

# Child-Directed Speech in Children's Media: A Case Study on *Bing*'s Lexical and Syntactic Structures

## ABSTRACT

High-quality animated programs that offer age-appropriate linguistic content characterized by clear pronunciation, engaging narratives, and vocabulary and syntactic structures that are aligned with their developmental stage should be readily available for children. Unfortunately, the quality of linguistic input in these programs varies significantly. Examining the linguistic features of *Bing* cartoon, a popular children's animated series on YouTube, and evaluating its potential contribution to children's language acquisition is hence, necessary. The research aims to identify the lexical and syntactic features of *Bing*, focusing on vocabulary frequencies, vocabulary level, and utterance length. The study employs a content analysis approach to analyze sixteen episodes of *Bing* using the British National Corpus and the Corpus of Contemporary American English (BNC/COCA) word list. Findings of this study reveal that *Bing* exhibits a unique linguistic feature by having similarities as child-directed speech characteristics. *Bing*'s language utilizes high-frequency words and short utterances, which are conducive to language acquisition. The study also found that *Bing* employs a simplified vocabulary, with a focus on core vocabulary of each theme, which is a characteristic of child-directed speech. The results of this study contribute to language acquisition by providing a comprehensive analysis of the linguistic features of *Bing* and its potential contribution to children's language development. The findings of this study have implications for parents and educators, who can utilize *Bing* as a valuable supplement for language acquisition. Furthermore, the study highlights the importance of incorporating high-quality linguistic input, such as *Bing*, into language acquisition program to support children's language development.

**Keywords:** child-directed speech; language acquisition, lexical features, syntactic features, educational cartoons

## INTRODUCTION

Language acquisition during early childhood is a foundational process that underpins cognitive development and communication skills (Ghozali et al., 2024; Rowe & Snow, 2020). From birth, children exhibit an inherent drive to express themselves through the language they encounter, progressing from babbling to the formation of words and the development of communicative competence (Berko Gleason & Bernstein Ratner, 2022; Laing & Bergelson, 2020). This critical period, spanning roughly from one to seven years, is characterized by rapid linguistic and cognitive growth, including the assimilation of increasingly complex syntax (Rowe & Snow, 2020).

Environment plays a crucial role in this development, encompassing both direct social interaction and the increasingly prevalent digital landscape (Akbar & Ismail, 2021; Arabiana et al., 2020). Children internalize language through imitation, repetition, and contextualized use, often without formal instruction (Betti & Igaab, 2022). Their linguistic development is supported by biological predispositions and a variety of environmental stimuli, including songs, rhymes, music, and screen-based media (Kol, 2021). As children navigate these environments, incidental learning, unstructured and unintentional language acquisition emerges as a powerful mechanism in language acquisition (Watkins & Marsick, 2021;

Figuroa, 2024). Multimedia content, particularly cartoons, has become a significant aspect of this digital environment, and has shown to facilitate the understanding of basic concepts (e.g., numbers, animals, colors) (Basar & Eyildirim, 2021) and enhance vocabulary retention through thematic repetition (e.g., Majuddin et al., 2021).

Research has documented the educational value of certain verbal cartoons, such as *Dora the Explorer* and *Blue's Clues*, which employ interactive dialogue, age-appropriate vocabulary, and repetition (Alghonaim, 2020; Trota et al., 2022). The key features found in both cartoons (i.e., repetition, simple vocabulary, and short sentence) align with Child-Directed Speech (CDS) – to support language acquisition. These series demonstrate the potential of carefully designed audiovisual media to positively influence linguistic development.

The accessibility of cartoons on digital platforms like YouTube has significantly altered how children engage with and potentially acquire language (Sheikh et al., 2023). These cartoons are often lauded for their capacity to enhance language skills through engaging narratives and a combination of verbal and nonverbal cues (Arabiana et al., 2020; Arif et al., 2022). Ideally, children would consistently encounter high-quality animated programs that offer age-appropriate linguistic content characterized by clear pronunciation, engaging narratives, and vocabulary and syntactic structures that are aligned with their developmental stage (Kostyrka-Allchorne, 2017; Basar & Eyildirim, 2021). However, in reality, the quality of linguistic input in children's cartoons varies significantly. Although programs such as *Dora the Explorer* and *Blue's Clues* have demonstrated that cartoons can facilitate language acquisition when designed with educational intent (Alghonaim, 2020; Trota et al., 2022), there are some non-verbal or poorly structured programs, that have even been associated with negative language outcomes, including delayed speech (Aini et al., 2023).

A notable gap exists in the scholarly investigation of the specific linguistic features of individual cartoons and their precise contribution to language acquisition. This gap is particularly evident in the case of the popular *Bing* series. Despite its widespread reach and preliminary evidence suggesting its potential to enhance listening skills (Ozturk, 2020), there is a lack of comprehensive research examining *Bing's* linguistic features within the context of child language development. This absence of research leaves the claims regarding *Bing's* educational value largely unverified and limits the ability of parents and educators to make informed decisions about its potential on language acquisition. To address this gap, this study employs a content analysis approach to examine the lexical and syntactic features of *Bing* and compare them with established benchmarks of children's language development, specifically child-directed speech (CDS). This analysis aims to provide evidence-based understanding into *Bing's* potential role in supporting language acquisition.

Therefore, this study investigates the lexical and syntactic features of *Bing*, through a content analysis of selected episodes. The specific objectives are to: (1) identify the key lexical and syntactic features present in the language used in *Bing*, and (2) evaluate the alignment of these features with the characteristics of Child-Directed Speech (CDS). By comparing the linguistic profile of *Bing* with established principles of CDS, this research contributes to the growing body of literature, exploring the role of digital media in children's language acquisition, offering valuable understanding for caregivers, media producers, and educators.

