

# LANGUAGE PRODUCTION IN CHILDREN WITH DYSARTHRIA LANGUAGE DISORDER: A PSYCHOLINGUISTIC STUDY

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## Abstract

The process of language production can be impeded by various language disorders, one of which is dysarthria. Dysarthria is a condition characterized by abnormalities in the nervous system that affect the functioning of the articulatory muscles or speech organs, leading to uncertain pronunciation of both vowel and consonant phonemes. This study aims to reveal the form of language production in children with dysarthria and analyze the types of errors in their language production. The research is grounded in psycholinguistic theory and employs the error classification theories of McCaffrey (2008), M. F. Berry, and John Bisension to analyze language disorder errors. A descriptive qualitative method is used, with data sourced from speech sound production in children with dysarthria. Data collection techniques include interviews and pronunciation tests. Data analysis follows the Miles and Huberman (1994) framework, encompassing data reduction, data display, and conclusion drawing. Findings indicate that language production in children with dysarthria is marked by unclear articulation, weak voice, rapid speech tempo, and difficulties in phoneme pronunciation. Error types identified include phoneme distortion, omission, and substitution.

**Keywords:** language production, dysarthria, psycholinguistics.

## Abstrak

Proses produksi bahasa dapat terhambat oleh berbagai gangguan bahasa, salah satunya adalah disartria. Disartria adalah kondisi yang ditandai dengan kelainan pada sistem saraf yang mempengaruhi fungsi otot artikulator atau organ bicara, yang mengakibatkan ketidakpastian dalam pengucapan fonem vokal maupun konsonan. Penelitian ini bertujuan untuk mengungkap bentuk produksi bahasa pada anak-anak dengan disartria dan menganalisis jenis kesalahan dalam produksi bahasa mereka. Penelitian ini berlandaskan teori psikolinguistik dan menggunakan teori klasifikasi kesalahan gangguan bahasa dari McCaffrey (2008), M. F. Berry, dan John Bisension untuk menganalisis kesalahan gangguan bahasa. Metode yang digunakan adalah metode kualitatif deskriptif, dengan sumber data dari produksi suara bicara pada anak-anak dengan disartria. Teknik pengumpulan data mencakup wawancara dan tes pengucapan. Analisis data mengikuti kerangka kerja Miles dan Huberman (1994), meliputi reduksi data, tampilan data, dan penarikan kesimpulan. Temuan penelitian menunjukkan bahwa produksi bahasa pada anak-anak dengan disartria ditandai dengan artikulasi yang tidak jelas, suara yang lemah, tempo bicara yang cepat, dan kesulitan dalam pengucapan fonem. Jenis kesalahan yang diidentifikasi meliputi distorsi fonem, penghilangan fonem, dan substitusi fonem.

**Kata Kunci:** produksi bahasa, disartria, psikolinguistik.

## 1. Introduction

Language is a speech activity involves two or more people to convey information. This process, known as language production, involves complex cognitive operations, as noted by Field (2004, p. 283), who states that speaking is one of the most intricate cognitive functions performed by humans. Furthermore, Field (2004, p. 283) says that a normal speech rate in English is around 150 words a minute. This means that a speaker retrieves two or three words per second from an everyday vocabulary of about 30,000. Then, they continue to do so over very extended periods of time and with remarkable accuracy (about one slip per 1000 words). This opinion shows that humans have proficiency in language, one of which is in producing language.

The production of language begins with the formulation of ideas in the human brain, which then sends commands to the speech organs that consist of various sound production tools. These speech organs function as sources of sound in the human body. One key component of these organs is the articulator, which plays a crucial role in producing speech sounds. The speech organs generate a wide range of language sounds that are organized into phonemes, including consonants and vowels. When the speech organs function properly, communication becomes clearer, and language skills improve. However, if any part of the speech organs does not develop properly or functions imperfectly, it can hinder language proficiency and affect the clarity of communication.

In early childhood, the speech organs are not fully developed, which often results in imperfect language sounds. According to Field (2004), language production is closely related to hesitation and pauses, reflecting the process of planning speech. At the phonetic level, producing language requires preparation of selected features, enabling speakers to control the form of articulation. However, young children often make mistakes or tongue slips that are unintentional and deviate from the intended linguistic target. During this developmental stage, children may experience phonetic errors due to the incomplete formation of their speech organs. Such errors are natural, as the speech organs—such as the tongue, lips, and palate—are still maturing. With time, practice, and exposure to correct language use, children typically improve their pronunciation naturally.

