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# A Psycholinguistic Investigation of Cognitive Mechanisms in Employee Speech and Conversation Dynamics at an Automated Teller Machine Filling Office

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**Abstract.** This study explores the cognitive processes underlying employees' utterances and conversational dynamics in the specific context of an ATM cash replenishment office from a psycholinguistic perspective. The study's goal is to discover how employees process, organize, and express linguistic information during high-pressure task-oriented interactions. This research adopts a qualitative design. The data consist of employees' utterances produced in the ATM replenishment office. Data sources include four bank officers, twelve ATM technicians, and ten customers. Data were collected using the participant observation method (*simak libat cakap*), in which the researcher observed the dynamics and cognitive processes of bank officers' and ATM employees' speech through audio recording and note-taking techniques. In-depth interviews were also performed with bank officers, ATM employees, and customers. Following data collection, the analytical process included transcription, data reduction, classification, verification, tabulation, interpretation, and drawing conclusions. The study's result shows that the employees's turn taking process, repair prosedures, and utterrance production, has influenced by time constraints, institutional norms, and cognitive load. Furthermore, the study indicates how shared mental models and implicit coordination can help sustain efficiency and accuracy in professional interactions. These resukts broaden the application of psycholinguistic research to organizational communication, especially in financial organizations where precision and clarity are crucial. Aside from its theoretical contribution, this study has practical implications for improving communication training, reducing operational errors, and strengthening teamwork in high-stakes operational settings.

Keywords: cognitive processes, conversational dynamics, employee statements, organizational communication.

 

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## 1 Introduction

Psycholinguistics ia a study that combine between psychology and linguistic. In this context, the psycholinguistics aim to analyse the employee's utterance at Automated Teller Machine (ATM). ATM cash replenishment offices are examples of high-pressure work settings where communication must be quick, clear, and effective. In these contexts, employees' verbal expressions serve not only as conduits for information exchange but also as reflections of intricate cognitive processes, encompassing attentional regulation, working memory oversight, and task-specific coordination methods [1]. Language production is a multifaceted process that comprises message preparation, word selection, syntax encoding, and speech production, all of which are influenced by working memory capacity and cognitive load [2], [3], [4], [5]. Multitasking and time-sensitive situations with a lot of mental work have been demonstrated to change both the sound and structure of speech. Previous research has shown that such situations are connected with shorter utterance durations, greater vocal intensity, and changed prosodic patterns. Lexical distribution in discourse also adheres to an informational economic principle, which states that high-frequency terms appear earlier in an utterance, whereas low-frequency or information-dense elements appear later. Furthermore, pauses in speech are important markers of cognitive load since people who are dealing with complicated activities prefer to take longer pauses to manage information flow and reduce communicative errors [6]. These characteristics are especially noticeable at ATM cash replenishment centers, where good communication must coexist with tight operational requirements.

ATM cash replenishment offices are an essential component of the banking and financial services sectors since they provide the public's access to cash. In this setting, operational tasks require high levels of efficiency, precision, and inter-employee coordination, as even slight communication failures can have major financial and security ramifications. Consequently, workplace conversations in ATM cash replenishment settings cannot be regarded as ordinary social interactions; rather, they function as critical instruments for maintaining operational stability and accuracy. In practice, staff must manage numerous concurrent duties, including as recording cash amounts, validating documents, working with team members, and adhering to tight security measures. These activities place significant strain on the resources of attention as well as memory retention [7]. Speech patterns indicating higher cognitive load include brief sentences, strategic pausing, and the use of error-prevention techniques. From this perspective, workplace communication in ATM cash replenishment offices provides empirical insight into how the human cognitive system performs under continuous operational pressure [8]. Beyond individual cognitive processes, employees' conversational dynamics indicate implicit coordinating mechanisms that help them perform more efficiently. Daily encounters are often brief, concise, and goal-oriented, showing that language is used as a cognitive technique to reduce processing demands and reduce the chance of error [9], [10]. The use of specialized terminology and internal codes in operational communication reflects the establishment of shared mental models that enable rapid comprehension without extensive explanation [11]. From a psycholinguistic perspective, this occurrence emphasizes the close relationship between language, cognition, and socio-organizational context.

