 2023; Lieven, 2003).

In contrast, GLP describes stages, especially in its applied version (the NLA model), organizing acquisition into a descriptive sequence of stages. This structure aims to guide clinical assessment and intervention for individuals on the autism spectrum or with predominant echolalia (Blanc, 2005a, 2005b, 2005c, 2005d, 2023). The reviewed literature shows an evolution of this model: from a description in typical development (Peters, 1983), to an outline of stages in ASD (16), to a structured clinical protocol (Blanc, 2005a, 2005b, 2005c, 2005d, 2023).

### 4.3.3 The First Linguistic Units

To illustrate the mechanisms proposed by UBT and GLP, consider the following situation: A child is watching a cartoon, accompanied by an adult. In the show, a character says: "Oh no, the girl dropped the ball!". Almost simultaneously, the adult comments on the same event more directly: "Oops, the ball fell!". In this scenario, the child receives two different linguistic inputs to describe the same situation. The way each theory describes the child's processing of this event will be analyzed next, and the examples will be summarized in Figure 2 for visual comparison.

**FIGURE 2: Comparison of UBT and GLP Stages**




***Caption***: *Comparison between the Gestalt Processing/Natural Language Acquisition model (top) and the Usage-Based Theory model (bottom). Colored rectangles (blue/brown) represent the developmental stages of each model. The outlined elements indicate the linguistic units (phrases or words) that combine to form the speech examples in the colored semicircles (blue/brown). The ellipses represent types of constructions in Usage-Based Theory. In bold, specific cognitive mechanisms of this theory are highlighted for each phase.*

***Source***: *Translated from Campião, 2026.*

The comparative analysis reveals a common starting point, yet described with distinct emphases. UBT considers the utterance to be the fundamental psycholinguistic unit in the initial stages of development (Tomasello, 2009, 2000b, 2000a). It is defined as a complete speech act, bounded by a single intonation contour, through which the speaker expresses a specific intention to a listener in a concrete interactional context (Tomasello, 2000b). To understand its nature and emergence, the reviewed texts highlight the importance of two underlying cognitive abilities: intention-reading and pattern-finding (Tomasello, 2000b).

The mechanism of communicative intention is central to this process. It refers to the speaker's action of expressing themselves with the aim of directing the interlocutor's attention to a shared referent or concept (Tomasello, 2000b, 2000c). Around 12 months, children begin to infer that adults communicate intentionally through language, a fundamental basis for joint attention behaviors such as following gaze or gestures, imitating actions, and pointing to objects. The first linguistic manifestations emerge directly from these triadic interactions

(child, social partner, and object), already imbued with communicative intention (Tomasello, 2009, 2000c).

Simultaneously, the search for patterns manifests in the ability to identify regularities in the foci of attention during interaction, a skill that will later support grammatical acquisition (Bishop et al., 2017; Croft, 1991; Tomasello, 2000c).

Thus, Tomasello describes this initial stage in which the child, after interpreting the adult's intention, attempts to reproduce their speech. Such productions can be termed: **holophrases**, which are single linguistic symbols that function as a complete utterance (e.g., "Fell!" to express "The ball fell!", as in Figure 2) (Tomasello, 2009, 2000b); or **"frozen phrases"** (e.g., "the ball fell", as in Figure 2), initially produced as undifferentiated chunks, without the child analyzing their internal constituents (Tomasello, 2000b).

This process is sustained by specific cognitive mechanisms. **Cultural or imitative learning** allows the child to grasp the adult's communicative intention and reproduce the utterance as a meaningful unit (Tomasello, 2000b). The consolidation of these initial units depends on **token frequency**, that is, the repetition of identical expressions in similar functional contexts. This repeated exposure leads to **entrenchment**, through which forms become automated and fixed in the child's repertoire as prefabricated chunks (Tomasello, 2000b).

In GLP, especially in its clinical application to ASD, the initial unit is **echolalia** or a **gestalt** – a memorized speech chunk, extracted from contexts with emotional or communicative value for the child (Blanc, 2005a; Prizant, 1983). Its function can be communicative (e.g., to make a request) or associative (e.g., to request reenacting a cartoon scene). Here, adult mediation is described as crucial: the caregiver must "enter the child's world," interpret the function of the gestalt, and, based on this connection, model new, more functional and mitigable chunks (Blanc, 2005a, 2005b).