However, imperfect pronunciation of phonemes is unacceptable when it occurs in adulthood. In adults, these phonetic disorders often indicate more profound and complex issues, such as articulation disorders or dysarthria, which can result from various factors, including medical conditions or the social environment. Language disorders frequently occur due to disturbances in the left hemisphere of the brain, which is responsible for speech production in humans. When the left hemisphere is impaired, patients often experience speech difficulties. This condition is known as Broca's aphasia or dysarthria (Melati, 2019, p. 2). According to Duffy (as cited in Lathifah, 2020, p. 2), dysarthria is a type of speech disorder characterized by abnormalities in the strength, speed, range, stability, tone, or accuracy of movements needed for breathing, phonation, resonance, articulation, and prosodic aspects of speech production.

People with dysarthria do not have difficulties understanding speech, reading, or writing; their main challenge lies in producing speech. The inability to speak in individuals with dysarthria can be due to congenital abnormalities or disorders of the tongue, making it difficult to move, which disrupts spoken language. According to McCaffrey (as cited in Indah, 2017, p. 143), dysarthria is caused by disruptions in the flow of muscle control messages due to lesions in the central or peripheral nervous system. Lesions in the central nervous system can result in stiffness or limited movement of the speech muscles. Moreover, speech errors in dysarthria patients often lead to unclear utterances, whether producing spontaneous sentences or imitating others' words, particularly through phoneme distortions or omissions. These symptoms can significantly hinder the communication process, making it difficult for the interlocutor to clearly understand the message being conveyed.

Previous research on language disorders has been conducted by several scholars, including Andriyana (2020), who wrote *Analisis Gangguan Fonologi dan Variasi Pelafalan Fonem /R/ pada Penderita Cadel*, and Rupa et al. (2021), who authored *Gangguan Berbicara Akibat Faktor Lingual pada Penderita Cadel (Kajian Psikolinguistik)*. Additionally, Pratama et al. (2022) explored similar topics in *Analisis Gangguan Bahasa pada Anak melalui Kajian Psikolinguistik*. However, the study by Putri et al. (2023), titled *Implikasi Disartria Fonem /r/ Trill (Kecadelan) Terhadap Pelafalan Fonem /t/ dan /d/*, is arguably the most relevant to this research. This article reveals that articulation problems can impact the production of all speech sounds. Specifically, the difficulty in producing the alveolar trill phoneme /r/ in individuals with dysarthria affects the articulation of other alveolar sounds, such as /t/ and /d/, which tend to become weaker and nasal. Consequently, dysarthria or lisp sufferers may experience emotional effects on their lexical and semantic knowledge.

The similarity between Putri et al.'s article and this study lies in their focus on dysarthria symptoms, particularly issues with sound production and difficulties in clearly articulating both vowels and consonants. However, there are significant differences between this study and previous research. Putri et al.'s article primarily focuses on the pronunciation of vibrating phonemes such as /r/, /t/, and /d/. In contrast, this study examines the overall language production in children with dysarthria, encompassing all phonemes at the phonetic level, including both vowels and consonants. Additionally, this study explores the types of errors in language production specific to children with dysarthria.

This study utilizes psycholinguistic theory. According to Field (2011), psycholinguistics is the study of how the mind equips humans to handle language. It primarily focuses on the cognitive processes underlying the storage, use, and acquisition of language, as well as their correlates in observable neural activity in the brain. In essence, it examines how humans process, understand, and produce language, and how the brain manages these functions. When individuals struggle to control these aspects, language disorders arise, leading to errors and deviations in language production. Dysarthria patients often experience language disorders, particularly in articulation. To analyze the types of language disorders in dysarthria, McCaffrey's (2008) theory (as cited in Indah, 2017, p. 143) is employed, which addresses phoneme deletion (distortion) and omission. Additional theories from M. F. Berry and John Bisension (Susanto, 2015, p. 31) are also used to examine phoneme substitution and addition.

This study focuses on children with dysarthria, a speech disorder resulting from symptoms affecting the central nervous system that controls the muscles of the speech organs, including the tongue, lips, jaw, and vocal cords. The study aims to: (1) reveal the forms of language production in children with dysarthria, and (2) analyze the types of errors in their language production.