## LITERATURE REVIEW

Children's television programs serve as influential platforms for early language development, offering immersive experiences that blend entertainment with linguistic input (Sheikh et al., 2023). Scholars have increasingly recognized these programs as vehicles for fostering vocabulary growth, syntactic development, and broader communicative competence (e.g., Alghonaim, 2020; Trota et al., 2022). Programs such as *Dora the Explorer*, (e.g., Alghonaim,

2020), *SpongeBob SquarePants* (e.g., Meshkat & Karami, 2016; Prasaja & Sujawarti, 2023), *Peppa Pig* (e.g., Alexiou & Kokla, 2018; Trota et al., 2022), *Blue's Clues*, *Paw Patrol* (e.g., Trota et al., 2022) often feature linguistically simplified content that mirrors the structure and function of child-directed speech (CDS), making them fertile grounds for language acquisition studies. This literature review examines research on the linguistic features on children's television programs, with an emphasis on the lexical and syntactic aspects, and outlines how these aspects align with the principles of CDS.

#### LANGUAGE ACQUISITION IN EARLY CHILDHOOD

Language acquisition is the process by which humans develop the ability to perceive, produce, and understand language; it is a crucial aspect of early childhood development. First language (L1) acquisition occurs without explicit instruction and involves achieving significant linguistic milestones within the first few years of life (Cook, 1969, as cited in Marzuki, 2012; Figueroa, 2024). L1 acquisition progresses through distinct developmental stages. Infants initially communicate through crying, with babbling emerging around 6 months (Akbar & Ismail, 2021). Children typically produce their first words around 12 months (Diesendruck, 2007) and acquire a vocabulary of approximately one thousand words by 36 months, enabling more effective communication (Badawieh & Al-Shamsi, 2023; Berko Gleason & Bernstein Ratner, 2022). By age three, children develop basic speaking abilities, progressing to more complex sentence structures as they grow older (Akbar & Ismail, 2021). This process is influenced by both internal factors, such as physiological development and innate abilities (Badawieh & Al-Shamsi, 2023), and external factors, primarily linguistic environment (Akbar & Ismail, 2021).

The acquisition of a first language is shaped by both biological predispositions and exposure to language-rich environments. From an internal perspective, Chomsky's theory of Universal Grammar (1957) posits that children are born with an innate linguistic blueprint, enabling them to acquire complex syntactic structures from minimal input. According to this nativist perspective, children are biologically equipped with an innate set of syntactic rules that enables them to internalize the grammar of any language which they are exposed to (e.g., Farid et al., 2021). Externally, the linguistic environment plays an equally vital role in triggering this innate potential. Vygotsky's social interactionist theory (1978) emphasizes that language acquisition is fundamentally rooted in social engagement, where children co-construct meaning with caregivers and peers (Sultana, 2019). Thus, while linguistic capacity may be innate, meaningful interaction in a rich environment is essential for its full realization.

#### LINGUISTIC INPUT AND CHILD-DIRECTED SPEECH

A key driver of language acquisition is linguistic input. Children acquire language through consistent and meaningful linguistic input, primarily from adults and caregivers (Figueroa, 2024; Nylund, 2022). Child-directed speech (or sometimes referred to as CDS by some authors), which is also referred to as "parentese" or "motherese", is characterized by distinct phonological features such as higher pitch, slower tempo, and exaggerated intonation (Ferjan Ramirez et al., 2022). These modifications are necessary as they can facilitate children to imitate, simplify, and create new words, which in turn can reinforce vocabulary acquisition (Cai, 2021). Research indicates a correlation between the diversity in parental lexical input and in children's vocabulary development (Quigley & Nixon, 2024). However, it is important to acknowledge that the quality and consistency of language input can be influenced by various socio-economic factors (Anderson et al., 2021) and social contexts (Casillas et al., 2021).

Krashen's Input Hypothesis, while is often discussed in the context of second language acquisition, offers valuable understanding into first language development. The hypothesis

posits that language acquisition is primarily driven by the subconscious process of language development, and that language input should be slightly beyond the learner's current proficiency level (i+1) (Krashen, 1982; Chen et al, 2024). This principle aligns with research on child-directed speech, which demonstrates that caregivers instinctively adjust their language to match a child's level, employing simplified structures, repetition, and exaggerated intonation to enhance comprehension (Lichtman & VanPatten, 2021).

In addition to direct interaction, media exposure, particularly cartoons, can serve as a complementary source of linguistic input. Though often passive, such exposure may foster vocabulary development and contribute to the gradual activation of receptive vocabulary (Tahir, 2023). As children accumulate linguistic experiences from both direct and mediated sources, their lexical, grammatical and pragmatic competencies are progressively shaped (Casillas et al., 2021).

#### LINGUISTIC FEATURES OF CHILD-DIRECTED SPEECH

Child-directed speech (henceforth, CDS) is a simplified and modified forms of communication used by adults and older children when addressing to young children (Betti & Igaab, 2022; Azzahra et al., 2022). CDS is marked by specific lexical and syntactic properties that make it highly effective for language acquisition. Lexically, CDS is characterized by restricted vocabulary, frequent repetition, with emphasis on high-frequency concrete nouns (e.g., Gelderloos et al., 2020; Shi et al., 2023). Caregivers often introduce new words gradually, embedding them within simplified structures that enhance comprehensibility (Odijk & Gillis, 2021). Nouns tend to dominate early CDS, followed by verbs and adjectives (Adi-Bensaid et al., 2015, as cited in Harmati-Pap et al., 2024; Meshkat & Karami, 2016).

Additionally, CDS commonly includes diminutives and reduplicated forms, such as “doggy” (for ‘dog’) or “choo-choo” (for ‘train;’) among English language acquirers, which are easier for young children to process and remember (Ota et al., 2018). Word frequency also plays a critical role in this regard – high frequency words, as defined by Nation's 2,000 most frequent words families, are more easily recognized and retained than low-frequency one (Brysbaert et al., 2018; Dang, 2020; Liu et al., 2024). Input frequency, which refers to how often specific words appear in the child's environment, also significantly predicts vocabulary acquisition (Cai, 2021; Dang, 2022). This aligns with the use of common words in CDS, which makes language more accessible for children (Harmati-Pap et al., 2024).

