The Metafunctional Realizations of Language in Research Article Abstracts: 
An Interdisciplinary Investigation of Variations and Similarities Across 
the Disciplines of Economics, Engineering and Medicine

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Abstract
The current study examines a corpus of 360 RA abstracts across three disciplines: economics, engineering (electrical and electronic) and medicine (general and internal), comprising a total of 80,028 words, from twelve highly ranked open access academic journals within the three disciplines published within 2018-2019, aiming to formulate a clear view of the lexico-grammatical features that realize the ideational, interpersonal and textual metafunctions of the RA Abstracts. To answer the research questions, computational linguistics’ analysis methods of text mining via the annotation and tagging of the lexico-grammatical features of these RA Abstracts are employed using the Systemic Functional Linguistics (SFL) software UAM CorpusTool through administering the SFL systems of transitivity, clause complexing, MOOD, appraisal, theme, cohesion and register.

Research Questions and Hypothesis
1- How do authors of the RAAs represent the ideational, interpersonal, and textual metafunctions in each of the following three disciplines: medicine, economic, and engineering?
2- Are there any interdisciplinary similarities/variations in the use of the three language metafunctions (ideational, interpersonal, and textual) across the three disciplines: economics, engineering, and medicine?

H₀: The quantitative analysis of the lexico-grammatical features discloses statistically significant differences between research article abstracts across the academic disciplines of economics, engineering and medicine.

Methodology
Research Design: An inductive interpretive research approach in a mixed method design.
a. Qualitative analysis: using UAM CorpusTools to tag the lexico-grammatical features and provide descriptive statistics of the count and frequency of every tagged feature.
b. Quantitative analysis: using SPSS to perform a one-way analysis of variance (ANOVA) test to establish whether a statistical difference between the usage of linguistic features exists or not.

Results of Feature Analysis

Transitivity Analysis - Participant Roles

Transitivity Analysis - Process Types

Modality Analysis - Modal Types

MOOD Analysis – Clause Type

Theme Analysis – Theme Types

Appraisal Analysis
The Subjectivity and objectivity of popular-science writers: An interdisciplinary investigation of dialogism in six soft and hard science books

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Introduction

Introduction
- Popular-science books disentangle the complex nature of science for the general public; Fields such as psychology, biology, physics, cosmology, philosophy, linguistics
- Gives a bird’s-eye view of current scientific issues within the field in societies, especially where scientific illiteracy is more pronounced (Hammud & Jarrar, 2017; Hammoud, 2005)
- The scientific community feels the urgency of informing the public of their work (Bazzaz, 1998)
- This led to confoundment of knowledge & personal convictions, causing ideological unrest between [some scientist] and the public, as well as weaponizing science to undermine societal values.

Gap in Understanding Popular-Science books
- Most work related to discourse and language analysis is concentrated in scientific articles, magazines, and book reviews.
- The purpose of this study is to explore the dialogistic resources for various authorial voices used in popular-science books available to the average reader.

Methods

Results

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Contract</th>
<th>Expand</th>
</tr>
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<tbody>
<tr>
<td>How Language Began</td>
<td>~45%</td>
<td>~55%</td>
</tr>
<tr>
<td>The Evolution of Desire</td>
<td>~63%</td>
<td>~38%</td>
</tr>
</tbody>
</table>

Most notable observations

1# Both SS data and HS data resemble each other in countering and deny: the IHS data, however, shows more frequent context dependency to indicate their function voice.

2# Expand: entertain in the SS data is more rhetorical than the HS data.

3# Proclaim: endorse, although share the same function in both datasets, the HS dataset is metaphorical while the SS, more literal and conventional.

4# Both datasets share numerable similarities in their hetero-glossic features, particularly in proclaim: pronounce, attribute: acknowledge and attribute: distance.

Are popular-science writers disassociated from their science books?

Hard Science:
- Explicitness of authorial voices
- Vocabulary of authorial arguments
- Less expansion on third-party voices

Soft Science:
- More expansion of alternative voices
- Maintain two-sided approach to discuss contrarian and authorial voices.

Can the differences be explained by genre (soft vs hard) sciences?