## 2. Methodology

This research is a qualitative study focusing on children with dysarthria language disorder. It employs qualitative methods with a descriptive approach. According to Creswell (2014, p. 32), qualitative research explores and understands the meanings individuals or groups ascribe to social or human problems. In qualitative research, data collection often involves direct interaction with the research subjects. The purpose of descriptive qualitative research is to describe and summarize various conditions, situations, or phenomena related to the research object.

In data collection, this study utilized in-depth interview techniques and tests involving question-and-answer sessions between researchers and interviewees. The interviews and oral tests focused on everyday topics and simple words that include all phonemes, as the researchers aimed to gather data on the verbal speech produced by the subjects. The oral tests consisted of naming pictorial objects and describing pictorial stories to assess the production of language sounds.

The research focuses on the speech sound production of an 11-year-old child with dysarthria, named Ajis (AJ), who is a student at a special school in the Sumedang district. This subject was selected due to his evident symptoms of dysarthria, which manifest in unclear and imperfect articulation. These symptoms have been present since childhood, resulting from disturbances in the central nervous system that affect the muscles of his speech organs.

Data analysis in qualitative research involves detailing, understanding, and interpreting the results to gain a deep insight, using specific stages of analysis. This study employs the three-stage data analysis technique outlined by Miles and Huberman (1994). This technique was selected due to its interactive nature, which aligns well with the research theme that requires detailed descriptions and interviews with sources. The steps in the Miles and Huberman model of data analysis are: (1) data reduction, (2) data display, and (3) conclusion drawing.

## 3. Results and Discussion

### *Form of Language Production in Children with Dysarthria*

Based on the research findings, several deviations were identified in the phonetic level of language production among children with dysarthria, particularly in their articulation of speech sounds.

**Table 1.** Description of Language Production Forms in Children with Dysarthria Language Disorder

Phonemes	Vowel, Consonant and Phonetic Positions		
	Start	Middle	End
a	<i>aku / au/</i>	<i>matabari / mata ai/</i>	<i>tenda / tenda/</i>
i	<i>ikan / ikan/</i>	<i>biru / biu/</i>	<i>gigi / didi/</i>
u	<i>ungu / unu/</i>	<i>bunga / u'a/</i>	<i>sabtu / atu/</i>
e	<i>elang / eang/</i>	<i>bebek / bebek/</i>	<i>sore / sole/</i>
o	<i>onta / onta/</i>	<i>bola / oa/</i>	-
b	<i>burung / u ung/</i>	<i>rambut / lamut/</i>	-
c	<i>coklat / o at/</i>	<i>kaca / ata/</i>	-
d	<i>daun / a un/</i>	<i>indonesia / ino e sia/</i>	<i>masjid / acit/</i>
f	<i>fanta / anta/</i>	-	-
g	<i>garput / hapit/</i>	<i>agung / adung/</i>	-
h	<i>hurip / u ip/</i>	<i>saba / aba/</i>	<i>lidab / yidab/</i>
j	<i>jajan / jajan/</i>	<i>belajar / lajal/</i>	-
k	<i>keju / iju/</i>	<i>buku / bu u/</i>	<i>katak / atak/</i>
l	<i>lauk / auk/</i>	<i>palu / pau/</i>	<i>camel / amey/</i>
m	<i>muhun / u un/</i>	<i>lima / ima</i>	<i>magnum / ma' num/</i>
n	<i>nanas / nanas/</i>	<i>sendiri / sendi i/</i>	<i>pohon / po on/</i>
ng	-	<i>inggris / ngisi/</i>	<i>jagung / jadung/</i>
ny	<i>nyet / net/</i>	<i>nyanyi / ani/</i>	-
p	<i>paku / pau/</i>	<i>bape / ape/</i>	<i>laptop / letop/</i>
r	<i>rumpu / wurput/</i>	<i>persib / pesib/</i>	<i>telur / teul/</i>
s	<i>spion / waion/</i>	<i>basi / basi/</i>	<i>sebelas / sebeas/</i>
sy	<i>syahadat / a a at/</i>	<i>Rasya / asa/</i>	-
t	<i>tang / tang/</i>	<i>mata / ata/</i>	<i>paket / pa 'et/</i>
v	<i>via / pea/</i>	-	-
w	<i>wawancara / wawanala/</i>	<i>jawa / jawa/</i>	-
x	-	-	<i>n-max / n-mesth/</i>
y	<i>yes / es/</i>	<i>ayam / alam/</i>	-
z	<i>zakat / a at/</i>	-	-