 

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To date, there is no research that has specifically examined the cognitive processes and conversational dynamics of employees' communications at ATM cash replenishment offices. Nevertheless, other pertinent studies illustrate that cognitive, affective, and communicative factors significantly influence linguistic proficiency and contextual understanding [12], [13], [14], [15], [16]. Other researcher talk about the influence of communication practice in order to become the good leadership in organization [17]. They also point out the need for new ways to communicate in workplaces that use technology, where efficiency may make emotions less important and interactions less immediate [18]. Nevertheless, high-risk operational scenarios like ATM cash replenishment offices were not specifically addressed in these research. By investigating how attention, working memory, and cognitive load affect employees' speech patterns, conversational techniques, and coordination mechanisms at ATM cash replenishment offices, the current study seeks to close this research gap. This study makes a novel contribution by combining cognitive psychology and conversational dynamics in a high-risk operational work context.

The findings have theoretical and practical ramifications for communication training, operational error prevention, and team performance in the financial industry.
They also expand applied linguistics into the realm of organizational communication. Because of this, this research is probably going to have a big impact on the development of psycholinguistic theory as well as actual improvements in professional practice. This study poses the following research question in light of the backdrop mentioned above: how are the interpersonal interactions and mental processes that underlie employees' utterances function in an ATM cash replenishment office?. A psychological linguistic framework is used to answer this research issue. The study of psycholinguistics focuses on how language is created, understood, and stored in human cognition [19]. In the context of workplace conversations, the psycho-linguistic method provides an analytical framework for understanding how utterances are processed in real time through several interconnected phases. Phonological processing, which includes recognizing and storing speech sounds, is followed by lexical processing, which includes retrieving and choosing relevant words from the mental lexicon. After syntactic processing organizes these lexical elements into grammatically correct phrases, semantic processing interprets meaning. The last step is exploring the meaning of utterances by pragmatic theory.

This series of procedures shows that employee communication is a sophisticated cognitive process influenced by environmental needs and the dynamics of professional contact rather than just a language activity. Psycholinguistic research has so far mostly concentrated on interactions in therapeutic, educational, or everyday conversational contexts. There is still little research on how English is used and processed in high-stress work settings, such ATM cash replenishment offices [20]. However, these studies are essential to expanding our knowledge of how the human brain adjusts to the demands of professional communication. By examining the cognitive processes underlying employees' utterances, this study seeks to theoretically advance organizational psycholinguistics while also producing beneficial implications for communication training, workplace stress management, and the avoidance of operational errors [21]. As a result, the context of the study lies at the nexus of language, cognition, and work needs. The study intends to comprehend not just how workers communicate but also

 

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how individuals think, remember, process information, and modify their communication tactics in response to challenges. A psycholinguistic approach in this context opens new avenues for understanding conversational dynamics in high-risk workplaces and provides a comprehensive account of how humans optimize cognitive functioning when performing critical operational tasks.

## 2 Method

This study adopts a qualitative research design. The data consist of employees' utterances produced in an ATM cash replenishment office. The data sources include four bank officers, twelve ATM employees, and ten customers. The researcher used the participant observation method (simak libat cakap) to gather data, closely examining the dynamics and cognitive processes underlying the claims made by bank officials and ATM employees. To record naturally occuring workplace interactions, notetaking and audio recording were used as data collection methods. To completely comprehend the conversational dynamics cognitive processes that emerge in the ATM cash replenishment work environment, indepth interviews wi th bank officers, ATM employees, and customers were also carried out. In addition to supplementing the observational data, these interviews provide a deeper insight of the viewpoint and communication goals of the participants. Transcripsion data, reduction, classification, verification, tabulation, interpretation, and conclusion drafting were among the analyses that followed data collection. During the transcription stage, spoken words were recorded. Then, the utterances were grouped based on their group and its types. Data reduction involved selecting and filtering the data in accordance with the research objectives. To verify the validity and reliability of the data, bank officers, ATM workers, clients, and linguists participated in the verification process. The data were ultimately tallied utilizing coded categories and assessed within their interactional and situational settings to yield comprehensive and accurate results.

