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

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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 16 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, short utterances, and repetitions, 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

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INTRODUCTION

Language acquisition during early childhood is a foundational process that underpins cognitive development and communication skills (Ghozali et al., 2024; Rowe & Snow, 2020; Salehuddin & Mahmud, 2024). 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 emerge as a powerful mechanism in language acquisition (Figueroa, 2024; Watkins & Marsick, 2021). 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 & Elyildirim, 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 audio-visual 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 (Basar & Elyildirim, 2021; Kostyrka-Allchorne, 2017). 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

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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 six months (Akbar & Ismail, 2021). Children typically produce their first words around 12 months (Diesendruck, 2007) and acquire a vocabulary of approximately 1,000 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 an L1 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 L1 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) (Chen et al., 2024; Krashen, 1982). This principle aligns with research on child-directed speech (Mahmud & Salehuddin, 2024), 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) refers to a speech register used by adults and older children when communicating with young children. It is widely recognized as playing a central role in supporting early language development (Azzahra et al., 2022; Betti & Igaab, 2022). Research has consistently identified a number of lexical and syntactic features that distinguish CDS from adult-directed speech and make it developmentally appropriate and accessible.

CDS is marked by specific lexical and syntactic properties that make it highly effective for language acquisition. Lexically, CDS is marked by a restricted vocabulary, frequent repetition,

and a strong emphasis on high-frequency concrete nouns that are familiar to the child (Gelderloos et al., 2020; Harmati-Pap et al., 2024; Shi et al., 2022). Caregivers often introduce new words gradually, embedding them within simplified structures that enhance comprehensibility (Odijk & Gillis, 2021). Nouns dominate early speech, followed by verbs and adjectives, aligning with children's early acquisition patterns (Adi-Bensaid et al., 2015; Meshkat & Karami, 2016). CDS also features diminutives and reduplicated forms, such as "doggy" (for 'dog') or "choo-choo" (for 'train'), which aid memorability and phonological segmentation (Ota et al., 2018).

In terms of vocabulary level, CDS tends to draw on high-frequency words, particularly from the first and second 1,000-word families, as defined by Nation's (2012) BNC/COCA corpus lists. High-frequency words are easier to process and retain, making them especially beneficial in early language exposure (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, 2020). This aligns with the use of common words in CDS, which makes language more accessible for children (Harmati-Pap et al., 2024).

Syntactically, CDS typically consists of short, simple utterance, and frequent repetition (Harmati-Pap et al., 2024; Hoff et al., 2020). These utterances are more likely to be understood by young learners and are easier to imitate. 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 emphasize that the effectiveness of maternal speech stems significantly from its small utterance units and frequent repetition, features that are profoundly shaped by the interactive dynamic between caregiver and child.

TABLE 1. Summary of linguistic features of CDS and supporting literature

Features	Description	Key sources
High-frequency vocabulary / restricted vocabulary	Words from the 1k-2k frequency bands (e.g., Nation's BNC/COCA list)	Brysbaert et al. (2018); Dang, (2020); Nation (2021)
Concrete nouns dominate	Frequent use of labels for familiar objects (e.g., food, animals)	Adi-Bensaid et al. (2015); Meshkat & Karami (2016)
Use of diminutives	Reduplicated or simplified forms (e.g., *doggy*, *choo-choo*)	Ota et al. (2018)
Short utterances	Predominance of brief syntactic structures	Betti & Igaab (2022); Hoff et al. (2020); Harmati-Pap et al. (2024)
Frequent repetition	Reuse of lexical items and phrases across discourse	Alexiou & Kokla (2019); Gelderloos et al. (2020); Shi et al., (2022)
Simplified syntax	Use of simple and compound sentences, limited complexity	Martin (2016); Saxton (2009) (as cited in Jones et al., 2023)
Phonological modification	Use of higher pitch, slower tempo, and exaggerated intonation	Ferjan Ramirez et al. (2022)

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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*) (Aini et al., 2023; Arif et al., 2022). 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., Guellai et al., 2022; Kostyrka-Allchorne, 2017) 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; Lodhi et al., 2018; Makasau, 2017; 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 been 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 narratives, direct character addresses, and pauses for responses are associated with enhanced language skills, while programs with weak narratives, 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 present in *Bing*, specifically focusing on how its lexical items and syntactic structures reflect the characteristics of child-directed speech (CDS). The study integrated quantitative methods – word frequency, vocabulary level, and utterance length – with a qualitative analysis of contextual and thematic elements. This triangulation of methods allowed a comprehensive account of language acquisition to be conducted.

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DATA SOURCE AND SAMPLING

Data were collected from the official *Bing* YouTube channel in November 2024. One hundred and five episode of *Bing* series were categorized into 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 16 episodes. This approach aligns with content analysis best practices (Babbie, 2020) and ensures the inclusion of diverse narratives contexts and lexical items.