The table above presents the results of the analysis of language production in children with dysarthria, focusing on all phonemes at the phonetic level. The findings indicate that AJ exhibits deviations or phonetic errors, leading to unclear articulation of both vowels and consonants. These articulation imperfections are attributed to disturbances in the central nervous system that affect the muscles of the speech organs, including the tongue, mouth, jaw, and vocal cords. Consistent with Field (2004), effective language production requires proper regulation of

articulation. However, individuals with dysarthria often produce language incorrectly, deviating from standard articulation patterns. AJ's speech can be categorized into the following general characteristics or forms.

#### 1. Unclear Articulation

In the interviews and oral tests conducted, AJ displayed unclear articulation. This issue stems from AJ's difficulty in controlling the movements of the tongue, lips, and jaw necessary for accurate sound production. As a result, AJ's speech is challenging to understand, particularly with longer or more complex words.

#### 2. Weak Voice

AJ's voice often sounds weak and inconsistent. He has difficulty adjusting the volume of his voice, leading to instances where his voice is too quiet or lacks sufficient strength during interviews and oral tests, making it hard to hear.

#### 3. Fast Speech Tempo

AJ tends to speak too quickly, which affects the clarity of his speech. This rapid tempo is a result of impaired muscle control in the speech organs, impacting the speed and clarity of his speech.

#### 4. Errors in Phoneme Pronunciation

As shown in Table 1, AJ's language production features systematic errors in phoneme pronunciation. These errors include replacing one phoneme with another or omitting phonemes altogether.

### ***Types of Errors in the Form of Language Production in Children with Dysarthria***

In the ability to produce speech, several errors were identified in the pronunciation of both vowels and consonants. According to McCaffrey's (2008) theory (as cited in Indah, 2017, p. 143), there are two primary types of speech errors: missing phonemes (distortion) and omitting phonemes (omission). Additionally, M. F. Berry and John Bisension (as cited in Susanto, 2015, p. 31) identify other types of articulation errors, including phoneme substitution and phoneme addition. The researchers found 5 instances of distortion, 33 instances of omission, and 14 instances of substitution. However, no instances of phoneme addition were identified in the data.

#### 1. Distortion

Distortion is defined as the modification of the sound of a language, which can change the meaning of the whole word or even make it meaningless. There are distortion type speech errors that occur in several phonemes, including phonemes at the beginning of words, and phonemes in the middle of words.

##### a. Beginning of word

- 1) /bunga/ become /ua/ (distortion of the phoneme /b/)
- 2) /bola/ become /oa/ (distortion of the phoneme /b/)
- 3) /coklat/ become /oat/ (distortion of the phoneme /c/)
- 4) /spion/ become /waion/ (distortion of the phoneme /sp/)
- 5) /syahadat/ become /a a at/ (distortion of the phoneme /sy/)

##### b. Middle of word

- 1) /bunga/ become /ua/ (distortion of the phoneme /ng/)
- 2) /bola/ become /oa/ (distortion of the phoneme /l/)
- 3) /coklat/ become /oat/ (distortion of the phoneme /k/ /l/)
- 4) /syahadat/ become /a a at/ (distortion of the phoneme /h/ and /d/)

The oral test reveals that AJ struggles with pronouncing certain phonemes at different positions within words. Specifically, AJ has difficulty pronouncing the phonemes /b/, /c/, /sp/, and /sy/ at the beginning of words. In the middle of words, AJ faces challenges with the phonemes /ng/, /l/, /k/, /h/, and /d/. These issues reflect deviations or distortions that affect consonant phonemes and consonant clusters, leading to altered and chaotic pronunciations. For example, AJ pronounces /bunga/ as /ua/, /bola/ as /oa/, /coklat/ as /oat/, /spion/ as /waiyon/, and /syahadat/ as /a a at/. These distortions occur because AJ has difficulty controlling the movement of articulatory muscles, such as the tongue, lips, and jaw.

