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A Systematic Review on Prosodic Entrainment in Spoken Dialogue

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Abstract

Background : Prosodic entrainment is a phenomenon in which many different fields intersect such as psycholinguistics, phonetics, and other fields. **Aims:** This systematic review tries to provide a comprehensive overview of existing research on prosodic entrainment in dialogues. **Methods:** Various studies are reviewed and compared to reach how speakers use their tone of voice to match it with other conversers. Different articles are reviewed to check their relativity to prosodic entrainment and the factor that affect entrainment. **Results**: It is shown that prosodic entrainment is affected by context, emotional state, task together with other factors. **Discussion:** Several studies on prosodic entrainment shed the light on the understanding of how people communicate. . **Conclusions:** The findings arrived at are supposed to contribute the dynamics of prosodic entrainment and its role in communication.

Highlights:

- Highlights how tone and rhythm align in spoken interactions.

- Identifies emotional and contextual factors influencing entrainment.

- Bridges linguistic theory with communication practice.

Keywords: Prosodic Entrainment, Spoken Dialogue, Communication, Psycholinguistics, Acoustic Matching

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Introduction

Communication is a two-way relationship between speakers and listeners. It is about exchanging speech during interaction and this kind of exchanging is characterized by adopting to each other's' tone of speech [1]. This phenomenon is known as prosodic entrainment or alignment which is observed in prosody but can be found in other fields such as lexical choice, syntax, etc [2].

Entrainment's role lies in different social situations such as building rapport , easing communication and delivering emotional effect. For example, interlocutors who mimic each other's tone of voice are likely to be looked at as trustworthy and well-liked [3].

Prosodic entrainment is a phenomenon characterized by the harmony of speech between interlocutors[4]. They entrain their rhythm, tempo and pitch to build relationships and establish common ground during conversations. People who are able to maintain entrainment in their speech are looked at as likeable and more sociable than others [5]. Thus, it is about similarity between people and to act and speak the same. Prosodic entrainment is a similarity in pitch, tempo and tone of voice which speakers use to establish the above purposes [6],[7], [8], [9] , [10]. This study is a review of previous studies on the topic of prosodic entrainment.

This review examines the subject of entrainment in spoken discourse as it covers different fields of prosody together with the factors affecting prosodic entrainment. Moreover, the social and communicative functions in which prosodic entrainment plays are also tackled in this review.

Data Collection

Articles are reviewed according to certain criteria and adopt the following databases:

Google Scholar, ERIC, PsycINFO and the following terms are used in to search for such as "Spoken Discourse", "Prosody" and "Prosodic entrainment". Yet, the articles should be published between 2000-2023.

Methods

Articles are retrieved from databases to check their relativity to "prosodic entrainment" review. The PRISMA guidelines are followed. A comprehensive search was done over the aforementioned databases covering publications from 2000-2023. Moreover, the following criteria are used to check their relationship to the subject:

a. The article should be about the subject of 'Discourse', 'Spoken Discourse', 'Prosody', 'Entrainment' and 'Prosodic entrainment'.

b. The article should be scientifically peer-reviewed.

c. The article should be published in peer-reviewed journal.

d. Using (AND, OR) operators to search for the articles.

More than 310 articles are yielded in the initial search. After removing 78 duplicates, 232 articles are screened for title and abstract. Based on the upcoming criteria of inclusion and exclusion , 124 articles were selected for full-text review. Yet, 21 articles are chosen to be included. These articles are reviewed to induce the following information:

a. The type of "prosodic entrainment" (for example; spoken discourse, prosodic entrainment and rhythm).

b. The factors affecting the "prosodic entrainment" (for example, speaker's characteristics, the context of the discourse and task).

c. The social and communicative functions of prosodic entrainment

Results and Discussion

A. Results

Results show that prosodic entrainment is a complicated phenomenon affected by different factors such as:

a. Characteristics of the speaker (such as age, sex and social status).

b. Context of discourse (such as topic and formality of discourse).

c. Background knowledge (attention, processing load).

d. Emotional state (valence, excitement).

e. Task (Negotiation and information sharing).

1. Speaker Characteristics

Some studies show that age and gender affect entrainment [11] [12]. For example, younger adults tend to entrain less than older people. In addition, men also tend to entrain prosodically less than women [13]. Moreover, social status affects entrainment as high- status people entrain less with people from low- status[15].

2. Conversational Context

The formality of any conversation and its topic affect prosody. For example, people seem to entrain in informal situations more than formal ones [14]. Speakers entrain more in funny conversations than serious ones.

3. Task

The tasks people do affect their prosodic entrainment. For example, some people engage with other people with the same prosody in sharing information than in negotiation. As people compete in situation with negotiations more than in other contexts.

4. Cognitive Factors

Interlocutors are not liable to entrain when they are busy and unattended or when they are under some kind of cognitive tasks.

Speakers tend to be less prone to entrainment when they do some cognitive tasks. As they are busy or absent minded when doing other tasks, so they will not take into consideration the entrainment process.

5. Emotional State

Prosodic entrainment is affected by the emotional state of speakers as those with positive emotions are more to entrain than other people. There are different factors that govern and one of them is the emotional state of the interlocutors [13].

B. Discussion

The studies on prosodic entrainment shed the light on the understanding of how people communicate. First, prosodic entrainment is a universal phenomenon that takes place in different social situations and has many communicative functions. Second, in this study, entrainment is a complex phenomenon influenced by different factors such as speaker's features, conversational context and task.

Prosodic entrainment has different implications, in this study, concerning human computer interaction as designers should take into consideration the way people interact with machines.

Conclusion

Prosodic entrainment has different consequences for human-human and human computer communication. Different and more studies are needed to be carried on concerning the aspects that influence prosodic entrainment such as social and communicative functions. Moreover, this study suggests that prosodic entrainment is a valuable tool to build rapport establish relationships and enhance and covey emotions between people.

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