

Indexicality of Redemption Strategies In The Bugis Language of the Community In Sidrap District, South Sulawesi

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ABSTRACT

The aim of this research is to describe the indexicality of reprimanding strategies in speech acts using the Sidenreng dialect of Bugis. Reprimanding is an action that can be interpreted into several indexicalities in the language of the people in Sidrap Regency. Reprimanding can be interpreted as a greeting, and reprimanding can be interpreted as something that is very difficult to do. Reprimanding is a speech act that has indexicality to greet, criticize, criticize another person for the good of that person. This research uses a qualitative descriptive research type. The data in this research were obtained from Bugis community in Dua Pitue District, Sidrap Regency. The results of this research include the indexicality of forms of reprimand expressed directly or indirectly, as follows: (1) Reprimand in a polite and polite manner, (2) Do not use a high tone, (3) Look at the situation and conditions, (4) Choose words, don't make people hurt, and (5) Don't say harsh words to the person you are reprimanding.

Keywords: Indexicality, Strategy, Rebuke, Bugis Language

1. INTRODUCTION

Reprimanding is basically something that is familiar to everyone. The word reprimand itself has many meanings in various versions. The first version is that the belief about reprimanding is something that is very difficult to do because it involves other people. The second version of reprimand is a greeting. Basically, in the essence of reprimanding itself, no one has officially limited the meaning of the word reprimanding. The general Indonesian dictionary (2005) states that reprimand has several meanings including (1) inviting conversation (asking questions and so on) greeting (2) criticizing, criticizing (3) warning, advising (4) disturbing (about demons or ghosts). Based on the definitions above, reprimanding is a language event whose implementation is in the form of a speech act.

Conversing is not just an exchange of words, but is also a form of active involvement in the communication process. When someone engages in conversation, they are not only expressing themselves, but also providing space for the person they are talking to to share their experiences, thoughts, and feelings. In this interaction, there is an element of asking and answering each other, creating a dynamic dialogue that enriches both parties. Asking about someone's day, interests or new experiences is a way to show attention and listen with presence. Warm greetings and smiles also help create a friendly atmosphere, giving the impression that each meeting has its own value and uniqueness. Through conversation, we can better understand each other, feel empathy, and build deeper and more meaningful relationships. Thus, inviting conversation is not only a daily activity, but also an art for building meaningful connectivity in everyday life.

Criticizing and criticizing are two forms of interaction that involve assessing someone's behavior, opinions or actions. Criticizing usually contains an element of sharp negative assessment of an aspect, while criticizing is more about providing a constructive evaluation with the intention of improving or providing a better view. However, both criticizing and criticizing can have a significant impact depending on the way it is delivered and the intention behind it. Harassment and baseless criticism can harm relationships between individuals and create an unhealthy environment. On the other hand, criticizing wisely and constructively can be a very effective learning tool. Constructive criticism opens up

opportunities for growth and improvement, while unprovoked criticism can create disagreement and conflict. Therefore, it is important to develop positive communication skills and be able to differentiate between criticizing and criticizing. When giving criticism, focus on solutions and improvements without condescending or cornering. Meanwhile, understanding the impact of words and choosing words wisely when criticizing can help maintain harmonious relationships between individuals.

Warning and advising are two forms of interaction that involve providing information or views to others, but with different goals. Warnings are usually issued to inform someone of the dangers or risks they may face as a result of certain actions or decisions. Meanwhile, advice is more in the nature of providing suggestions or views with the intention of helping someone to make better decisions. Warnings have a preventive dimension and often appear when there is a potential danger or negative consequence that needs to be avoided. Providing a warning may involve objective information about a situation that the person may have ignored or been unaware of. The main goal is to protect and remind the person so that the person can avoid risks that may arise.

Meanwhile, giving advice involves views or suggestions to help other people overcome problems or make better decisions. Advice can be constructive and given with the positive intent of supporting the individual's growth or improvement. When giving a warning or advice, it is important to pay attention to the way it is delivered so as not to offend the person's feelings. Effective communication, empathy, and respect for other people's views can increase the positive impact of warnings or advice given.