Syntactically, CDS is different from general speech in several notable ways. Sentences in CDS are typically shorter, simple, and more repetitive, making them more accessible to young learners (Harmati-Pap et al., 2024; Hoff et al., 2020). These structural simplifications such as reduced sentence length and increased repetition facilitate language input and support both vocabulary development and the internalization of grammatical patterns (Martin, 2016; Saxton, 2009, as cited in Jones et al., 2023). Harmati-Pap et al. (2024) further emphasizes that one of the most effective features of maternal speech lies in its use of small utterance units and frequent repetition, which shaped by interactive dynamic between caregiver and child.

#### CARTOONS AS LINGUISTIC INPUT

Cartoons represent a significant form of digital media that can influence children's language development. Cartoons can be broadly categorized as educational (e.g., *Dora the Explorer*, *Little Einsteins*) or non-educational (e.g., *Dragon Ball Z*, *Ben10*), with the latter potentially posing risks due to violent content or inappropriate language (Dweich et al., 2022; Lodhi et al., 2018, 2020; Ghilzai et al. 2017). Cartoons can also be classified as verbal (dialogue-driven, e.g., *Bob the Builder*) or nonverbal (visually driven, e.g., *Shaun the Sheep*) (Ariff et al., 2022; Aini et al., 2023). While nonverbal cartoons can enhance imagination, they may also contribute

to speech delays due to a lack of verbal communication (Aini et al., 2023; Akbar & Ismail, 2021). Studies (e.g., Kostyrka-Allchorne, 2017; Guellai et al., 2022) have also shown that cartoons with low-quality language (i.e., “baby talk”) such as in *Teletubbies* can negatively impact language skills.

Numerous studies (e.g., Alexious & Kokla, 2018; Alghonaim, 2020; Arabiana, 2020; Makasau, 2017; Lodhi et al., 2018; Trota et al., 2022) have demonstrated the potential of cartoons to facilitate language acquisition. The quality of the content is crucial, with educational cartoons that feature clear labelling, character interactions, and vocalizations modelling have shown to enhance vocabulary, grammar, and conversational skills in children (Kostyrka-Allchorne, 2017; Trota et al., 2022). Repetition is another key mechanism through which cartoons support language acquisition, as repeated words and phrases become familiar to young viewers (Alghonaim, 2020; Guellai et al., 2022; Majuddin et al., 2021; Trota et al., 2022). Cartoons like *Dora the Explorer* engage children through direct address and interactive prompts, thereby introducing new vocabulary and sentence patterns in meaningful contexts (Alghonaim, 2020). The educational value of cartoons is amplified through repeated exposure to both frequent and infrequent words, as seen in programs like *Peppa Pig*, *Paw Patrol*, and *Blue’s Clues* (Alexiou & Kokla, 2018; Trota et al., 2022).

Age-appropriateness of content is essential for enhancing cognitive development (Guellai et al., 2022). Programs with strong narrative, direct character address, and pauses for responses are associated with enhanced language skills, while programs with weak narrative, fast pacing, or complex stimuli can hinder language acquisition (Linebarger & Walker, 2005, as cited in Guellai et al., 2022; Guellai et al., 2022). This aligns with Krashen’s *i+1* hypothesis, as programs that overwhelm children are those that far exceed their comprehension level (Guellai et al., 2022).

The literature reviewed supports the notion that cartoons, particularly the well-designed ones, can serve as effective supplementary sources of linguistic input, aligning closely with the features of CDS. Lexical items in these programs often emphasize high-frequency, concrete vocabulary, whereas their syntactic structures tend to be simplified and repetitive. These characteristics mirror those found in naturalistic caregiver speech, suggesting that high-quality children’s media has the potential to encourage early language acquisition process.

## METHODOLOGY

This study employed a mixed-method content analysis approach to examine the linguistic features that are present in *Bing*, with a focus on how its lexical items and syntactic structures used in the program reflect the characteristics of child-directed speech (CDS). The research integrated quantitative methods – word frequency, vocabulary level, and utterance length – with a qualitative analysis of contextual and thematic elements. By triangulating these methods, the study aimed to provide a comprehensive account of how *Bing* models language input that may support children’s language acquisition.

### DATA SOURCE AND SAMPLING

Data were collected from the official *Bing* YouTube channel, which, as of November 2024, featured over 790 videos categorized into 42 thematic playlists such as “Food,” “Animal,” “Indoor Adventure,” and “Outdoor Adventure.” To ensure a representative sample of *Bing* episodes, a stratified random sampling technique was employed. This method involved dividing the population of episodes into distinct subgroups or ‘strata’ based on the thematic playlists. Four episodes were then randomly selected from each of the four thematic strata (food, animal, indoor adventure, and outdoor adventure), resulting in a total of sixteen episodes.

This approach aligns with content analysis best practices (Babbie, 2020) and ensures the inclusion of diverse narrative contexts and lexical items.

A total of sixteen episodes were chosen, each with an approximate duration of 7 minutes, resulting in a total dataset of approximately 118 minutes of screen time and 1616 words. The total of sixteen episodes were chosen because *Bing* episodes have a high degree of thematic consistency; the core linguistics patterns, and narrative structures are repeated across episodes. This sample size was deemed sufficient for capturing the recurrent linguistic patterns of the series while remaining manageable for in-depth analysis. A larger sample would have increased the complexity of the analysis without necessarily adding significant new information, given the thematic consistency. The selected themes – food, animals, indoor adventure, and outdoor adventure – reflect familiar experiences for preschool-aged children, aligning with vocabulary domain typical in CDS.

#### TRANSCRIPTION PROCEDURE

All dialogues from the selected episodes were transcribed using the Cockatoo online transcription platform. Transcription included utterances from all speaking characters – Bing, Flop, Pando, Sula, Coco, Amma, and Padget – and were segmented according to natural speech boundaries (commas and full stop) to capture sentence-level and utterance-level data. This process resulted in a corpus suitable for both lexical and syntactic analysis. Following Laalo and Argus (2020), the use of transcription enables precise frequency calculation and facilitates the identification of linguistic structures relevant to early language development.