In summary, both theories identify the holistic unit as the starting point of acquisition. However, they describe its emergence in distinct ways. In UBT, which describes typical development, the process is seen as more spontaneous, driven by the child's developing pragmatic skills, without requiring targeted adult mediation. In contrast, in GLP applied to ASD, the active mediation of the adult is considered essential to interpret and assign communicative function to the initial gestalts; after this intervention, the child's production can evolve into forms similar to the holophrases and initial phrases described by UBT.

This distinction in the origin and role of the holistic unit raises a central question: the differentiation between echolalia in the context of ASD and echolalic or repetitive behavior observed in typical development.

#### 4.2.3.1 Echolalia

Echolalia is described as a continuum of repetitions (whether immediate/delayed or literal/mitigated) whose meaning depends on intention, context, and sociocognitive function (Schuler, 1979), and which can be a sophisticated interactional resource (Paccia & Curcio, 1982; Sterponi & Shankey, 2014). It is emphasized that its analysis must consider context and that its indiscriminate suppression can harm speech development (Saad & Goldfeld, 2014).

Multiple functions are identified, with turn-taking being the most frequent (~61%) in children with typical development (Bybee, 2023). For delayed echolalia, there are subtypes with distinct clinical implications, such as stereotyped, negativistic, and mitigated – the latter indicating increasing communicative intent (Dyer, 1981).

Schuler (1979) also observes its occurrence in typical development (18-30 months), with a transition from literal to mitigated repetitions, favoring language acquisition. The differences between typical and atypical would be of degree and function, not of nature, reinforcing the need for functional analysis. This view aligns with Pruccoli et al. (2021), who discuss the distinction between typical echolalic behavior and atypical echolalia.

Studies present distinct perspectives: Tager-Flusberg and Calkins (1990) suggest that imitation does not facilitate grammatical development in children with typical development, ASD, or Down syndrome, whose spontaneous speech is more complex. In contrast, Leung (1997) demonstrates that interventions integrating echolalia can benefit receptive language acquisition in ASD (Beals, 2024).

In summary, while the gestalt model (Blanc, 2005a, 2005b, 2005c, 2005d; Prizant, 1983) views echolalia as the starting point for analytical processing via mitigation and recombination, UBT understands it as a transient phase in typical development.

### 4.2.4 From Unit to Analysis: The Pre-Syntactic Period

In UBT, it is observed that, through the use of these holophrases and frozen phrases, the child begins a process of analyzing their parts, that is, of understanding words as isolated

units with meaning. This path unfolds into pre-syntactic patterns, such as word combinations and pivot schemas (Tomasello, 2009, 2000a).

Word combinations emerge around 18 months, where the child joins two relevant terms for a scene (e.g., "girl ball", as in Figure 2). These combinations, which can be produced with a pause or under a single intonation contour, represent an advance over holophrases, as they segment the experience into nameable parts. However, word order still does not carry grammatical value, being guided by frequency in the adult input (Tomasello, 2009, 2000a).

Subsequently, pivot schemas emerge, one of the first systematic combination patterns (around 18-24 months). In them, a fixed word (the pivot, such as "more" or "fell") combines with a variety of other words (the open words), generating utterances such as "ball fell" or "fell girl", as observed in Figure 2 (Tomasello, 2009, 2000a). This pattern is enabled by type frequency, that is, exposure to different lexical items in the same functional position (e.g., "more milk", "more cookie"), which allows the child to identify a variable slot in the structure (Bybee, 2010; Tomasello, 2009). This is an initial abstraction, still far from proper syntax (Tomasello, 2000a).

In GLP for typical development, Peters (1983) describes a phase of segmenting chunks into smaller parts, followed by the extraction of morphosyntactic frames with slots (e.g., "I want _"), equivalent, respectively, to word combinations and pivot schemas in UBT (Peters, 1977; Tomasello, 2000a).