No!
- A broader distinction needs to be allocated (e.g. popular-science books)
- Comparison of popular-science books with other popular-science mediums

Conclusions

- Faithful commitment to objectivity in popular-science books cannot fully be achieved.
- Their subjectivity is largely apparent by the explicitness of their voice and vocality of their argument
- Disparities between hard and soft science books may not sufficiently capture the distinction between the two; plausibly more realistic is to understand whatever arising differences through the scientist-writer’s choice to address field-specific contentions.
- Scientist-writers subscribe to a substrate of ideological and philosophical circles.

Bibliography


Data Collection:
The data comprises up to 2000 words of book chapters from six popular-science books classified as:
1) soft science (Philosophy; Evolutionary Psychology; Linguistics)
2) hard science (Biology/Genetics; Neuroscience; Physics)
Code-switching in a Saudi Hospital; A Sociolinguistic Perspective

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Supervised by
Dr Mona Torjuman

Introduction
A considerable amount of research has been published on code-switching (CS) in various Saudi educational contexts, but it has been marginalized in sectors such as healthcare and telecommunications. To date, Alm atharki (2017) and Alhamami (2019) are the only ones who investigated CS in non-academic Saudi healthcare sector. These studies were conducted in public healthcare providers in the Makkah region. The current study was conducted in King Khalid University Hospital (KKUH), a public hospital in Riyadh. It investigated the context and functions of CS and the attitude toward the phenomenon among the hospital’s medical staff.

The study addressed a gap in sociolinguistic research, pointed out by Alm atharki (2017) and Alhamami (2019), that little attention has been given to CS in occupational settings such as hospitals. Furthermore, with advances in technology and in align with King Salman’s Saudi Vision 2030 (Kingdom of Saudi Arabia, 2020), Riyadh is rapidly developing linguistically and culturally, among other aspects. As the center of Saudi Arabia, the city preserved its distinct Najdi culture as it was less exposed to other foreign cultures and languages unlike the western and eastern coastal regions. Hence, the current study focused on Riyadh. Investigating a different region would contribute to sociolinguistic research by describing the current English language status and by providing a fuller understanding of Arabic-English CS in Saudi Arabia.

This understanding of the sociolinguistic situation could help vocational preparation courses like English for medical purposes and language programs to provide training based on actual situations. This may produce more efficient employees who can communicate with each other to serve patients. Moreover, understanding the current Arabic-English CS state would help hospital administrations recognize the situation and provide more linguistic assistance for visitors and employees where needed.

Methods
The study investigated the following research questions:
1. In what context(s) do code-switching between Arabic and English occur at KKUH?
2. What are the functions of code-switching between Arabic and English at KKUH?
3. What are the attitudes toward code-switching among the medical staff at KKUH?

Theoretical Framework
The study adopted Interactional Sociolinguistics (Gumperz, 1982) as its main theoretical framework because it uses anthropological methods of data collection and analysis, accounts for CS in multilingual workplaces (Gordon, 2011), and it is compatible with other theories to investigate interpersonal relationships, like the politeness theory (Brown & Levinson, 1987) and communication accommodation theory (Giles et al., 1973).

The researcher collected data on how CS is used and what attitudes they trigger from different group of participants, employing mixed qualitative and quantitative methods and tools simultaneously. The concurrent use helped in achieving data triangulation to provide more in-depth analysis and increased the reliability of the results.

Qualitative Tools: Observations and Interviews
The speech of 28 members of the medical staff was observed over two phases:
• The initial phase was used to understand the context, make necessary introductions and pilot recording tools.
• The main phase lasted for four days at the Day One Surgery unit and Medical Day Care unit and two days at the Microbiology unit. Then, a total of 60 speech events was selected from those units. The selection was semi-random, as the speech events were selected based on the clarity and length of recording, the availability of a background description, and the consent of the key participants.

After data transcription and analysis, semi-structured interviews were conducted with seven out of the 28 participants in a single session. The interviews were guided by a schedule adopted from Alm atharki (2017).

Quantitative Tools: Questionnaires
A total of 64 questionnaires were collected to access a wider range of the sample population and to compare it with the results of qualitative data to find similarities and differences. The questionnaire was adapted by the researcher based Dewaele and Wei (2014) and by Al Heeti and Al Abdey (2016).