#### LEXICAL ANALYSIS

The lexical analysis focused on two dimensions, vocabulary frequency and vocabulary level. These were chosen to assess both the recurrence and complexity of the lexical items in *Bing*.

#### VOCABULARY FREQUENCY

Lexical items, specifically nouns, verbs, and adjectives, were extracted and quantified based on their frequency of occurrence. Words repeated three or more times within a single episode were included in the analysis, based on Vidal (2011) who suggests that repeated exposure (3-6 times) significantly supports vocabulary retention in children. Proper nouns (e.g., character names such as Bing, Flop, Pando) and auxiliary verbs (e.g., can, may, will) were excluded, as they serve narrative or grammatical functions rather than contributing to vocabulary expansion. Inflected verb forms (e.g., “plants,” “planted,” “planting”) were grouped under their respective lemmas (e.g., plant).

#### VOCABULARY LEVEL

To determine lexical complexity, words were categorized into high-frequency and low-frequency groups using the BNC/COCA word lists via the Lextutor platform ([www.lextutor.ca](http://www.lextutor.ca)). High-frequency words were defined as those occurring in the 1<sup>st</sup> and 2<sup>nd</sup> 1000-word frequency lists (1k and 2k bands). According to Nation’s (2012) lists, words occurring below the 1k and 2k bands were classified as high frequency (Dang, 2020). This classification enabled a deeper understanding of the lexical accessibility and learning potential of the language used in *Bing*. The final list included 153 lexical items, with their frequency levels and word classes (noun, verb, adjective) identified. This allowed for a detailed analysis of how *Bing* uses both familiar (high-frequency) and rare (low-frequency) vocabulary, which is the strategy for aligning with CDS and scaffolding children’s lexical development.

#### SYNTACTIC ANALYSIS

Syntactic features were assessed through utterance length, an indicator frequently associated with CDS and children’s syntactic development (Harmati-Pap et al., 2024; Hoff et al., 2020). To analyze the distribution of utterances length, utterances were categorized as short (fewer than 5 words), medium (5-10 words), and long (11 or more words). This categorization was chosen to align with the developmental stages in children’s language acquisition, where shorter utterances reflect early language production and longer utterances indicate syntactic complexity. Research suggests that young children initially produce short utterances, gradually processing to more complex sentences as their language skills develop (Berko Gleason & Bernstein Ratner, 2022). Therefore, this categorization allows for a clear examination of how *Bing*’s syntactic features align with these developmental milestones.

**TABLE 1.** Framework for Analyzing the Utterance Length in Bing

Category	Detail	Example
Short utterances	Fewer than 5 words.	Padget: “Yes, count to ten.”
Medium-length utterances	5-10 words.	Bing: “Can I have an ice-lolly, Flop?”
Long utterances	More than 10 words.	Flop: “Okay, now how about another go and this time you need to be quiet and statue still.”

#### COMPARATIVE ANALYSIS WITH CDS

To evaluate the educational value of *Bing*’s language, findings from the lexical and syntactic analyses were compared against the established features of child-directed speech (e.g., repetition, simplified structure, use of high-frequency vocabulary, and short utterances). This comparative framework allowed the study to determine the extent to which *Bing* aligns with known strategies used by caregiver to support early language acquisition (Hoff et al., 2020; Harmati-Pap et al., 2024; Ota et al., 2018).

### RESULTS

This study examined the linguistic features of the *Bing* cartoon, with a particular focus on its lexical and syntactic structures. Through a content analysis of sixteen randomly selected episodes from the official *Bing* YouTube channel, the findings are organized into two major components: lexical features (vocabulary frequency and level) and syntactic features (utterance length). These results are evaluated in terms of their alignment with the characteristics of Child-Directed Speech (CDS), which is widely recognized for its role in facilitating language acquisition in young children.

#### LEXICAL FEATURES

##### VOCABULARY FREQUENCY

One hundred and fifty-three distinct lexical items (nouns, verbs, and adjectives) that were repeated more than three times across the 16 episodes from four thematic categories: Food, Outdoor Adventure, and Indoor Adventure were identified from the current study. This frequency threshold aligns with the previous studies (e.g., Jones et al., 2023; Shi et al., 2023, Vidal, 2011), which emphasizes that repeated exposure enhances vocabulary retention. The majority of repeated words were thematically relevant and contextually embedded, supporting children’s semantic mapping.

Nouns were the most frequently used word class (79 items, 51.6%), followed by verbs (54 items, 35.3%) and adjectives (20 items, 13.1%). This distribution reflects the natural developmental sequence of vocabulary acquisition, where children tend to learn concrete nouns earlier, followed by action-oriented verbs and later, descriptive adjectives (Adi-Bensaid et al, 2015, as cited in Harmati-Pap et al., 2024; Akbar & Ismail, 2021; Berko Gleason & Bernstein Ratner, 2022).

Throughout the episode, many lexical items were repeated across different themes, contributing to consistent exposure and encouraging children's lexical development. Nouns such as "carrot" and "frog" were among the most frequently used lexical items. For instance, "carrot" appeared 28 times – 20 of which occurred in a single episode – while "frog/froggy" were each repeated over 30 times across in the "Animal" theme episodes. These concrete, familiar nouns represent everyday concepts relevant to children's lives, making them highly accessible and meaningful to children. Such repetitions help to solidify vocabulary acquisition in children by reinforcing word-referent associations through meaningful context (Meshkat & Karami, 2016), which is in line with CDS practices.

Another noteworthy lexical feature observed in *Bing* is the use of diminutive forms such as "doggy" and "froggy". These forms align with established patterns in CDS, where diminutive and phonologically simplified words (e.g., night-night, choo-choo) are used to enhance phonological awareness and word segmentation in infants (Ota et al., 2018). In *Bing* these diminutives often appeared interchangeably with their base forms (e.g., frog/froggy), subtly introducing children to morphological variations and enhancing their understanding of word families. This strategy not only makes speech sound friendlier but also, as Berko Gleason and Bernstein Ratner (2022) suggest, facilitates lexical recognition through rhythmic and repetitive patterns, a technique shown to support early word learning.