In the clinical model for ASD, this progression is reflected more slowly. Prizant (1983) describes a stage in which echolalia gains pragmatic functions and the segmentation of gestalts begins, followed by a stage of recombining the segments into new combinations (Prizant, 1983). Blanc (2012), in turn, describes the second stage as the "mitigation" phase, a period of transition in which the child begins to separate gestalts, modifying elements of the phrase to adapt it to new contexts. As examples, the author cites: (1) the change from "mommy got" to "girl got"; and (2) the production of "girl's ball", derived from the original gestalts "the girl dropped the ball" and "oops, the ball fell" – as represented in Figure 2. The first case approximates the pivot schemas described by Tomasello, while the second reflects the greater complexity and length of echolalia in ASD, associated with pragmatic challenges.

The third stage in Blanc's model (2012) – termed "isolated words" – shows a clear correspondence with the concept of "word combinations" in UBT. This phase is marked by the use of referential combinations, such as the production of "ball" followed by “the ball fell" (Figure 2).

### 4.2.5 Beginning of Syntactic Marking

In UBT, the beginning of syntax is marked by item-based constructions, a grammatical knowledge that is still concrete and tied to specific verbs the child already masters. In this phase, the child uses word order and other syntactic markers consistently, but only around individual "verb islands". For example, a child may know perfectly that for the verb "to fall," the agent of the action comes before the verb ("The girl's ball fell on the floor", as in Figure 2). The knowledge is, therefore, specific and non-abstract, evolving gradually from exposure to concrete uses (Tomasello, 2000a, 2003).

In GLP, especially in its clinical version for ASD, the equivalent stage is described as the emergence of original phrases (Stage 4 of the NLA model). The initial syntax here is experimental, characterized by a period of "trial and error," with productions that may seem disorganized (e.g., "no ball floor", as in Figure 2). These "linguistic labyrinths," along with the use of "minichunks" (fragments of previous gestalts), are seen as positive indicators of the active construction of grammar. The proposed intervention emphasizes the careful modeling of basic and transparent structures, avoiding initial abstract elements like pronouns, with the aim of transforming parts of gestalts into independent words (Blanc, 2005c, 2012).

Thus, as a convergence, we see that both approaches describe initial syntax as concrete, specific knowledge centered on lexical items (verbs or verbal frames), which gradually evolves into more general patterns. As a divergence: UBT offers a cognitive explanation of the learning mechanism (limited generalization from verbs). GLP, in turn, provides an observable clinical description of the process, highlighting the phenomenology of speech under construction and proposing intervention guidelines to support this transition in the context of ASD.

### 4.2.6 Towards Complete Grammatical Construction

Regarding the development of abstract and complex constructions, UBT responds to criticisms about its supposed limitation to simple structures by arguing that complexity emerges gradually. Tomasello (2003) demonstrates that constructions such as complement clauses (e.g., "I think that..."), relative clauses (e.g., "the toy that spins"), and complex questions are not acquired as abstract rules. Instead, the child initially learns specific, fixed lexical patterns tied to concrete verbs or expressions. Generalization to truly abstract

structures occurs later, through repeated exposure to different instances of these patterns in the input. In this way, grammatical constraints (such as the dative alternation) are not innate but learned through experience with the conventional uses of the language.

In contrast, GLP describes the pinnacle of development as mastery of a complete and productive grammatical system. In the typical model, Peters (1983) describes final stages of "fusion" and "persistence at intermediate levels," where frequent combinations become pre-assembled units. In the NLA model applied to ASD, stages 5 and 6 are dedicated to the spontaneous and appropriate use of complex sentences, marking the final consolidation of grammar and a significant reduction in echolalia (e.g., "the girl's ball had already fallen on the floor when I arrived", as in Figure 2) (Blanc, 2012).

In summary, the approaches converge in characterizing the final stages of acquisition as the consolidation of a productive linguistic system. In UBT, this process is described as the formation of a network of constructions that functions as a complex adaptive system (Bybee, 2010; Kretzschmar, 2015), in which abstractions emerge from the recurrent use of contextualized linguistic patterns. Parallelly, GLP defines Stages 5 and 6 of the NLA model as the phase of mastering complex and grammatically complete structures, typically marked by a significant reduction in echolalia (Prizant, 1983; Blanc, 2012).

### 4.4 Studies Reinforcing Elements of Both Theories

Research on pronouns indicates that reversals are more linked to socio-cognitive factors and input than to structural deficits (Barokova & Tager-Flusberg, 2020) and are not solely explainable by echolalia (Fay, 1979). Such findings align with UBT's emphasis on communicative intention as a guide for development and with the GLP view that personal references emerge later, after the gestalt phase.