In general, "reprimanding" refers to the act of giving someone a warning, criticism, or advice regarding a particular behavior or action. However, in the context of demons or ghosts, the term "rebuke" is not commonly used to imply interference or interaction with such supernatural beings. It is important to note that word usage may vary according to specific contexts and cultures. In the context of beliefs or folklore, there may be specific terms or descriptions used to describe interactions with supernatural beings. However, in general, "reprimand" in Indonesian does not have the connotation of disturbing or interacting with demons or ghosts.

The speech act of reprimanding can be found at a certain time and is not planned in advance. A meeting between two friends accidentally gives rise to a speech act of reprimand. The resulting speech act of reprimand is in the form of greetings "Hi", "how are you", "long time no see". Based on these language events, reprimanding in this case is interpreted as a greeting. There is also the speech act of reprimanding which can be interpreted as criticism or advice if the context in which the speech occurs occurs when the speaker gives advice or criticism to the speech partner. For example,

when an employee arrives late, as a good boss you should reprimand the employee. The speech act used by superiors to reprimand their employees could be "What time is it?" This sentence serves to reprimand the late employee with a sarcastic meaning. Reprimanding is defined as an order.

Talking about pragmatics, one of the analyzes is regarding speech acts. Speech act theory was first put forward by Austin, an English philosopher, in his book How to do things with Word (1962), which was later developed by Searly (in Chaer 1995:65), speech acts are individual psychological symptoms and their continuity is determined by the speaker's language skills in dealing with certain situations. Speech acts are related to the psychological factors of the speaker when carrying out the speech act. This differentiates the meaning behind the speech because it depends on the speaker's psychology.

Tarigan (2015) explains that a study of how to do something by using sentences is a study of speech acts. To understand speech acts, you must be aware of the importance of the context of the utterance or expression. The goal of understanding speech acts is to be able to understand the meaning behind the utterance. Sometimes speech is sarcastic (vice versa). For example, someone tells you to put sugar in your tea, even though what you mean is that the tea is not sweet enough, you need to add sugar. Based on several expert opinions that have been stated, speech acts are all actions that use verbal speech in the form of someone's speech to express opinions, suggestions, feelings, etc.

Research on reprimanding strategies in the Bugis language in the Sidrap Regency community has significant relevance for an in-depth understanding of local culture. Through this research, we can reveal the cultural values, social norms and customs that influence the way the Bugis community communicates, especially in the context of reprimanding. A better understanding of the social structures and hierarchies that form the basis of reprimand strategies will pave the way for the development of intercultural communication skills. This research is not only a valuable learning resource for individuals from outside Bugis society, but also provides significant benefits to members of the local community (Indriawaty, 2023).

Well-documented information about reprimanding strategies can be the basis for the preservation and preservation of the Bugis cultural heritage, including its language and communication traditions. In addition, the results of this research can be used to develop education and training programs that strengthen communication skills in the context of local values. Thus, research on reprimanding strategies in the Bugis language in Sidrap Regency has the potential to deepen understanding of cultural and communication dynamics at the local level and strengthen community ties in the region.

2. RESEARCH METHODS

The type of research used in this research is descriptive. Study Descriptive is research that describes data in the form of words, sentences or paragraph and not in the form of numbers (Endraswara, 2008:5). Descriptive research is a research method that describes the facts later followed by analytical actions. This research describes form reprimand strategies in community speech acts in Sidrap district.

This research uses a qualitative research design. According to Bog and Taylor (in Moleong, 2001:3) defines qualitative research as research that produces descriptive data in the form of words or verbal expressions of people and their behavior observed. This qualitative research design describes reprimanding strategies, modes rebuke strategy oncommunity, especially in the Sidrap district area.

3. RESULTS AND DISCUSSION

The strategy of reprimanding in the Bugis language, especially in the Sidrap Regency community, can reflect the cultural values and social norms adhered to by that community. The Bugis language has a strong nuance of politeness, and reprimanding is usually done by paying attention to customary policies, social structures and hierarchies in Bugis society. Using respectful language, when reprimanding, the language used tends to be respectful and polite. Expressions of respect for traditional values and social hierarchies can be reflected in the words chosen. Using Indirect Form: Direct reprimanding may be avoided so as not to offend. Therefore, Bugis people may tend to use indirect forms or jokes to convey messages.