A total of 16 episodes were chosen, each with an approximate duration of seven minutes, resulting in a total dataset of approximately 118 minutes of screen time and 1616 words. The total of 16 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 – were chosen because they reflect core experiential domains in early childhood such as routines, common animals, and play-based exploration, which are strongly represented in CDS (e.g., Basar & Elyildirim, 2021, Brysbaert et al., 2017).

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 analyses. 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, namely, vocabulary frequency and vocabulary level, based on BNC/COCA Word list. 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 (three-six 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). High-frequency words were defined as those occurring in the first and second 1000-word frequency lists (1k and 2k bands). According to Nation's (2021) 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). For this study, utterances were categorized into a three-length-based group (refer to Table 2). This classification was developed specifically for the purposes of this study, drawing on developmental linguistic research which suggest that shorter utterances reflect early stages of child language production, while longer utterances typically indicate increasing syntactic complexity (Berko Gleason & Bernstein Ratner, 2022). Although there is no universally fixed categorization, this three-tiered framework offers a practical and transparent method for analyzing syntactic input in media content aimed at young children.

TABLE 2. Framework for analyzing the length utterances in *Bing*

Category	Number of words	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 how closely the linguistic input in *Bing* aligns with the principles of child-directed speech (CDS), the lexical and syntactic findings were systematically compared against well-documented linguistic features commonly associated with CDS (see Table 1). This also served as the primary benchmarks for comparison. These features were derived from key studies, which synthesize findings across empirical research on early language input. This comparative framework allowed the study to determine the extent to which *Bing* aligns with known strategies used by caregivers to support early language acquisition (Harmati-Pap et al., 2024; Hoff et al., 2020; Ota et al., 2018).

RESULTS & DISCUSSION

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 16 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 were 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 (see Table 3), namely Food, Outdoor Adventure, and Indoor Adventure were identified. This frequency threshold aligns with previous studies (e.g., Jones et al., 2023; Shi et al., 2022, Vidal, 2011), which emphasize that repeated exposure enhances vocabulary retention. The majority of repeated words were thematically relevant and contextually embedded, supporting children's semantic mapping.

TABLE 3. Distribution of lexical items by word class in *Bing*

Word class	Frequency	Percentage (%)
Nouns	79	52
Verbs	54	35
Adjectives	20	13
Total	153	100

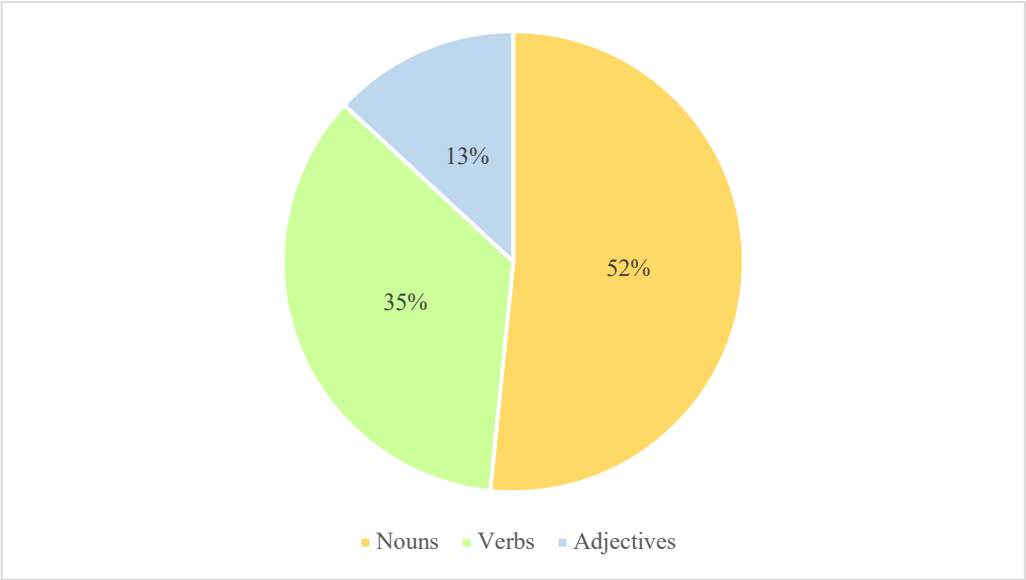

FIGURE 1. Distribution of lexical items by word class in *Bing*

This distribution (see Figure 1) is consistent with developmental patterns in early language acquisition, where concrete nouns dominate initial vocabulary, followed by action verbs and adjectives (Adi-Bensaid et al., 2015; Akbar & Ismail, 2021; Berko Gleason & Bernstein Ratner, 2022).