## 3 Results and Discussion

The findings indicate that cognitive processes in employees' conversations within the ATM cash replenishment office operate through complex dynamics shaped by work pressure, security conditions, and the need for inter-employee coordination. The findings show that there are planning of utterances, strategy of communication, and regulation of emotional on the interaction. First, with regard to utterance planning, employees tend to employ short, concise, and goal-oriented sentences to minimize ambiguity. This trend implies that in extremely dangerous operational circumstances, cognitive resources are purposefully directed to communicative efficiency to avoid misinterpretation of instructions. Second, the use of nonverbal clues, repeating instructions, and depending on internal technical terminology are the most common communication techniques. These tactics serve to guarantee that team members have a common understanding and to reinforce the clarity of messages. Third, employees' attempts to maintain steady voice intonation when working under pressure demonstrate emotional

 

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management, which is a conscious tactic to maintain interactional stability and team cohesion. The study also finds a regular turn-taking pattern in conversations at work. Senior employees more frequently assume the position of conversational control-lers, whilst junior employees usually function as active listeners and carry out instructions. This interactional pattern illustrates a hierarchical communication structure that reflects underlying social ties and power dynamics in the workplace.

**Table 1. The Dynamics and Cognitive Processes of Employee Utterances**

| Data Code | Aspect of Speech | An explanation | Consequences |
|---|---|---|---|
| PU | Planning of Utterances | Phrases should be clear, concise, and straightforward in order to eliminate ambiguity | The effectiveness of communication under stressful circumstances |
| PC | Planning of Communication | Using nonverbal clues, repeating directions, and using technical terms | improves coordination and lowers errors |
| EC | Emotional control | Neutral facial gestures and steady intonation under pressure | keeps the team cohesive |
| PT | Patterns of Turn-taking | Junior employees listen intently while senior employees steer the discourse. | reflects the workplace's social hierarchy |
| SB | Sociocultural Background | Communication flow is influenced by power dynamics and job experience | Language serves as a social structure symbol |

Table 1 shows that organized cognitive processes that are adaptively modified by high-pressure work environments are responsible for the dynamics of employees' utterances in the ATM cash replenishment office. With regard to utterance planning (UP), employees tend to employ short, concise, and goal-oriented sentences as a strategy to avoid ambiguity and ensure communicative efficiency. Communication strategies (CS) are reinforced through the use of non-verbal cues, repetition of instructions, and reliance on technical terminology, all of which function to reduce the potential for error and enhance team coordination. From the perspective of emotional regulation (ER), harmony at work is maintained by maintaining neutral expressions and consistent intonation under pressure. The hierarchical structure of the workplace is reflected in turn-taking patterns (TP), which demonstrate how junior employees primarily act as active listeners while senior employees dominate conversational flow. Meanwhile, the sociocultural context (SCC), which highlights how power dynamics and work experience affect communicative behaviors, positions language as a symbolic representation of organizational social structure.

 

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These results support by Levelt's that speech production model, which highlights the stages of conceptualization, formulation, and articulation and shows that workers can maximize these stages when faced with time constraints [22]. The observed effectiveness of utterances is also compatible with the cognitive load hypothesis [23], which highlights the importance of lowering cognitive burden in high-risk situations. Additionally, van Dijk's claim that discourse and social structure are closely related is supported by hierarchical communication patterns, and conflict-mitigation techniques outlined in emotion regulation theory are replicated in emotional regulation practices [24], [25]. From a psycholinguistic standpoint, these results confirm that workplace conversations in high-risk settings are not just linguistic processes but rather a complex integration of cognitive, social, and emotional elements, placing language as the main tool of coordination, control, and stability in professional practices that require accuracy and caution.

**Table 2.** Factors Contributing to Utterances' Emergence

| Data Code | Speech Factor | Supporting Theory | Description |
|---|---|---|---|
| EUP | Efficiency of Utterance under Pressure | Cognitive load theory (Sweller, 1994) and the speech production model (Levelt, 1989) | In high-risk circumstances, workers choose brief utterances as a tactic to lessen cognitive load |
| HC | Hierarchy of Communication | Theory of Sociocognitive Discourse (van Dijk, 2008) | Patterns of senior-junior interaction reveal the organization's power dynamics and social structures. |
| EC | Emotional Control | Theory of Emotion Regulation (Gross, 1998) | Maintaining communicative stability is achieved through the control of intonation and neutral expressions. |
| CLI | Cognitive–Linguistic Integration | Psycholinguistics in Practice | Work coordination is facilitated by language, which integrates linguistic, cognitive, and social aspects. |
| RWS | Relevance to Workplace Studies | Studies of Workplace Communication (Braun & Clarke, 2006) | Demonstrates how discussions at work involve the development of professional identities in addition to the exchange of information. |