Adjusting the level of formality, the level of formality in the Bugis language can reflect the social relationship between the speaker and listener. In the context of reprimanding, the use of words and expressions can be adjusted to the level of formality deemed appropriate. Involving local traditional values, the Bugis people have a strong cultural heritage and customs. In reprimanding, local customary values may be involved to strengthen the message and provide a moral basis for the reprimand. Focus on improvement and learning: Reprimanding in Bugis society may be more directed at positive goals, namely helping the individual being reprimanded to improve themselves and understand the social values that are upheld.

Using body language and facial expressions, apart from words, body language and facial expressions can also be used as a communication strategy. This can provide a deeper nuance to the message conveyed. The reprimand strategy in Bugis language in Sidrap Regency reflects the complexity of cultural values, social norms and hierarchies that exist in local society. By understanding this cultural context, the reprimanding

process can be carried out more effectively and appreciated by community members.

No	Speech Act of Reprimand	Examples of Bugis Language	Translation
1	Reprimand in a polite and polite manner	Tabē', aja' tatudangi werrē'ē dēng	Sorry, don't sit on the rice, sis
2	Don't use a high tone	Weddikki' mabbiring ceddē'? engka ammani motoro' gēsokki'	It's okay to step aside a little, because you're ready or a motorbike will grab you
3	Look at the situation and conditions	Laoki' matu' bolaē, engka maēlo upidakki' sappiseng	Come to my house for a moment, I have something to tell you, cousin
4	Choose words, don't make people hurt	Taddampengika maraja, makanja mold kosibawaki	Sorry, it would be nice if I accompany you
5	Don't say harsh things	Dēng, maga yako tapauni silempuna	Sis, maybe it's better to tell the truth

Data 1

Reprimanding in a polite and polite manner is a communication skill that not only builds positive interpersonal relationships, but also creates an environment that facilitates mutual growth and understanding. When you need to convey a warning, it is important to pay attention to the choice of words so as not to demean or offend other people. Deliver the message personally, giving the individual space to respond without excessive social pressure. In addition, the use of positive body language, such as a friendly facial expression and attentive eyes, can give the impression that the reprimand is delivered with good intentions. Focus on the behavior or action that triggers concern, and avoid criticizing personally.

Explaining by providing concrete examples of the behavior you want to reprimand helps individuals better understand the message being conveyed. Reprimand using questions, while allowing space to listen carefully to the response, showing concern and a desire to understand their perspective. Next, if possible, offer solutions or assistance to help the individual overcome or improve the situation. By using positive language, we can reprimand someone by having a positive impact on the communication environment, creating space for mutual growth and improvement.

If you want to reprimand someone, use polite and courteous language with good behavior. That way, the person you are reprimanding will really appreciate and appreciate your attitude. Because it might make him a better person. However, if you have used polite language but the person does not accept it or is even angry, it is better to stick to your initial stance, behaving well. If you respond to a bad response with something bad, it's the same as them.

Example: *Tabe'*, *aja'* tatudangi were'ē dēng (Sorry, don't sit on the rice, sis)

Based on the examples I have presented above, the word tabe' (sorry) is a speech act that will earn someone respect and is a polite way to use it towards someone who is being reprimanded. Thank you for the additional explanation regarding the word "tabe'" (sorry) in the context of reprimanding in Bugis culture. By understanding that the word "tabe'" is used as a form of speech act to express apology or regret, this shows that Bugis communication culture places the values of politeness and respect in social interactions.

In the context of reprimanding, the use of the word "tabe" is not only a word of apology, but also as an expression to build a friendly atmosphere of communication. This emphasizes the importance of respect and caution in conveying corrective messages. Thus, the use of the word "tabe" is not only a polite speech act, but also as a strategy to defuse potential conflicts and maintain interpersonal relationships. It is important to remember that the use of certain words or phrases in language reflects the cultural values and social norms in a particular society. In this case, the word "tabe" shows that its existence is not only a word of apology, but also as a communication tool that has a positive impact in the context of reprimanding in Bugis culture in Sidrap Regency. Top of Form

Data 2

It is important to note that using a calm, low-pitched tone when reprimanding someone is wise in maintaining effective communication and avoiding unnecessary confrontation. Maintaining a calm tone gives the impression that the reprimand is delivered with constructive intent and not to attack or make the person feel blamed. Using a low tone of voice can create an environment that is more conducive to discussion and responds better to reprimands. This allows the recipient of the warning to be more open to the information conveyed without feeling threatened or embarrassed.