CONCRETE NOUNS

Throughout the episode, many lexical items were repeated across different themes, contributing to consistent exposure to encourage children's lexical development. 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). 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.

DIMINUTIVES

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, duck/ducky), 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.

ACTION AND ABSTRACT VERBS

Meanwhile, verbs were also strategically repeated, particularly those related to everyday routines and actions. Words like "go" and "play" featured prominently across episodes. Verbs such as "go," "turn," "let," "come," "get," "play," "like," "love," and "help" 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., 2022).

Verbs like "give" and "catch" represent observable actions, making them easier for children to acquire and 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 relationships. This supports Betti and Igaab (2022) who state that simplified and emotionally expressive language, as found in CDS, contributes to both linguistic and social-emotional development in early childhood.

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DESCRIPTIVE ADJECTIVE

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). 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 state that early lexical development is enhanced when descriptive language is presented in a contextually rich and emotionally engaging manner, as this allows children to connect words with their immediate experiences.

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; Mahmud & Salehuddin, 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 lexicon 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.

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-referenced with the BNC/COCA word lists by Nation (2021) 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) (see Table 4).

TABLE 4. Distribution of vocabulary levels in *Bing*

Vocabulary level	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

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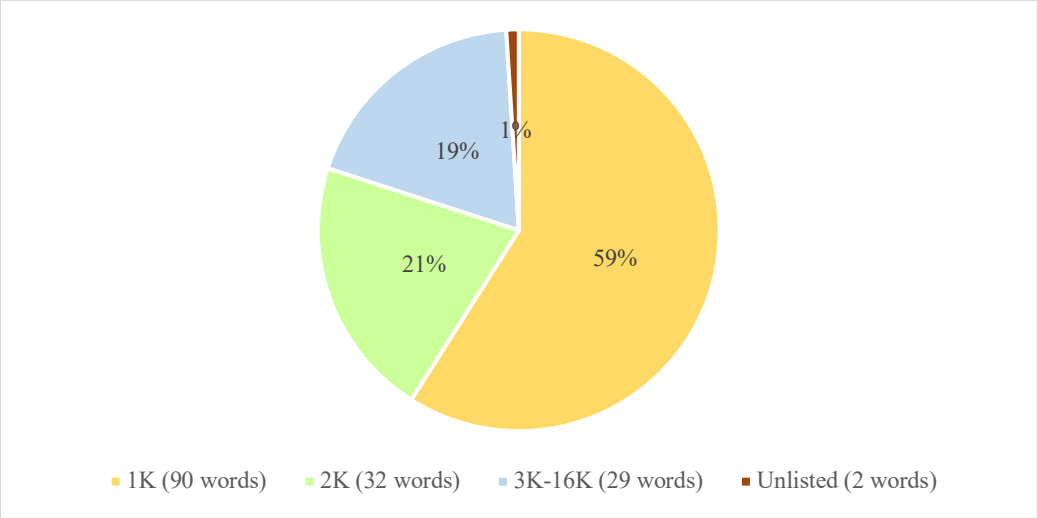

FIGURE 2. Distribution of vocabulary levels in *Bing*

The analysis revealed that *Bing* heavily features high-frequency vocabulary (see Figure 2). 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 *Bing* 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).

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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; Mahmud & Salehuddin, 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 (Harmati-Pap et al., 2024; Lichtman & VanPatten, 2021).

SYNTACTIC FEATURES

UTTERANCE LENGTH

Utterance length was categorized into three levels in this study: short (fewer than five words), medium (5-10 words), and long (more than 10 words) (see Table 5). 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 is as follows:

TABLE 5. Distribution of length utterances in *Bing*

Utterance types	Number of instances	Percentage (%)
Short utterances	974	60
Medium-length utterances	568	35
Long utterances	74	5
Total	1,616	100