Results

Quantitative Data: Contexts And Functions
Results of analyzed contexts and functions are illustrated in Figure 1.

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Conclusion
The reported results of the contexts, functions and attitudes are generally consistent with those reported in the literature.

Pedagogical implications: Medical vocational preparation courses should involve both English as a foreign language and Arabic as a second language. The results about the contexts and functions of CS showed that both foreign and native medical staff members faced communication breakdowns despite the assumption that English is the lingua franca.

Administrative implications: Results about the practice of CS and attitudes toward it might help hospital leaders to develop a realistic language policy that accounts for the linguistic needs of the staff and visitors.

Research implications: Results about the contexts and functions of CS between Arabic and English provided some insights into the future use of the English language in Saudi Arabia. Medical terms like活动 case, 我的 patient, and 患 use are consented in an unmarked manner, and they are incorporated into the use of the Arabic language in the hospital. It seems that such a medical terms might be on their way to becoming loan words.

Bibliography


The current study is informed by Systemic Functional Linguistics, which is a functional theory of language that contributes to understanding how interpersonal meaning is constructed. The study employs the framework of appraisal theory developed and extended by Martin and White (2005). The study explores how Saudi EFL undergraduates and professional published writers argue their propositions objectively and at the same time subjectively, and how they commit to maintaining a relation of solidarity with their readers while at the same time arguing for their own research. The qualitative study involved a detailed analysis of the discussion sections of medical academic research texts. The thesis attempts to contribute new understandings of interpersonal meaning in the Saudi EFL undergraduate academic texts and professional writers from the functional perspective of appraisal theory.

Research Questions
1. What features of attitude (affect, judgment, and appreciation) are disseminated in the discussion section of medical RAs by EFL undergraduate Saudi writers and professional published writers in reputable journals?
2. How are different authorial voices constructed through the use of evaluative language by Saudi EFL writers and professional writers in reputable journals?
3. What are the assumptions that undergraduate Saudi EFL writers and professional writers in reputable journals make about the values and beliefs of their putative audience?

Methodology
- Appraisal Theory (Martin & White, 2005).
- Qualitative.
- Discussion sections of medical Research Articles.

Results
- Appraisal in the discussion section of the medical RAs:

Conclusion
In the discussion section of the medical texts:
- Language played an important role and was used rhetorically to achieve argumentative goals. Interpersonal language was highly achieved through resources of engagement.
- EFL writers argued on emotional grounds while the professional published writers avoided arguments that are based on feelings or judging behaviours.
- Both writers preferred to restrict the scope of alternative positions and contract the dialogical space rather than open it up.
- Both writers maintained a relationship of solidarity with the reader and showed high tolerance for alternative positions.
The Interface of Second Language Knowledge, Automatization and Processing: The Acquisition of English Passive Sentences by Saudi L2 Learners

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Introduction

SLA research found that adult L2 learners usually have difficulty in applying grammatical knowledge in the processing of L2. L2 learners are unable to access or integrate morphosyntactic knowledge during online processing because it is not encoded as implicit knowledge. Making a distinction between the various types of grammatical knowledge is vital in explaining processing variability in SLA.

The role that language knowledge plays in the processing of syntactic structures received little attention within SLA due to lack of valid and separate measures. VanPatten and Rothman (2015) had urged that SLA researcher have to move away from only measuring knowledge towards examining the interface between knowledge and processing. McManus and Marsden (2019) claimed that L2 knowledge and processing routines have a huge influence on L2 online processing and offline interpretation and production.

Literature Review

SLA studies that examined the effect of Explicit knowledge (EK) on processing have not measured the other two kinds of knowledge (i.e., automatized explicit (AEK) and implicit knowledge (IK)). The speed up might be the result of the two other types of knowledge instead explicit knowledge.

There is a limited number of SLA studies that examined automatized explicit knowledge (Suzuki, 2017; Suzuki & Sunada, 2018) where most of these studies examined L2 immersed learner’s automatization of explicit knowledge. They examined the processing of morphological structures or morphosyntactic structures, none of which examined syntactic structure.