In the Bugis cultural context in Sidrap Regency or in any context, maintaining a calm tone and avoiding high notes is a form of respect for the person being reprimanded. This reflects wisdom in communication and helps create a more positive atmosphere in interpersonal relationships. Using a high tone is not appropriate. What's more, if you reprimand someone who is more mature, it's the same as not having the "unggahungguh" that Javanese people say. Priority of parents in Islamare indeed held in high esteem, even though they

are in the wrong position. We as easier people still have to respect. Remind in gentle language and pray. God willing, as time goes by he will come to his senses.

In the second data example, namely: Abbirikki ceng, panna engka ammengngi motoro' (Pull over, friend, because there is no motorbike) so this speech act sounds quite clear, the speaker says it without using loud words, so that the person being reprimanded understands the statement. Using gentle words and without a harsh tone in reprimanding someone is a wise communication strategy. By conveying messages without relying on harsh or offensive words, we can create a friendlier and more welcoming communication environment. This gives the person being reprimanded an opportunity to better receive and understand the message being conveyed.

Using gentle words can create a calm atmosphere and minimize the potential for confrontation. Therefore, speakers can choose words carefully, maintain their tone, and use more neutral expressions so that the message conveyed does not cause unnecessary tension. By speaking gently, the speaker can emphasize his good intentions and facilitate better understanding from the recipient of the reprimand. This strategy can help maintain interpersonal relationships and have a positive impact on communication between individuals in the context of Bugis culture in Sidrap Regency or elsewhere.

Data 3

The process of reprimanding someone, paying attention to the situation and conditions is an important step to ensure the effectiveness and acceptance of the message. Looking at the context of the physical environment where the reprimand is delivered is an initial consideration, whether it should be done in private or avoided in public. Assessing the emotions and condition of the recipient of the reprimand is also crucial, because the right moment can influence how the message is received. In addition, attention to interpersonal relationships and local cultural characteristics are key factors. Understanding social and cultural norms helps determine the most appropriate approach, whether it is more polite and gentle or more direct. Of course, the purpose of a reprimand should always be kept in mind, whether it is to correct behavior, provide information, or simply serve as a reminder. Viewing reprimands as opportunities for learning can also create more constructive dialogue. By considering all these factors, speakers can deliver reprimands with wisdom, create effective communication, and build positive relationships, especially in the context of Bugis culture in Sidrap Regency or elsewhere.

It's best if you intend to reprimand someone, pay attention and consider the situation and conditions first, friend. Don't immediately reprimand him in a crowded place, so that your behavior actually makes the person you are reprimanding embarrassed. It is our duty as fellow Muslims to cover each other's disgrace.

Based on the sentence "Laoki' matu' okko bolaē nah, engka melo upedakki ceng". Come to me later at home, I have something to tell you, friend). The sentence in Bolaē indicates a place where the speaker automatically chooses the right conditions, namely home. When speakers indicate a place by mentioning that they are choosing to speak from home, this shows that the speaker has deliberately chosen certain conditions or situations to carry out the conversation. This choice can have several underlying implications and intentions.

First, mentioning that the speaker is speaking from home may indicate desired comfort or privacy. Home is often considered a private and safe place, where one can relax and focus on conversations without external distractions. Second, in the context of modern technology, saying that a speaker is speaking from home may also mean that they are using a long-distance communication tool, such as a telephone or video call. This signifies the flexibility and ease of technology that allows people to interact from a location that is convenient for them. Finally, mentioning that the speaker is speaking from home can provide additional information to the listener, allowing them to better understand the context or background of the conversation. By including this information, the speaker adds an additional dimension to the conversation and can help the listener better interpret the message.

Data 4

When speakers try to choose words carefully, the goal is clearly to ensure that the message conveyed does not hurt the feelings of the listener. Choosing words wisely is an effort to communicate with respect and empathy, in the hope of creating a more positive communication environment. One strategy used is choosing neutral words, avoiding the use of derogatory or personally attacking words. Communication with empathy and considering other people's feelings and perspectives is key, helping to reduce the potential for hurt feelings. Apart from that, speakers can also avoid provocative language and focus on facts and personal experiences to make the message more objective. Using positive sentences and conveying criticism with praise can also balance in communication. Additionally, consideration of body language, such as facial expressions and tone of voice, also plays an important role in ensuring that messages are conveyed appropriately. Thus, through careful use of words, speakers aim to create space for constructive discussion and mutual understanding without compromising interpersonal relationships.