Meanwhile, verbs were also strategically repeated, particularly those related to everyday routines and actions. Words like "go" and "play" featured prominently across episodes. The verb "go", for example, appeared in various contexts, such as initiating actions ("let's go") or describing movement, mirroring children's own developmental stages of exploring space and objects. This functional variety introduces children to semantic flexibility and supports the development of action-based vocabulary crucial for early communication.

The analysis also revealed an intentional mix of concrete and abstract verbs. Verbs like "give" and "catch" represent observable actions, making them easier for children to acquire and are easier to relate to physical experiences. In contrast, abstract verbs such as "like," and "love," introduce more distinctive emotional and cognitive states to children. For instance, utterances like "*I love him too*" provide opportunities for children to connect language with feelings, preferences, and social relationship. This supports Betti and Igaab (2022) who states that simplified and emotionally expressive language, as found in CDS, contributes to both linguistic and social-emotional development in early childhood.

On the other hand, adjectives were used more sparingly but served as key roles in supporting descriptive language. Words like "yummy" and "slimy" were used to evoke sensory experiences and emotions. For instance, in describing a frog as slimy or food as yummy, the language taps into children's sensory and emotional associations, making the words more memorable and enhancing expressive vocabulary development. This supports Berko Gleason and Bernstein Ratner (2022) who states that early lexical development is enhanced when descriptive language is presented contextually rich, emotionally engaging way, as this allows children to connect words with their immediate experiences.

Therefore, the vocabulary used in *Bing* is carefully curated to reflect the linguistic needs and cognitive capacities of young children. Through high-frequency repetition, concrete and familiar nouns, action-based verbs, and simplified forms like diminutives, the series models many of the core features of child-directed speech. At the same time, its lexical variety

introduces children to new concepts and contexts, balancing familiarity with cognitive challenge. These features suggest that *Bing* may serve as a valuable source of incidental vocabulary acquisition, complementing naturalistic learning in everyday environments.

VOCABULARY LEVEL

To assess the accessibility of the vocabulary used in *Bing*, the identified words were cross-references with BNC/COCA word lists by Nation (2012) using Lextutor tool. Words from the first and second 1,000-word families (1K and 2K) were classified as high-frequency, while words from the 3K and beyond – or those not appearing in the corpus – were classified as low-frequency (Dang, 2020).

TABLE 2. Total Number of High and Low Frequency Vocabulary

Word class	Nouns	Verbs	Adjectives	Total	Percentage (%)
Number of high-frequency words	57	48	17	122	80%
Number of low-frequency words	22	6	3	31	20%

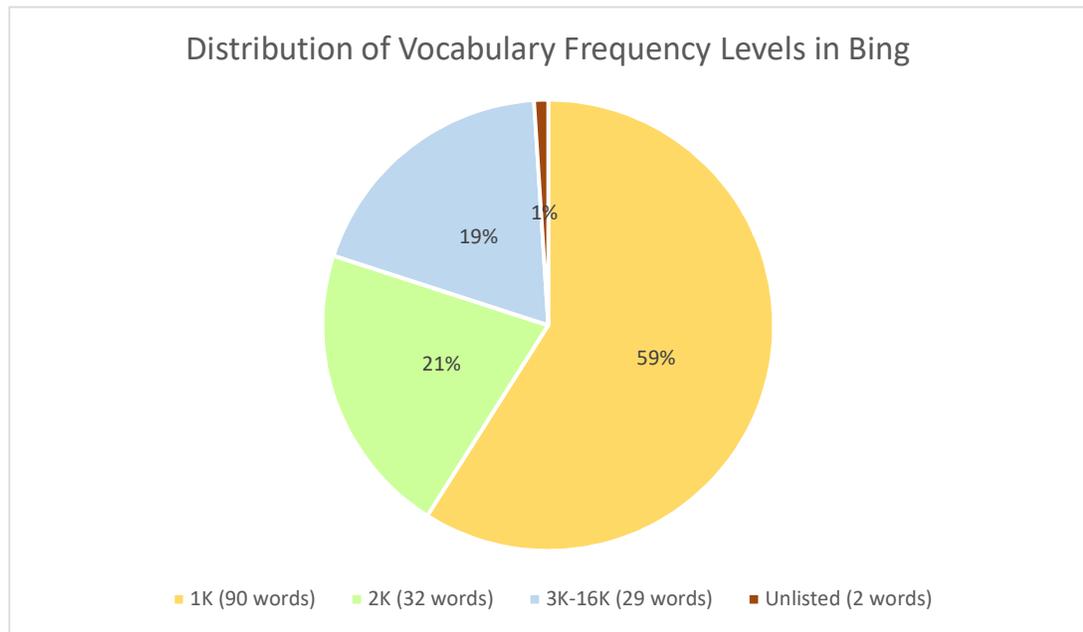


FIGURE 1. Distribution of Vocabulary Frequency Levels in Bing

The analysis revealed that *Bing* heavily features high-frequency vocabulary. The results show that 122 out of the 153 words (approximately 80%) were high-frequency words, with 88 words in the 1K band and 34 in the 2K band. This distribution suggests that the show prioritizes commonly used language that aligns with children’s daily experiences, a feature that is consistent with the linguistic input provided through child-directed speech. Words such as “go,” “see,” “milk,” “friends,” and “big” are developmentally appropriate and contextually familiar, facilitating both comprehension and production in young children.

Notably, nouns constituted the largest lexical category across the frequency bands, with 79 distinct nouns identified, followed by 54 verbs and 20 adjectives. This emphasis on nouns mirrors patterns in early language development, where concrete object labels are often acquired before verbs and descriptive terms (Akbar & Ismail, 2021). High-frequency nouns in *Bing*, such as “tree,” “banana,” and “blanket”, often appear in contexts where visual references promote meaning, enabling multimodal learning in young children. High-frequency vocabulary is especially important in CDS and early childhood input, as these words are more easily processed, remembered, and eventually produced by young children (e.g., Brysbaert et al., 2018). Verbs and adjectives also predominantly fall within the high-frequency bands. Of the 54 verbs identified, 48 were high frequency, including “help,” “look,” and “play”. Among the adjectives, 17 of the 20 identified were in the 1k-2k range. Word such as “big,” “nice,” and “wet” help children develop early descriptive skills and make sense of sensory or evaluative aspects of their environment.