Research Questions

1. Does the presence of explicit language knowledge in adult L2 learners promote the learners’ online processing of the target (i.e., passive sentences) structure?
2. Does the presence of automatized explicit language knowledge in adult L2 learners promote learners’ online processing of the target (i.e., passive sentences) structure?
3. Does the presence of implicit language knowledge in adult L2 learners promote learners’ online processing of the target (i.e., passive sentences) structure?

Methods

Target structure
The target structure in the study is English passives sentences. The past English passive is targeted in this study.

Participants
The participants are (n = 15) female students from KSU. They have not studied abroad or lived in an English-speaking country as children or as teenagers.

Instruments
The experiments are administered via PsychoPy3. Due to the on going pandemic, the experiments are administered virtually via Pavlovia platform.

Conclusion

• The results of the correlation between EI & MKT tasks showed negative correlation which suggest that the two tasks tap into two distinct knowledge systems (IK & EK).
• The correlation analysis of MAZE (RT) and the TGJT (RT) also revealed moderate correlation which suggest that both tap into the same knowledge system (AEK)

Data Analysis

The R statistical package is used to analyze the RT and accuracy results of the tasks that measure language knowledge and processing.

Results

• A paired t-test was conducted between GR & Ungr sentence in the EI, SPR, TGTJ and UGJT.
• Results revealed that the participants did not show sensitivity toward grammatical violation during the SPR task. However, they showed significant sensitivity during the EI task.

<table>
<thead>
<tr>
<th></th>
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<th>t</th>
<th>p</th>
<th>Cohen's d</th>
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<tr>
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<td>104</td>
<td>2.334</td>
<td>0.021</td>
<td>0.247</td>
</tr>
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</table>

The participants showed more sensitivity to grammatical violation during the TGTJ and the UGJT.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>df</th>
<th>t</th>
<th>p</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGTJ</td>
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<td>2.296</td>
<td>0.02279</td>
<td>0.196713</td>
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<tr>
<td>UGJT</td>
<td>0.12563</td>
<td>215</td>
<td>4.2161</td>
<td>0.00002682</td>
<td>0.3699735</td>
</tr>
</tbody>
</table>

The correlation analysis of MAZE (RT) and the TGTJ (RT) also revealed moderate correlation which suggest that both tap into the same knowledge system (AEK)

Conclusion

• The quantitative data suggests that the participants shows more sensitivity to grammatical violation when the task is form focused and conscious .
• Also, the data shows that the EI & MKT tasks tap into two distinct knowledge systems (IE & EK).
• The RT data suggests that the MAZE and TGTJ tasks are processed in similar manner.
Introduction

Commercials directly or indirectly address society’s expectations of roles of men, women, teenagers and children in various contexts, such as at home or workplace. Additionally, the continuous representation of these preferred roles in commercials creates a pattern of stereotypical female roles (Suter 98), as women are often the decision-makers in household spending. Eventually, these stereotypical female roles come to be accepted as social reality (Cheng and Leung 43). That is, commercials contribute to naturalising stereotypical female roles and, in this sense, shaping and enhancing a reality of gender roles. The present study was carried out to critically analyse and compare the types of stereotypical female roles in two societies, the liberal and non-liberal, with Saudi Arabia being non-liberal and the USA the liberal one, in detergent commercials. The choice of detergent commercials was made as women are expected to be portrayed more than men in them. The goal of the study stems from the need to deconstruct gender asymmetry and patriarchal ideology, and to see if the liberal factor plays a role in differentiating the perceptions of women in the two cultures accordingly.

Literature Review

1. Previous Studies on Gender and Advertisement

Several studies have employed content analysis to report the stereotypical female roles in television commercials that have become a reality for certain societies (Hung 1034; Nassif and Gunter 758). For instance, women as homemakers or housewives are usually portrayed in commercials as performing cleaning tasks in the kitchen. Nassif and Gunter report that Saudi television commercials prefer to depict women performing household tasks (756). This homemaker role is differentiated from another similar role, which is that of a nurturing mother. According to Hung et al., the nurturer is a mother who is depicted as gentle, kind and well-mannered (1036). Another female role reported in the literature is that of women as beautiful or decorative objects. Alstiel and Grow claim that incorporating female beauty and sexuality in TV commercials is an effective instrument for promoting a product (96).