Example: *Taddampengekka' maraja puang, makessing kapang kosibawaki* (I'm sorry sir, but it's better if I accompany you)

Based on the sentence above, the words Taddampengika maraja (I'm sorry profusely) indicate an apology to the person who wants to be reprimanded so that later when they are reprimanded they don't feel hurt. Before giving someone a reprimand, the speaker wisely tries to relieve potential hurt by signaling an apology. In conveying an apology, the speaker uses gentle and understanding words, creating a more friendly and supportive atmosphere.

Facial expressions and voice intonation are used to show sincerity, indicating that the apology is genuine and not just a formality. In this process, speakers can also acknowledge mistakes or inconveniences that may have occurred, increasing trust between the parties involved. An explanation regarding the positive intentions behind the reprimand is also provided, explaining that the purpose of the reprimand is to provide constructive feedback and not to hurt feelings. In addition, the speaker tries to carry out this conversation privately or in a more closed atmosphere, adding to the impression of honesty and cooperation in solving problems. By taking the initiative to apologize before offering a rebuke, the speaker opens the door to a more open discussion, prevents unnecessary conflict, and creates the basis for a more positive and understanding relationship.

Before giving a warning to someone, the speaker wisely indicates an apology as a first step. By using gentle and empathetic words, the speaker creates a friendlier atmosphere. Through facial expressions and voice intonations that show sincerity, the speaker tries to emphasize that the apology is not just a formality, but truly arises from the desire to maintain a good relationship. Acknowledging mistakes any inconveniences that may have arisen is also part of an apology, creating space for honesty and trust. The speaker tries to explain the positive intention behind the warning, namely providing constructive input without intending to hurt feelings. The importance of having these conversations in private or in a more private setting is emphasized, emphasizing honesty and goodwill in a heart-to-heart. Thus, apologizing before giving a reprimand is a strategic step to create harmonious communication, open the door to open discussion, and prevent potential unnecessary conflict.

Data 5

Keeping oneself from speaking harshly is a highly appreciated attitude in communicating. Speakers who choose their words carefully, do not use harsh language, demonstrate a high level of self-control. These actions reflect tact and sensitivity to the feelings of others, creating a more positive communication environment. By not using harsh words, the speaker shows respect for the values of politeness and communication ethics. This can also help prevent unnecessary conflict and strengthen interpersonal relationships. Instead, choosing gentle, respectful words can open the door to more constructive

dialogue, create space for mutual understanding, and build more positive relationships.

Saying harsh things to the person you are reprimanding will actually make them offended, and your reprimand will be seen as a passing event, friend. It's natural if other people don't respond well to you because you don't speak softly to them.

Example: *Deng, makanja' kapang koipalisungenna barakku* (Sis, maybe it would be better if I returned my item)

Based on what was stated above, the word deng (older brother) means someone who is older than us, so the way/talking to older people tends not to be rude. By understanding that the word "deng" in the Bugis language context means "older brother" or someone who is older, we can conclude that the way of speaking to older people tends not to be rude. The use of gentle, polite and respectful words is a value that is upheld in communication with people who are in an older position or age.

When speaking to a "dēng" or older sibling, it is important to pay attention to grammar and message delivery to comply with applicable social and cultural norms. Respect and gentleness in communication reflect respect for the values of the Bugis family and society. In various cultures, including Bugis culture, talking to older people with courtesy is a reflection of the ethics and manners that are upheld. It also creates a positive communication atmosphere and strengthens interpersonal relationships. Therefore, choosing words that are not harsh, respectful expressions, and tact in speaking are important when interacting with older people, along with the understanding that "deng" refers to an older position or age in the Bugis language context.

4. CONCLUSION

Overall, the people in Sidrap Regency have their own way of expressing rebuke to their speech partners, including the Bugis tribe itself, in accordance with what I have written above. It is concluded that the reprimands given by the Bugis community have many variations. The forms of reprimand include: (1) Reprimand in a polite and polite manner, (2) Do not use a high tone, (3) Look at the situation and conditions, (4) Choose words, do not make people hurt, (5) No Rough words. The forms of reprimand as described are a form of polite reprimand, or in other words, gently reprimanding, so as not to offend the partner of the conversation.