In a longitudinal study, Patterson (2000) described the progression of a child with language delay in three phases: 1) use of isolated words and "frozen phrases"; 2) emergence of flexible elements; 3) spontaneous construction of new sentences. The author used the term "gestalt" to describe the initial phase of unanalyzed units and, in the discussion, cited Tomasello and Brooks (1999) in emphasizing that acquisition can occur both bottom-up (part-whole) and top-down (whole-part).

Carvalho and Avelar (2002) established a dialogue between typical and pathological acquisition by analyzing repetition and error in children with and without ASD. They observed that while the child with typical development transitioned between imitation and

creation, the child with ASD presented more rigid speech, characterized by echolalias and stereotypies.

Another study demonstrated that the pragmatic use of language was a better predictor of word combination than vocabulary size, reinforcing the emphasis of both approaches on the role of actual use for acquisition (Foster-Cohen, van Bysterveldt, & Papp, 2020).

Finally, caregiver alignment emerged as an empirical link between the perspectives. Longitudinal studies showed that the correspondence between the child's and adult's productions (lexical, syntactic, or semantic) predicted growth in vocabulary and sentence complexity, suggesting a common mechanism underlying both approaches (Fusaroli et al., 2023).

### 4.5 Limitations and Empirical Evidence (GLP vs. UBT)

The comparative analysis reveals a notable contrast in the empirical support for the two approaches. The NLA/GLP model faces substantial limitations in its evidence base. While it offers a detailed clinical description and a proposed stage trajectory, its literature is predominantly composed of case reports, editorials, and books. There is a lack of controlled trials testing the efficacy of the structured protocol, a consensus on terminology for key concepts (such as "gestalt" and "mitigation"), and standardized outcome measures (Blanc, Blackwell, & Elias, 2023; Hutchins et al., 2023; Venker & Lorang, 2024; Bryant et al., 2025). From a neurodiversity perspective, it is recommended that support practices, regardless of the model, be individualized, respect preferred communicative modes (including AAC), consider multilingualism, and promote the active participation of the autistic person, indicating the need for more research with diverse populations (Blanc, Blackwell, & Elias, 2023).

In contrast, UBT has a broad and consolidated empirical base in both typical and atypical acquisition. Its core mechanisms – such as sensitivity to input properties, shared intentionality, and statistical learning – are widely investigated and receive replicable support across various contexts (Tomasello, 2000b; Ibbotson, 2013; Ghalebi & Sadighi, 2015; Bybee, 2023, 2010; Tomasello, 2000a; Abbot-Smith, 2020; Tomasello, 2000c). Neurodevelopmental research aligns with its predictions, showing, for example, that parental input complexity predicts language development and that statistical learning is a multi-component mechanism (Tomasello, 2000b; Arciuli, 2017).

It is important to note that any criticisms, such as Baker's (1984) critique of a radical and earlier descriptivist strand of "use theory," point out specific theoretical inconsistencies of

that historical approach but do not invalidate the empirical and cognitive foundations of contemporary UBT consolidated by Tomasello and others.

Echolalia emerges as a point of conceptual convergence. While reviews point to a lack of solid evidence for specific protocols like NLA (Dinello & Gladfelter, 2025), the phenomenon is recognized by both approaches as a strategic and meaningful expression in the early stages of acquisition.

The results indicate a partial compatibility between the approaches. Both assign a fundamental role to frequency, communicative function, and social interaction. However, they diverge in the organization of the process (stages versus continuum) and the degree of theoretical abstraction attributed.

In summary, the analysis suggests a complementary relationship. UBT provides a robust explanatory framework with testable mechanisms for understanding the "from whole to parts" developmental trajectory. GLP, in turn, provides a detailed clinical description and an intervention protocol focused on atypical trajectories, whose principles align with a usage-based view, but whose structured application requires more systematic empirical validation. This dialogue is essential for advancing the comprehensive understanding of language acquisition, especially in ASD.

## 5. Discussion

The present study conducted a mapping and comparative analysis between UBT and the GLP model. The results revealed fundamental convergences, but also divergences in the described developmental stages, empirical scope, and theoretical foundation of each approach.