While the bulk of *Bing*’s vocabulary consists of high-frequency words, the remaining 20% of the words in *Bing* were categorized as low-frequency vocabulary. Nineteen percent of the words appeared in the 3k-16k frequency range, and two words – “kingy” and “skateboarding” – were unlisted in BNC/COCA. Low-frequency words like “monster,” “blender,” “excavator,” and “rainbow” – are less familiar but semantically rich words. Although these words are not as commonly used in everyday speech, their inclusion in a narrative-supported visual medium increases the likelihood of retention and comprehension (Gelderloos et al., 2020. Majuddin et al., 2021). These low-frequency words were often introduced through meaningful storytelling and accompanied by visual or emotional cues, which are known to support deeper cognitive processing (Arabiana et al., 2020; Kanellopoulou et al., 2019; Vásquez & Gomez, 2018).

The overall lexical item in *Bing* reflects a careful balance between familiar and novel vocabulary. This structure aligns with Krashen’s Input Hypothesis (1982), which proposes that optimal language acquisition occurs when learners are exposed to language that is just beyond their current level ( $i+1$ ) (Chen et al., 2024). By anchoring its dialogue in high-frequency, developmentally appropriate vocabulary while occasionally introducing more complex or rare terms, *Bing* mirrors the scaffolding strategies observed in CDS (Lichtman & VanPatten, 2021; Harmati-Pap et al., 2024).

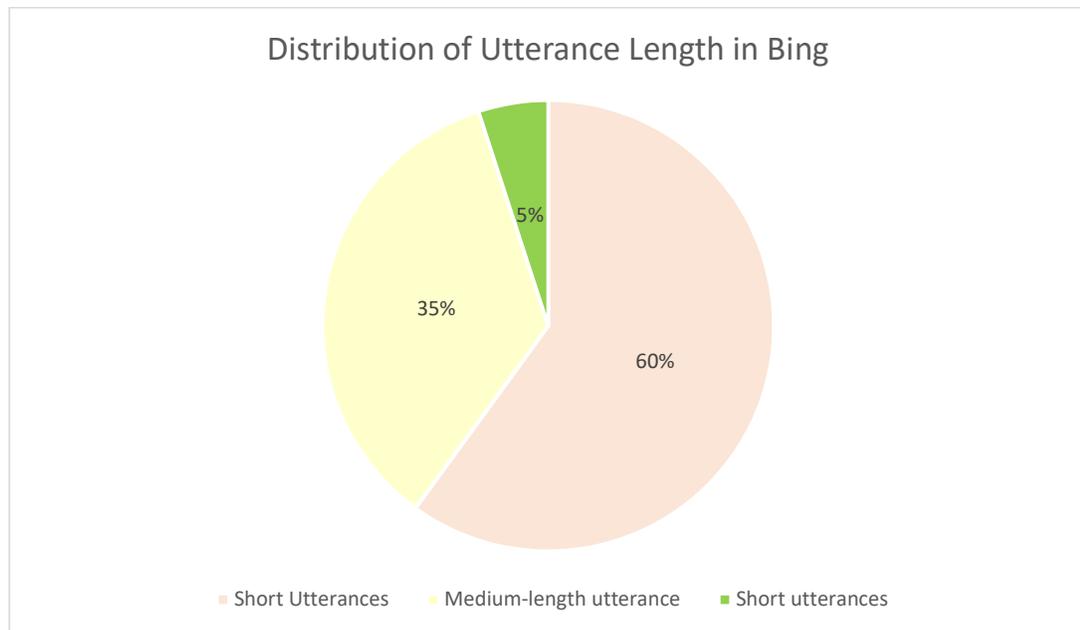
## SYNTACTIC FEATURES

### UTTERANCE LENGTH

Utterance length was categorized into three levels in this study: short (fewer than 5 words), medium (5-10 words), and long (more than 10 words). This analysis was intended to evaluate the syntactic accessibility of the speech presented in *Bing* and to assess its alignment with known features of CDS, which typically includes shorter, segmented utterances. Across 1,616 utterances analyzed, the distribution as follows:

TABLE 3. Utterance Length Distribution in Bing

Utterance Types	Number of Instances	Percentage (%)
Short utterances	974	60%
Medium-length utterances	568	35%
Long utterances	74	5%
<b>Total</b>	<b>1,616</b>	<b>100%</b>



**FIGURE 2.** Distribution of Utterance Length in Bing

The data revealed a clear preference for shorter utterances in the series. Out of 1,616 total utterances, 974 were classified as short, followed by medium-length utterances and only 74 long utterances. This dominant use of short utterances highlights the show's deliberate strategy of linguistic simplification, aligning closely with the principles of CDS.

Short utterances in *Bing* often appear in the form of one- or two-word phrases. Analysis of short utterances in *Bing* reveals that the character communication style is characterized by brief and concise utterances. The data suggests that short utterances are the most prevalent type of utterance in this cartoon. This is evident from the fact that 974 occurrences of short utterance account for approximately 60% of the total number of utterances. The characters in *Bing* often employ simplified utterances and questions to convey meaning. This is particularly evident in situations where the characters ask a question or seek clarification. For example, instead of constructing a longer utterance, Flop, one of the characters, simply asks 'banana?' or 'milk?' to Bing, inquiring if Bing wants something. This strategy of shortening utterances to a single word is a common feature of a character's communication style. Research suggests that toddlers and preschoolers primarily produce single-word utterances or short phrases before gradually developing more complex speech (Laalo & Argus, 2020).