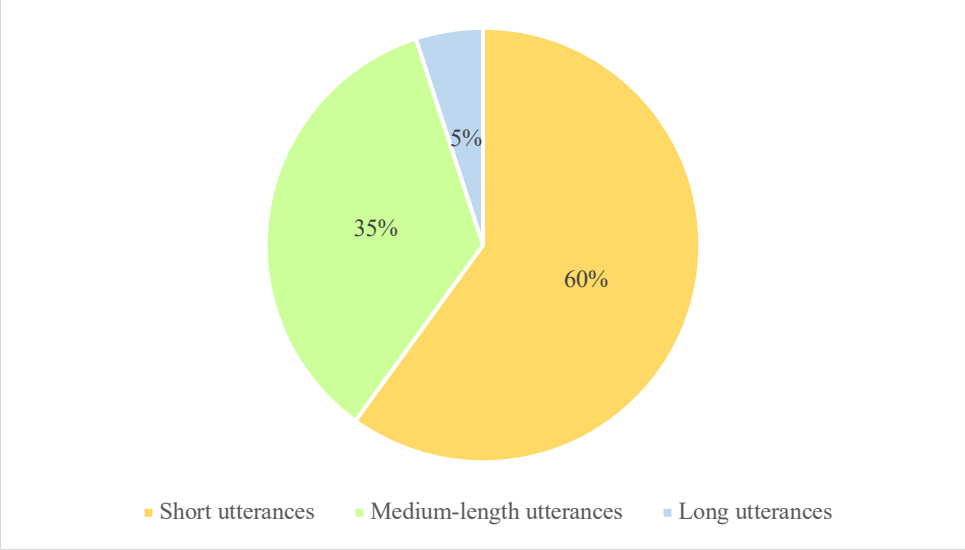

FIGURE 3. Distribution of length utterances in *Bing*

The data revealed a clear preference for shorter utterances in the series (see Figure 3). The analysis of utterance length revealed a predominant use of short utterance (less than five words), accounting for approximately 60% of all utterance across all episodes. Medium-length utterances (5-10 words) comprised 35% whereas long utterances (more than 10 words) were infrequent (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 utterances in *Bing* often appear as one- or two-word phrases. Analysis of short utterances in *Bing* reveals that the characters' communication style is characterized by brief and concise utterances. The data suggest that short utterances are the most prevalent type in the cartoon. The characters in *Bing* often employ simplified utterances and questions to convey meaning. This is particularly evident in situations that involve asking questions or seeking for clarification. For example, instead of constructing a longer utterance, Flop, one of the characters, simply asks "*banana?*" or "*milk?*" to inquire if Bing wants something. 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). 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 (Gelderloos et al., 2020; Harmati-Pap et al., 2024; Hoff 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. With 568 instances, medium-length utterances represent a significant portion of the dialogue, suggesting a balance between simplicity and narrative flow. The medium-length utterances account for approximately 35% of the total number of utterances. 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* are *"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. Although longer than the typical CDS utterances, these statements are still supported by visual or contextual cues, ensuring that their length does not compromise comprehensibility. These structures also reflect the type of language children are expected to gradually acquire as they move beyond single-word or two-word utterances.

Complex utterances are less frequent but serve as an introduction to a higher syntactic complexity. The 74 long utterances identified in this study are mainly spoken by adult characters (e.g., Flop, Amma, and Padget). These utterances are typically used to explain consequences, provide guidance, or summarize events. Some examples are Flop's utterance to Bing: *"When you have a dog, you have to do the yucky stuff as well as the fun stuff, Bing,"* and Amma's utterance to Bing: "*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 are 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 resource for early childhood learning.

COMPARISON WITH CHILD-DIRECTED SPEECH

The linguistic features observed in *Bing* and the characteristics of child-directed speech show a high degree of similarity (see Table 6). Both *Bing* and child-directed speech use simple, everyday vocabulary, and short to medium-length utterances. However, *Bing* also has a broader range of words and phrases, which can help children expand their vocabulary structure, making them accessible for young children. *Bing* also includes complex sentences, which can challenge children's linguistic skills and support cognitive development.

TABLE 6. Similarity between linguistic features identified in *Bing* and the characteristics of CDS

Linguistic feature	Characteristics of CDS	Observation in *Bing*	Comparison
Word choice (vocabulary level)	Caregivers introduce new words while maintaining simplicity (Adi-Bensaid et al., 2015; Brysbaert et al., 2018; Dang, 2020; Meshkat & Karami, 2016; Nation, 2021)	High proportion of high frequency words, gradual introduction of low frequency words.	High similarity
Repetition (word occurrence)	Frequent use of words, repetition for reinforcement (Alexiou & Kokla, 2019; Gelderloos et al., 2020; Shi et al., 2022)	Frequent repetition of words and phrases.	High similarity
Syntactic structure	Simplified utterance and shorter utterances (Betti & Igaab, 2022; Hoff et al., 2020; Harmati-Pap et al., 2024)	Characters use short and grammatical simple utterance.	High similarity

In addition to the lexical and syntactic features previously discussed, another core characteristic of CDS that emerged from the analysis of *Bing* is repetition. 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 studies 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 vocabulary's retention and language acquisition (e.g., Alghonaim, 2020, Trota et al., 2022). Similar to 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 16 episodes. Among the 156 lexical items, 122 of them are classified as high-frequency words based on the BNC/COCA list. This intended emphasis on repetition aligns with the findings of Basar and Elyildirim (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 phases, 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 results of this study demonstrate 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 CDS. 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 programs but also how those programs are tailored by their producers to support children's language development.

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