### 5.1. From Continuum to Stages: An Epistemological Divergence

A key difference between the approaches lies in the description of the developmental trajectory. UBT conceives the process as a gradual continuum, without delineating fixed phases, emphasizing the continuous action of cognitive mechanisms on linguistic input (Croft, 2004; Bybee, 2023, 2010). In contrast, GLP, particularly in the formulation of the NLA model, organizes acquisition into a descriptive sequence of stages (Blanc, 2005a, 2005b, 2005c, 2005d, 2023).

Although the NLA/GLP model itself recognizes individual variability and does not establish rigid ages (Blanc, 2005a, 2005b, 2005c, 2005d, 2023), the "stage" structure may, in clinical practice, be interpreted in an excessively linear way. Hutchins et al. (2024) point out this risk, questioning its adequacy for capturing the heterogeneity of ASD. This risk materializes if the sequence is seen as a universal roadmap, precisely underestimating the crucial role of environmental mediation – a central pillar of the model.

This distinction does not invalidate GLP but defines its different purposes. The stages of GLP function as a descriptive clinical tool that names and sequences observable phenomena (such as mitigation). UBT, on the other hand, offers an explanatory model of the underlying cognitive processes. The divergence is, therefore, one of emphasis and application: UBT explores the "why" (the mechanisms), while GLP/NLA describes the "what" (the phenomena) and suggests a "how" to intervene.

### 5.2. The Holistic Unit

One of the central axes of convergence identified is that both theories describe the onset of language acquisition as anchored in larger, unanalyzed units (Wertheimer, 1923; Tomasello, 2000b; Ibbotson, 2013; Ghalebi & Sadighi, 2015; Novák & Novák, 2022; Leclercq, 2023; Bybee, 2023, 2010; Tomasello, 2000a). In UBT, these are holophrases or "frozen phrases" (Tomasello, 2009, 2000b); in GLP, they are gestalts, "chunks," or echolalias (Blanc, 2005a, 2005b, 2005c, 2005d, 2012, 2023; Prizant, 1983; Peters, 1983). This shared premise signals a view of language as an emergent system, constructed from actual use, input frequency, and its communicative function (Tomasello, 2003; Croft, 2004; Bybee, 2023).

Both perspectives propose that these holistic chunks are progressively analyzed and recombined in a trajectory that goes "from whole to parts," forming the basis for subsequent grammatical creativity (Blanc, 2005a, 2005b, 2005c, 2005d, 2012; Tomasello, 2009).

### 5.3. The Major Divergence: The Initial Pragmatic Abyss and the Bridge of Mediation

The convergence on the starting point, however, conceals a fundamental divergence concerning the degree of shared communicative intentionality associated with these initial units. In UBT, which describes typical development, holophrases emerge naturally from established joint attention and effective intention-reading, carrying from the outset a clear communicative intention for the interlocutor (Tomasello, 2009, 2000b). In the clinical GLP,

applied to ASD, the starting point is different. The first gestalts or echolalias are often chunks that are difficult to comprehend, with a predominantly associative or self-stimulatory function, and their communicative intent may not be transparent (Prizant, 1983; Blanc, 2023). This reflects the deficits in socio-emotional reciprocity characteristic of the spectrum (DSM-5-TR, 2022).

It is in this initial pragmatic abyss that the NLA/GLP model introduces its most crucial element: intentional adult mediation. Blanc (2005a, 2005b, 2005c, 2005d) proposes that the caregiver must first "enter the child's world," deciphering their gestalts to establish a connection. In a second step, they begin strategically introducing new linguistic chunks that are, by design, more functional, predictable, and analyzable (e.g., "Where is...?") (Blanc, 2023).

This mediation acts as a theoretical bridge between the models. By providing structured, frequent, and functional input, the adult creates the conditions for the cognitive mechanisms described by UBT (intention-reading, pattern-finding) to be triggered, even within a context of initial pragmatic difficulties. Therefore, GLP does not contradict UBT but specifies its point of application and the practical procedure for enabling it in an atypical context.