Medium-length utterances add slightly more syntactic complexity to the syntactic structure of *Bing* but remain developmentally appropriate. With 568 instances, they represent a significant portion of the dialogue, suggesting a balance between simplicity and narrative flow. The medium-length utterance accounts for approximately 35% of the total number of utterances. These utterances often include compound constructions or linked phrases that convey more context and narrative flow. For example, sentences like "Some grapes, some lettuce, and milk for her lunch." and "It's a lovely fruit cone now, and you still have your cone" demonstrate how ideas are sequenced using coordinating conjunctions. Although longer than the typical CDS utterances, these statements were still supported by visual or contextual cues, ensuring that their length did not compromise comprehensibility. These structures also represent the type of language children are expected to gradually acquire as they move beyond single-word or two-word utterances.

The 74 long utterances identified in this study were those that are mainly spoken by adult characters (e.g., Flop, Amma, and Padget). They were typically used to explain consequences, provide guidance, or summarize events. For example, the utterance made by Flop to Bing in “*When you have a dog, you have to do the yucky stuff as well as the fun stuff, Bing*” and the one made by Amma to Bing in “*And Bing, what will you do next time you need to go pee in the middle of a game?*” Although syntactically more complex, these utterances were usually accompanied by pauses, intonation cues, and visual support – all of which are hallmarks of CDS that help children process extended speech. Despite their infrequent occurrences, these longer utterances are typically constructed using high-frequency, child-accessible vocabulary, which enhance their comprehensibility (Brysbaert et al., 2018), and reflects Krashen’s i+1 Input Hypothesis (1982)

Overall, the utterance length distribution in *Bing* closely mirrors patterns found in CDS. The predominance of short utterances, complemented by medium-length segments and occasional longer explanations, creates a scaffolded linguistic environment for young children. This progression of complexity shows natural language development stages and supports young viewers in gradually expanding their comprehension and production capabilities. The findings suggest that the syntactic structuring of *Bing*’s dialogue is purposely tailored to facilitate language acquisition, making it a linguistically supportive media resources for early childhood learning.

## DISCUSSION

The findings from the content analysis of sixteen episodes of *Bing* suggest that the linguistic input in the show mirrors many of these features, supporting its potential utility in facilitating early language acquisition.

### LEXICAL FEATURES AND ALIGNMENT WITH CDS

The lexical analysis revealed that *Bing* frequently employs high-frequency words, particularly concrete nouns and basic action verbs. Of the 153 distinct lexical items identified, approximately 80% belonged to the 1,000 and 2,000 most common words families as defined by the BNC/COCA corpus (Nation, 2021). High-frequency nouns such as “carrot,” “froggy,” and “house” appeared across multiple episodes and themes, aligning with CDS’s emphasis on familiar, concrete vocabulary to support comprehension (Brysbaert et al., 2018; Meshkat & Karami, 2016). These words are developmentally appropriate for young children, as they reflect objects and concepts encountered in everyday life.

This lexical selection strategy also reflects Krashen’s Input Hypothesis (1982), which emphasizes the importance of language input that is slightly beyond the learner’s current level (i+1) (Chen et al., 2024). *Bing* largely uses familiar vocabulary but occasionally introduces less frequent or novel words (e.g., excavator, monster, blender), offering young viewers opportunities to expand their lexicons while remaining grounded in accessible language. This balance between high-frequency and lower-frequency vocabulary aligns with the findings by Liu et al. (2024) and Dang (2020), who assert that incidental exposure to novel terms in engaging contexts supports vocabulary expansion.

The lexical items in *Bing* were dominated by nouns (n=79), followed by verbs (v=54), and adjectives (a=20). This distribution is consistent with typical developmental patterns in child language, where noun acquisition often precedes verbs and adjectives (Adi-Bensaid et al., 2015, as cited in Harmati-Pap et al., 2024; Akbar & Ismail, 2021). Verbs such as “go,” “turn,” “let,” “come,” “get,” and “play” were repeated frequently across themes. These verbs, representing both concrete and abstract actions, align with CDS features that prioritize functionally relevant language and repetition (Harmati-Pap et al., 2024). Repetition of action

words strengthens semantic association and enhances retention, as supported by studies in CDS and educational media (Jones et al., 2023; Shi et al., 2023).

Adjectives, though less frequent, provided sensory and evaluative descriptor (e.g., yummy, slimy, wet), consistent with CDS's goal of contextual grounding (Gelderloos et al., 2020). These descriptors support expressive vocabulary development and facilitate children in understanding attributes of objects and experiences – both are critical for conceptual development (Shi et al., 2023).

#### SYNTACTIC FEATURES AND ALIGNMENT WITH CDS

In addition to lexical simplification, *Bing* exhibits syntactic features that closely resemble CDS. The analysis of utterance length revealed a predominant use of short utterance (less than 5 words), accounting for approximately 60% of all utterance across all episodes. Medium-length utterances (5-10 words) comprised 35% and long utterance (more than 10 words) were infrequent at 5%. This distribution is consistent with previous studies on CDS, which emphasize brief and syntactically simple utterances to reduce cognitive load and support real-time comprehension (Harmati-Pap et al., 2024; Hoff et al., 2020).

Short and simple utterances are typically significant given that children in the early stages of language acquisition (typically between 12 and 36 months) are still mastering the basic syntactic order; they will benefit greatly from consistent, simplified input (Diesendruck, 2007). Furthermore, research on language acquisition (e.g., Diesendruck, 2007; Fadhli et al., 2017) highlights that children typically begin producing words at 12 months and progress from babbling to sentence formation by age of 3. The short utterances in *Bing* reflect early-stage language production, reinforcing fundamental vocabulary and structures that align with children's linguistic development stages (Jones et al., 2023). Studies indicate that CDS employs shorter utterances to aid comprehension (Harmati-Pap et al., 2024; Hoff et al., 2020; Gelderloos et al., 2020). The predominance of short utterances in *Bing* mirrors this pattern, making speech more accessible to young children.