The results shown in table 2 theoretically suggest that speech production processes, cognitive load management, and sociocognitive discursive construction are closely integrated to produce employees' utterances in high-risk work environments. In order to speed up the processes of cognition, formulation, and articulation under time

 

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constraints, Levelt proposed optimizing the speech production system by simplifying language structures through direct and concise utterances [26]. This strategy also aids in lowering cognitive burden, according to Sweller's cognitive load theory, which prioritizes processing efficiency in high-risk situations [27]. According to sociocognitive discourse theory, communicative hierarchy creates utterance patterns that represent the distribution of power, authority, and knowledge within the organization in addition to controlling the flow of interaction [28]. According to emotion regulation theory, neutral lexical phrase choice and intonation control are language strategies for emotional regulation that foster interpersonal stability and reduce the probability of conflict [29]. Therefore, in this context, workplace utterances can be viewed as a type of applied psycholinguistic practice that illustrates how linguistic structure, cognitive processes, and social dynamics are systemically interconnected to support cautious and successful professional performance.

**Table 3.** Specialized Terminology Used by ATM Replenishment Employees

| Data Code | Specialized Expression | Description |
|---|---|---|
| **PK** | *Printer kantor* RPF | RPF (*Receipt Printer Fatal*) refers to an ATM problem caused by the receipt paper running out |
| **OS** | OK solved | Indicates that the reported issue has been successfully resolved |
| **OT** | *HP-nya yang rusak segera di* open ticket | *Open ticket* is a term used in handling ATM problems by requesting a ticket number from a third party, namely the machine vendor |
| **H** | Hopper 1 *punya admin rusak* | *Hopper* refers to the cash cassette in an ATM machine; however, in this utterance it metaphorically denotes a drawer belonging to the administrative division |

**1. *PK (Printer Kantor)* RPF**

The phrase "Printer Kantor RPF" is an illustration of a linguistic shortening technique that facilitates clearer thinking during professional communication. From a psycholinguistic perspective, the use of the acronym RPF represents the engagement of a shared mental vocabulary among staff members, enabling the automatic processing of technical terms without requiring additional semantic elaboration. The speech production model by Levelt, states that because the meaning of this utterance has become a single lexical unit in long-term memory, it is created through a rapid formulation pathway [30]. In practical terms, RPF not only conveys information about device malfunctions but also quietly conveys a certain degree of urgency because interruptions in receipt printing could result in lower-quality ATM services and customer complaints. Consequently, RPF is an indication of technology failure as well as a signal for prompt action.

 

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**2. OS (OK Solved)**

The phrase"OK solved" and "ok terselesaikan" are two instances of how language can be utilized to disrupt work cycles in the professional world. According to psycholinguistic theory, this sentence is a formulaic expression, which is a conventionalized phrase that is easy to say because it is stored as a ready-made pattern. When Indonesians utilize both English and Indonesian in their local technical communication, it is clear that they are using foreign terminology. In practical terms, OS signifies that an issue has been completely fixed and doesn't need to be looked into further. This has a communicative purpose because it gives the team confidence about their position, which enables them to quickly turn their attention to other tasks. OS is therefore crucial to maintaining the rhythm, coordination, and continuity of workflow management.

**3. OT (Open Ticket)**

The phrase "HP-nya yang rusak segera di open ticket" is an example of how code-switching is commonly employed in professional technical discourse. The term "open ticket" is preserved in English due to its specific and standardized conceptual representation within the ATM vendor system from a psycholinguistic perspective. This suggests that speakers are adopting institutional cognitive models instead of depending only on particular lexical meanings. Practically speaking, the statement instructs a formal administrative procedure to report the issue to an external party in addition to stating that there is a problem. Therefore, OT indicates a shift in accountability from managing issues internally to using an external, documented, and approved method of problem-solving.

**4. H (Hopper)**

In business communication, the phrase "Hopper 1 punya admin rusak" is a prime example of semantic expansion. Although the term "hopper" actually refers to the ATM's currency storage unit, in this context it refers to a cash drawer that is a part of the administrative division. From a psycholinguistic perspective, functional association specifically, the shared function of cash storage causes this semantic shift. The phrase "hop-per" is used pragmatically to convey damage information to the team in an easily comprehensible manner without the need for additional vocabulary. Although it has nothing to do with the ATM itself, the inference is that the disturbance impacts administrative operations flow and necessitates immediate attention. Based on the above analysis, the usage of linguistic codes in ATM cash replenishment workplaces reveals that employees' utterances are economical, conventionalized, and largely reliant on shared cognitive processes. Language is used not only to convey technical knowledge, but also to coordinate labor, control cognitive load, and signal operational status. These results show that efficiency and semantic accuracy are more important than grammatical completeness in high-risk work environments, making workplace utterances a vital instrument for maintaining stability, response time, and system effectiveness.