## 2. Omissions

Omissions involve the removal of consonant phonemes from words. In AJ's case, certain phonemes are omitted within words. These omissions occur in various positions, including both at the beginning and in the middle of words.

### a. Beginning of word

- 1) /fanta/ as /ata/ (omissions of the phoneme /f/)
- 2) /nyanyi/ as /ani/ (omissions of the phoneme /ny/)
- 3) /Rasya/ as /asa/ (omissions of the phoneme /r/)
- 4) /yes/ as /es/ (omissions of the phoneme /y/)
- 5) /zakat/ as /aat/ (omissions of the phoneme /z/)

### b. Middle of word

- 1) /aku/ as /au/ (omissions of the phoneme /k/)
- 2) /matahari/ as /mata ai/ (omissions of the phoneme /h/)
- 3) /sabt/ as /satu/ (omissions of the phoneme /b/)
- 4) /elang/ as /eang/ (omissions of the phoneme /l/)
- 5) /fanta/ as /ata/ (omissions of the phoneme /n/)
- 6) /magnum/ as /manum/ (omissions of the phoneme /g/)
- 7) /nyanyi/ as /ani/ (omissions of the phoneme /y/)
- 8) /Rasya/ as /asa/ (omissions of the phoneme /s/)
- 9) /wawancara/ as /wawanala/ (omissions of the phoneme /c/)

Omissions are evident in AJ's speech when he fails to pronounce certain phonemes, resulting in their removal from words. For instance, AJ omits phonemes such as /f/, /ny/, /r/, /y/, and /z/ at the beginning of words. In the middle of words, he omits phonemes like /k/, /h/, /b/, /l/, /n/, /g/, /s/, and /c/. This pattern of omission is particularly noticeable in consonants and consonant clusters (i.e., two or more consonants occurring together in a word). These omissions occur because the speech muscles required for pronouncing these consonants are not functioning effectively or are poorly coordinated. Examples of omissions include the pronunciation of /aku/ as /au/, /matahari/ as /mata ai/, /sabt/ as /satu/, /elang/ as /eang/, /fanta/ as /ata/, /magnum/ as /manum/, /nyanyi/ as /ani/, /Rasya/ as /asa/, /wawancara/ as /wawanala/, /yes/ as /es/, and /zakat/ as /aat/.

## 3. Substitution

Substitution involves replacing a correct phoneme with an incorrect one, making the speech less accurate. In AJ's case, who has dysarthria, he often substitutes phonemes with others that are easier for him to pronounce. These substitution errors occur in various positions within words, including in the middle and at the end of words.

### a. Beginning of word

- 1) /gigi/ as /didi/ (substitution of the phoneme /g/ to /d/)
- 2) /lidah/ as /yidah/ (substitution of the phoneme /l/ to /y/)

- 3) /*garpit*/ as /*hapit*/ (substitution of the phoneme /g/ to /h/)
- 4) /*rumpu*t/ as /*wumpu*t/ (substitution of the phoneme /r/ to /w/)
- 5) /*Via*/ as /*pea*/ (substitution of the phoneme /v/ to /p/)

b. Middle of word

- 1) /*gigi*/ as /*didi*/ (substitution of the phoneme /g/ to /d/)
- 2) /*kaca*/ as /*ata*/ (substitution of the phoneme /c/ to /t/)
- 3) /*ayam*/ as /*alam*/ (substitution of the phoneme /y/ to /l/)
- 4) /*Via*/ as /*pea*/ (substitution of the phoneme /i/ to /e/)

c. End of word

- 1) /*mesjid*/ as /*ecit*/ (substitution of the phoneme /j/ to c/ and phoneme /d/ to /t/)
- 2) /*N-max*/ as /*N-m esth*/ (substitution of the phoneme /x/ to /esth/)

In the oral tests conducted with AJ, phoneme substitution frequently occurs as he replaces difficult sounds with ones that are easier for him to pronounce. This is evident in both vowel and consonant substitutions. For example, AJ often substitutes the vowel /i/ with /e/ because he has difficulty maintaining the mouth position required for the /i/ sound. Consonant substitutions include replacing /g/ with /d/, /l/ with /y/, /g/ with /h/, /r/ with /w/, and /v/ with /p/ at the beginning of words. In the middle of words, AJ substitutes /g/ with /d/, /c/ with /t/, and /y/ with /l/. At the end of words, he substitutes /j/ with /c/, /d/ with /t/, and /x/ with /esth/. These substitutions are likely due to AJ's difficulty in controlling the speech muscles required for accurate sound production. Examples of these substitutions include the pronunciation of /*gigi*/ as /*didi*/, /*kaca*/ as /*ata*/, /*mesjid*/ as /*ecit*/, /*lidah*/ as /*yidah*/, /*garpit*/ as /*hapit*/, /*rumpu*t/ as /*wumpu*t/, /*ayam*/ as /*alam*/, /*Via*/ as /*pea*/, and /*N-max*/ as /*N-m esth*/.