2. Theoretical Framework

Critical Discourse Analysis (CDA) starts with the premise that “language use is always social” and that “discourse both reflects and constructs the social world” (Rogers 5). Clark and Ivančič argue that critical analysis aims to explore issues related to gender, ideology and identity, and how these issues are reflected in a text (217). Fairclough claims that CDA deconstructs texts to explore power relations in the social and political world and to do so, CDA starts with a detailed textual analysis and moves from there to an interpretation and explanation of the analysis (29). The Social Role theory, which was first proposed by Eagly aims to shed light on gender stereotypes in the field of social studies. The theory maintains that men and women act according to their social roles, which are segregated by gender lines, and, in this respect, gender roles and stereotypes are confirmed (Eagly 87).

Methodology

The materials used in this study are six detergent commercials of one popular international detergent company; the choice of looking at only one company is to ensure the reliability of data. The name of the company is kept anonymous for confidentiality purposes. Three of the commercials are Saudi, and the other three are American. They are all recent commercials found in the official company’s YouTube and have been aired on local channels in Saudi Arabia and the USA, respectively, between 2014 and 2017. The American commercials are provided in English with English subtitles and the Saudi commercials are provided in Arabic with English subtitles, except for one that the researcher has translated into English for the sake of analysis since the analysis depends only on the texts.

Results & Discussion

1. Description

The study found the prevalent use of metaphors, rhetorical questions and motifs in Saudi commercials, whereas ideologically contested words, overwording and hyponymy are employed in the American commercials. In the Saudi commercials, there is a reliance on the use of metaphors, rhetorical questions and motifs. For instance, in commercial 1, a woman is seen giving comments of disapproval to her sister-in-law who is washing her husband’s clothes with gel detergent. She uses the rhetorical question “Does your husband know about this?” to rebuke the sister-in-law and imply that if her husband knew about this, he would not have allowed it. The woman then uses the family’s motto “old habits are precious habits” to emphasise conventions and conformity to societal beliefs and values. In the American commercials, ideologically contested words, hyponyms and overwording of some concepts to represent their experiential world are highly employed in these commercials, often to depict what they favour and what they oppose. By way of illustration, in commercial 4, a father says his daughter wears a “princess dress” all the time, but she is “not tidy,” which is a contradiction to the first comment.

2. Interpretation

The linguistic choices highlighted in the previous stage of analysis are interpreted in terms of “presupposition” (Fairclough 152) of conventional female roles. Presupposition can be defined as common knowledge shared and agreed to by a group of community. According to Fairclough, presupposition can have an ideological function when what the speakers assume has the characteristics of “common sense in the service of power” (86). Both the liberal and non-liberal cultures of the USA and Saudi Arabia, respectively, depict stereotypical female roles in commercials. Saudi commercials and American commercials depict women using the same labels of nurturers, housewives or pretty feminine girls. In line with the findings of Holtzhausen, it can be inferred that detergent commercials capitalised on the presupposed knowledge of women as the homemaker and enhanced this image to sell their products.

3. Explanation

In line with the findings of the social role theory (Eagly), the results show that commercials confirm the existence of gender stereotyping. In these commercials, girls are expected to be feminine beings who wear pink and are tied, whereas women are portrayed as housewives who wash their husbands’ clothes, and single women are portrayed as waiting to get married to be the perfect housewife. Similarly, according to Fairclough, social conventions that are portrayed in discourse usually embody ideological assumptions that are taken as common sense and facilitate existing power relations (86). Therefore, in terms of these commercials, ideology is manifested in women’s responsibility to do household chores such as laundry and in the preferred expectations of girls to be pretty and clean. Through the continuous representation of these stereotypical female roles, they have become naturalised and regarded as common sense.

Conclusions

This study has not claimed any generalisations. Its aim is an in-depth analysis of a cross-cultural phenomenon. It has attempted to reveal the situation of female roles in Saudi Arabia and the USA to show that these two cultures have certain similarities. However, more studies and a larger sample of commercials would be ideal to examine the situation more extensively.

Bibliography