This work makes a substantial contribution to the fields of academia and practice. Academically, it contributes to the study of applied psycholinguistics by investigating employee discourse in a high-pressure work setting, specifically ATM cash replenishment offices. Previous psycholinguistic research has been focused on educational

 

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settings or everyday interaction, whereas this study uses workplace language as the primary target of examination. The findings show that brief utterance techniques, technical terminology usage, and emotional management are critical cognitive-linguistic adaptations for decreasing cognitive load and enhancing communication in high-risk contexts. Furthermore, this study contributes to the literature on organizational communication by showing how hierarchical structures are represented in conversational dynamics. As such, it provides an interdisciplinary approach that combines psycholinguistic theory, workplace communication, and sociolinguistics to conceptualize language as both a tool for coordination and a symbol of professional identity.

The results have strategic implications in several domains. Practically speaking, these findings could serve as a foundation for financial service companies to develop effective communication training for staff members, particularly in high-stress situations that call for precision and quick response. By understanding the cognitive processes underlying utterance formation, businesses can improve communication effectiveness and reduce the risk of costly errors. Second, research demonstrates the significance of incorporating psycho-linguistically informed communication norms into Standard Operating Procedures (SOPs) at the organizational policy level. These standards include guidelines for managing emotions while performing duties, controlling tone, and speaking succinctly. This could improve professionalism and teamwork. Third, from an academic standpoint, this study paves the way for further research that measures the relationships between social, linguistic, and cognitive aspects of workplace communication objectively using quantitative or mixed-method approaches. The results could guide the creation of applied psycholinguistic training models for other industries, like banking, emergency services, or aviation. Ultimately, this study lends credence to the notion that workplace contact is a place where social structures, emotional regulation, and cognitive processes come together to preserve professional identity, accuracy, and efficiency in contemporary businesses rather than merely serving as a channel for information flow.

## 4 Conclusion

The study's objective was to look into the dynamics and thought processes that underlie employees' comments in a high-risk workplace like an ATM cash replenishment office. The findings demonstrate how employees' speech production is influenced in a complex and adaptive dynamic by the demands of interpersonal interaction, work pressure, and security situations. Three significant conclusions are drawn from the analysis of conversational data. In order to eliminate ambiguity and reduce cognitive load, employees typically choose brief, succinct, and goal-oriented utterances during the utterance planning stage. This makes communication accurate and efficient. Second, common communication strategies include internal technical language, repetition of instructions, and nonverbal clues to enhance coordination and decrease operational errors. Third, even in stressful situations, emotional management is shown by steady verbal expression and controlled intonation to maintain operational stability and team cohesion. Furthermore, regulated turn-taking patterns suggest a hierarchical communication system that reflects power dynamics and social relationships in the workplace. Senior

 

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employees control the flow of discourse, while junior employees actively listen and carry out instructions.

Based on its findings, the report offers several suggestions for additional research. First, more research is recommended using quantitative or mixed-method approaches to experimentally examine the relationship between cognitive load, language strategies, and workplace communication efficacy. Second, broadening the scope of the study by contrasting speech patterns in different high-risk industries like emergency services, aviation, or logistics could improve knowledge of cross-domain diversity in psycholinguistic tactics. Third, the impact of digital technologies on workplace interaction patterns, such as instant communication tools and application-based coordination systems, should be investigated in future research. Fourth, a more thorough explanation of the interaction between language, cognition, and emotion would come from analyses that concentrate on emotional and psychological aspects employing multimodal techniques like prosody, intonation, and nonverbal expression. Fifth, it is recommended to conduct longitudinal studies to monitor how employees' communication strategies change in relation to organizational change, training, and increased work experience. It is therefore expected that this study will expand the field of applied psycholinguistics and serve as a manual for developing professional communication models that are effective, adaptable, and considerate of the needs of modern workplaces.

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