### 5.5. From Analysis to Syntax

The review revealed notable parallels between the descriptions of each theory in the subsequent processes: (1) Initial Analysis: The word combinations and pivot schemas of UBT (Tomasello, 2009) find their counterpart in the mitigation stages and isolated word combinations of GLP (Blanc, 2005a; Prizant, 1983). The "mitigation" process is the observable clinical manifestation of the "pattern-finding" mechanism described by UBT; (2) Emerging Syntax: The item-based constructions or "verb islands" of UBT – where syntactic knowledge is initially tied to specific verbs (Tomasello, 2003) – mirror the phase of original phrases with experimental grammar (Stage 4 of NLA), where verbs begin to stand out as a grammatical class, albeit through trial and error (Blanc, 2005c, 2023); (3) Consolidated Grammar: The development of abstract and complex constructions in UBT (8) corresponds to the final NLA stages of sentences with a complete grammatical system (Blanc, 2005d, 2023).

These parallels reinforce that an underlying sequence of linguistic processes (analysis, recombination, generalization) may have a common basis. The heterogeneity of ASD does not

invalidate this sequence but explains the variations in its starting point (complex echolalias) and in the pace of its progression, the latter being deeply influenced by mediation.

### 5.6. Empirical Limitations: An Imbalance

The review evidenced an imbalance in the evidence base supporting each approach. While UBT is supported by a diversity of experimental research and corpus studies (Tomasello, 2000b; Ibbotson, 2013; Ghalebi & Sadighi, 2015; Croft, 2004; Leclercq, 2023; Bybee, 2023, 2010; Tomasello, 2000a, 2000c), GLP – especially as the NLA protocol – rests predominantly on clinical reports, case studies, and non-indexed literature (Blanc, 2005a, 2005b, 2005c, 2005d, 2012; Prizant, 1983; Hutchins et al., 2024; Venker & Lorang, 2024; Bryant et al., 2025). This lack of controlled clinical trials and standardized outcome measures constitutes a significant limitation for validating NLA as an evidence-based intervention.

It is crucial, however, to distinguish between the conceptual core of GLP (the description of the gestalt-analytic trajectory) and the NLA intervention protocol derived from it. The results of this review corroborate the core concept of GLP, as its descriptive sequence finds strong resonance in the principles of UBT and in studies on functional echolalia. The criticism regarding the empirical base primarily refers to the efficacy of the structured intervention protocol, which lacks robust comparative testing.

## 6. Final Considerations

This work proposed a conceptual integration between two models of language development, suggesting that GLP can be understood as a specialized clinical lens that describes frequent trajectories in ASD, which find explanatory support in the general principles of UBT.

The implications of this review are twofold. For clinical practice, a critical adoption of the NLA model is recommended, prioritizing not the rigid application of its stages, but the understanding of the mediation mechanisms that facilitate the transition from holistic to analytic processing. Intervention should, therefore, create environmental conditions—such as adequate input and opportunities for meaningful interaction—capable of activating the learning processes described by UBT, always starting from the individual's interests and communicative forms.

In the field of research, two main directions are indicated: conducting longitudinal studies that correlate measures of pattern abstraction (from UBT) with progression through the GLP stages, and carrying out controlled clinical trials to test the efficacy of the NLA protocol compared to other approaches.

The limitations of this study are recognized. It was based on a narrative and qualitative review of the literature, with the inclusion of grey literature, which implies an inherent interpretive bias. The choice to focus on the dialogue between UBT and GLP may also have left out nuances from other relevant theoretical perspectives. These limitations, however, reinforce the need for the propositions presented here to be validated by future empirical investigations.

In summary, the articulation between UBT and GLP allows us to understand language acquisition in ASD not as a deficit process, but as a variation in the starting point, pace, and necessary conditions for activating the same fundamental usage-based learning mechanisms. This integrative view has the potential to ground a clinical practice that is more scientifically informed, more aligned with the neurodiversity perspective, and therefore more effective.

## Conflict of Interest

The authors have no conflicts of interest to declare.

## Authorship Contribution

*Alice Silvestre Campião:* Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration and Writing - Original Draft.

*Marina Leite Puglisi:* Conceptualization, Methodology, Supervision, Validation and Writing - Review & Editing.

## Research Protocol and Pre-Registration

We confirm the evaluation of Equator Network guidelines, and the application of available models was not deemed relevant. The protocol for this scoping review was registered on the Open Science Framework platform under the registration: https://doi.org/10.17605/OSF.IO/U2KFV.

## Data Availability Statement

The extraction data are publicly archived in the Zenodo repository under the persistent identifier DOI: https://doi.org/10.5281/zenodo.18470555

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