5. AUTHORS' CONTRIBUTIONS

All authors collect data, the first author analyzes the data that has been collected, the second author assists in data validation and data analysis based on data that has been obtained in the field. The writing process involves several steps, including data collection and analysis. In the context you provided, the first author is responsible

for collecting data. Once the data is collected, that author will conduct preliminary analysis to organize findings or results that may be relevant to the purpose of the research or writing.

Next, the second author is involved in data validation and further analysis. Tasks may include double-checking the accuracy of the data, ensuring the analytical methods used are relevant, and contributing to developing a deeper understanding of the findings produced by the first author. Collaboration between first and second authors is important to ensure that the data collected is not only accurate but also interpreted correctly. The process of joint validation and analysis helped to reduce bias and increase the reliability of the findings. This collaboration also reflects a team approach to research or writing, where authors complement each other's expertise and experience to achieve stronger and more meaningful results. Thus, in this collaborative dynamic, the first and second authors contribute to each other to produce a comprehensive and high-quality paper.

REFERENCES

- [1] Tarigan, H. G. 2015. Speaking as a Language Skill. Bandung: Angkasa.
- [2] Abdul Chaer. 1995. General Linguistics. Jakarta: Rineka Cipta.
- [3] Indriawati, Prita, et al. 2023. An Overview of Teacher Personality Competence in the Millennial Era. Fusion Journal, Vol 3 No 02, February 2023
- [4] Saleh, F., Yulfiana, R., Waru, D. S. U., Yusuf, R., & Nasrullah, I. (2023). Principles Analysis Of Grice's Cooperation In Events Speech In Traditional Markets: A Pragmatic Study. La Ogi: English Language Journal, 9(2), 131-140.
- [5] Fatahuddin, F., Iswary, E., & Saleh, F. (2022). Assertive Acts of Defamation on Social Media. Idiomatic Journal: Journal of Indonesian Language and Literature Education, 5(1), 8-22.
- [6] Irwani, I. (2021). Persuasive Directive Acts in Bugis Language on Covid-19 Posters in Maros Regency. Al-MUNZIR, 14(2), 231-248.
- [7] Sainab, S., Yusmah, Y., Aswadi, A., Hanafi, M., Mahmud, N., & Saleh, F. (2022). Analysis of Illocutionary Speech Acts in Indonesian Language Learning in Class VIII of SMP Negeri 2 Baranti. Cakrawala Indonesia, 7(2), 83-91.
- [8] Saleh, F., Aras, N. A. M., & Wahyudi, F. (2023). Interpretation of the Meaning of the Bugis Song "Alosi Ripolo Dua": Roland Barthes Semiotic Analysis. Idiomatic: Journal of Indonesian Language and Literature Education, 6(2), 185-195.

- [9] Mahdalena, Ina. 2023. Evaluation of Multicultural-Based Learning to Develop National Character at Rawarengas 2 State Elementary School. Journal of Education and Social Sciences Vol. 1 No. 3 July 2023.
- [10] Akbar, S. (2018). Analysis of Speech Acts in the Interview between Putra Nababan and the President of Portugal (Pragmatics Study). SeBaSa, 1(1), 27, ISSN (Online): 2621-0851. Obtained from https://doi.org/10.29408/sbs.v1i1.792 (downloaded on January 5, 2021).
- [11] Saleh, F., Yusmah, Y., Ahmad, N. A. A., & Yusuf, R. (2023). Analysis of the Cosmos and Human Metaphors of Mappaenre'Manu'Mantra in the Breeder Community in Sidrap Regency. Cakrawala Indonesia, 8(2), 181-195.
- [12] Ardianto. (2013). Teacher's Directive Speech Actions in Classroom Interaction Discourse of Deaf Children. LITERA Journal of Language, Literature, and Teaching Research, 12(April 2013), 1-12.
- [13] Ariff, T. N. A. Z., & Mugableh, A. I. (2013). Speech Act of Promising among Jordanians. International Journal of Humanities and Social Science, 3(July 13, 2013), 248-266.

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