Moreover, the presence of compound and complex sentences within longer utterances reflects the strategies in CDS, where language complexity is introduced in manageable increments (Gelderloos et al., 2020) and reflects Krashen's i+1 Input Hypothesis. While short and simple utterances dominate *Bing*'s dialogue, the occasional use of medium-length and long utterances also play a significant role in children's language acquisition. Medium-length utterances frequently feature compound sentences, in which two independent clauses are linked by coordinating conjunctions such as 'and' and 'but'. Examples of medium-length utterances found in *Bing* such as "*it's a lovely fruit cone now, and you still have your cone*" and "*I wanted my ice-lolly, but it melted*". The use of compound structures at this level provides exposure to young children on how to connect ideas sequentially. Medium-length utterances also contribute to balanced dialogues rhythm, helping children to gradually transit from single-word responses to more structured speech.

Complex utterances are less frequent but serve as an introduction to a higher syntactic complexity. These structures include subordinate clauses that add layers of meaning, such as conditions or explanation, to the main clause. For example, the utterance "*Charlie does like peek-a-boo Bing, but if you want your block back, we need something that really makes him laugh*" not only imparts a command but also provides a conditional framework that models cause-and-effect reasoning. Such syntactic forms are critical for developing narrative skills and comprehensions, as they enable children to understand more intricate relationships between events and ideas (Berko Gleason & Ratner, 2022). Research on Universal Grammar (Chomsky, 1957) suggests that children have an innate ability to acquire syntactic rules. As children are repeatedly exposed to these syntactic patterns, their cognitive system begins to internalize the

underlying grammatical rules, thereby facilitating more sophisticated language production over time.

Undeniably, the use of short utterances in *Bing* aligns with the characteristics of CDS and is suitable for young children. Akbar and Ismail (2021) mention that children typically acquire a vocabulary of three to fifteen words at 18 to 24 months; they can construct four to five sentences at five, and they are capable of articulating sentences containing six to eight words at five to six. *Bing* emphasizes on short utterances, constituting approximately 60% of the speech, aligns with this developmental trajectory, supporting children's early language acquisition.

### REPETITION AND CHILD-DIRECTED SPEECH

The intended selection and repetition of these high-frequency nouns, verbs, and adjectives in *Bing* mirrors the characteristics of child-directed speech (CDS). Repetition is a well-documented feature of CDS and has been extensively studied in educational cartoons, such as *Dora the Explorer*, *Peppa Pig*, and *Blue's Clues*, all of which demonstrate the effectiveness of repeated lexical items in supporting children's vocabulary retention and language acquisition (e.g., Alghonaim, 2020, Trota et al., 2022). In alignment with findings from studies on CDS, which demonstrate the effectiveness of repetition in vocabulary acquisition, *Bing* employs repetition as a strategic linguistic tool to strengthen vocabulary acquisition, making key words more accessible and memorable for young viewers.

There are 156 different lexical items that were identified in *Bing* presumed as core vocabulary due to the high frequency of occurrences across sixteen episodes. Among the 156 lexical items, 122 of them are classified as high-frequency words based on BNC/COCA list. This intended emphasis on repetition aligns with the findings of Basar and Eyildirim (2021), who emphasize that the frequent recurrence of words and phrases in cartoons fosters familiarity and supports children's language development. By repeatedly exposing children to commonly used words, *Bing* provides a structured linguistic environment that strengthens comprehension and recall.

Furthermore, *Bing*'s use of repetition aligns with theories of language development that emphasize the importance of structured and predictable input. Guellai et al. (2022) highlights the importance of age-appropriate educational content with clear, narrative, interactive prompts, and structured repetition to enhance language acquisition. Unlike programs with rapid pacing and complex stimuli that may hinder comprehension (Guellai et al., 2022), *Bing* employs a slower tempo and systematic repetition to strengthen language patterns. This approach provides children with ample opportunities to process, recall, and use new vocabulary in a meaningful context.

Despite the argument that television alone is insufficient for language acquisition due to the absence of social interaction (Rowe & Weisleder, 2020), *Bing* fosters an interactive experience through its repeated questioning and call-and-response style dialogues. Similar to *Dora the Explorer*'s screen-pause method, which encourages children to respond to prompts and repeat words (Alghonaim, 2020; Makasau, 2017), *Bing* provides moments where characters pose questions, reinforcing active engagement. When supported by caregivers, or adults who discuss and repeat content with children, the impact of this repetition is amplified leading to more significant language gains (Guellai et al., 2022).

In summary, the lexical and syntactic features observed in *Bing* closely align with the characteristics of CDS. The frequent recurrence of high-frequency words, thematic phrases, and structured dialogues facilitates vocabulary retention and supports early language acquisition. By strategically employing repetition, *Bing* effectively mirrors key principles of CDS and

contributes to an engaging and educational viewing experience that supports children's linguistic growth.

## CONCLUSION

The result of this study demonstrates that *Bing* utilizes high-frequency, concrete vocabulary and predominantly short to medium-length utterances, creating linguistically accessible environments for young viewers. These features closely mirror natural caregiver-child interactions, suggesting that the series may provide meaningful linguistic input that supports early language development. While not a replacement for real-life communication, *Bing* exemplifies how educational media can facilitate language in a way that are developmentally appropriate and engaging. The series' use of repetition, simplified syntax, and familiar themes may aid in vocabulary acquisition and comprehension. These results emphasize the importance of intentional language design in children's media and offer deep understanding for caregivers, media producers and educators. The role of parental guidance and interactive co-viewing however, remains essential to maximize language acquiring outcome from screen-based content.

This study only provides a snapshot of how the lexical and syntactic features of *Bing* reflect CDI. Although the sample used in this study was only 16% of the 105 episodes of *Bing*, the results, nevertheless, provide some general information on the kind of linguistic input that children today get through such programs. This study is not intended to promote *Bing* to the public; rather, it hopes to provide awareness in parents and caregivers when selecting programs for their children. Other aspects of CDS such as the phonological features are not investigated in this study. Therefore, similar future studies can be conducted to investigate other children's programmes but also how those programs are tailored by their producers to support children's language development.

## ACKNOWLEDGEMENTS

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