#### 4. Conclusion

Based on the research conducted on language production in children with dysarthria, it can be concluded that effective language production relies on the proper functioning of the articulators, which are essential for producing language sounds. When these articulators do not function optimally, it leads to language disorders characterized by unclear or impaired speech. Language disorders are conditions where individuals have difficulty acquiring and using language due to deficits in understanding or producing vocabulary, sentence structure, and conversational discourse. Dysarthria is one such disorder, resulting from abnormalities in the nervous system that affect the performance of the articulatory muscles or speech organs. Consequently, individuals with dysarthria may produce unclear or incorrect speech, leading to errors in pronunciation and the meaning of words. These issues can affect the articulation of both vowel and consonant phonemes.

In the study "Language Production in Children with Dysarthria Language Disorder: A Psycholinguistic Study," it was found that deviations or phonetic errors in the language production of children with dysarthria lead to unclear vowel and consonant articulation. These articulation imperfections are primarily due to disturbances in the central nervous system, which affects the muscles of the speech organs, including the tongue, mouth, jaw, and vocal cords.

For the subject AJ, these phonetic deviations manifest as unclear and blurred articulation, stemming from difficulties in controlling the movements of the tongue, lips, and jaw. Additionally, AJ's speech often exhibits weak sound production, as he struggles to adjust the volume of his voice, resulting in speech that is sometimes too quiet to be heard. AJ also tends to speak at an excessively fast tempo, which further contributes to the clarity issues due to muscle control disorders affecting the speed of his speech. Moreover, errors in phoneme pronunciation



are common, including substitutions (replacing one phoneme with another) and omissions (leaving out certain phonemes), which affect the overall intelligibility of his speech.

In addition, several types of errors are observed in language production among children with dysarthria.

1. Distortion: This type involves subtle changes in speech that make the spoken word understandable but still pronounced incorrectly. The subject modifies the sound of a word, which can alter its meaning or make it meaningless. Examples of distortion in AJ's speech include the pronunciation of /bunga/ as /ua/, /bola/ as /oa/, /coklat/ as /oat/, /spion/ as /waiyon/, and /syahadat/ as /a a at/.
2. Omissions: This error type occurs when the subject fails to pronounce an entire syllable or class of sounds, resulting in missing phonemes in words. Examples of omissions in AJ's speech include the pronunciation of /aku/ as /au/, /matahari/ as /mata ai/, /sabtu/ as /satu/, /elang/ as /eang/, /fanta/ as /ata/, /magnum/ as /manum/, /nyanyi/ as /ani/, /Rasya/ as /asa/, /wawancara/ as /wawanala/, /yes/ as /es/, and /zakat/ as /aat/.
3. Substitution: This type involves replacing a difficult phoneme with an easier one. The subject tends to substitute complex phonemes with simpler ones, which affects both consonant and vowel phonemes. Examples of substitution in AJ's speech include the pronunciation of /gigi/ as /didi/, /kaca/ as /ata/, /mesjid/ as /ecit/, /lidah/ as /yidah/, /garpit/ as /hapit/, /rumput/ as /wumput/, /ayam/ as /alam/, /Via/ as /pea/, and /N-max/ as /N-m esth/.

## 5. Suggestions and Recommendations

The researcher acknowledges the limitations and shortcomings of this study. Despite these, it is hoped that the research will offer valuable insights and contributions to readers, particularly within the field of psycholinguistics, and enhance the variety of linguistic studies. By employing psycholinguistic theory, this research aims to provide a comprehensive understanding of language disorders and language production. Furthermore, it is anticipated that this study will serve as a useful reference for future researchers, whether they pursue similar lines of inquiry or integrate findings with other research areas.

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