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Using Ideological Conflict to Create Carcinogen Risk in Arabic Scientific Discourse: A Corpus-Based Study

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Abstract
Many Arabic scientific debates are devoted to disputes on cancer and its causes. Scientists tend to inform people about the danger of consuming and being exposed to carcinogens. The paper aims to explore the proximization strategy that Arab scientists rely on to construct carcinogen risk to promote people's preventive actions against carcinogens. The paper intends to answer the main question: how does the Arabic scientific discourse employ ideological conflict to construct carcinogen risk? It is hoped that the paper can provide insights into the linguistic construction of concepts through the ideological conflict between two different poles in the Arabic scientific discourse. It provides insights for Arab scientists by promoting their awareness of the potential of Arabic for presenting a fully intellectual reflection of scientific knowledge. It focuses on the construction of carcinogen risk that generates tension between the values held by people and the opposing values ascribed to carcinogens. This aim is achieved by employing Cap's (2013) cognitive pragmatic theory of proximization. The theory comprises three proximization strategies: spatial, temporal and axiological. The axiological proximization strategy is applied to a corpus of Arabic scientific discourse. Both qualitative and quantitative methods are used in the analysis to produce more objective results. Anthony's AntConc (2019) corpus linguistics software is used for conducting mathematical calculations through corpus linguistics. The paper has arrived at some conclusions that show how axiological proximization is employed to construct carcinogen risk which encourages people to take preventive actions.

Keywords: AntConc, axiological proximization, carcinogen risk, cognitive pragmatics, ideological conflict, proximization theory, scientific discourse
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Introduction

Cancer represents a global and public health concern. The bulk of deaths worldwide is primarily due to cancer. In 2018, there were approximately 9.6 million registered death cases (Arafa, Rabah, & Farhat, 2020). Carcinogens are substances that cause cancer and are present in every part of the environment. The Latin word *carcinoma* (from the Greek karkinoma), which means "malignant tumor, cancer," and the suffix *-gen*, which means "something produced" or "thing that creates or causes," were combined in 1853 to make the noun *carcinogen* (Carcinogen, 2008). Carcinogens can quickly enter human systems through food, air, radiation, water, cosmetics, smoking, etc. According to Pohanish (2002), a substance or combination of substances that cause the promotion or start of malignant or benign neoplasia (cancer) in humans or animals is considered a carcinogen.

One of the main focal points of the scientific discourse (henceforth SD) in general and Arabic SD, in particular, is cancer and carcinogen-related issues. Knowledge in SD comes from disciplines such as biology, chemistry, physics, pharmacy, ecology, etc. Through linguistic resources, knowledge of various subjects is textualized. Examining the language used to represent knowledge is necessary to determine knowledge structure (Hao, 2020; Rasheed, 2020). SD differs from other kinds of discourse. According to Wei and Yu (2019), the ideographic, interpersonal and textual functions of SD influence the formality of language. In their list of genres connected to SD, Wei and Yu (2019) include scientific papers, scientific writings, experimental reports, introduction of scientific and technological trends, scientific and technological information materials, etc. SD is the contextualized language that scientists and other science practitioners employ. It shares specific grammar, pronunciation, and spelling patterns with practically all other types of discourse. It contains a broad vocabulary with several familiar or specialist terminology which is used in specific contexts (Yore, Florence, Pearson, & Weaver, 2004; Jaafar & Ganapathy, 2022).

Scientists disagree over whether it is possible to derive a convincing explanation from the gathered facts in SD, which is a discourse of conflict (Harris 1997 cited in Hanauer, 2006). Scientific research is governed by discourse, which transforms unsupported theories and scientific arguments into evidence-based arguments (Prelli, 1989, cited in Hanauer, 2006). Disagreement and argumentation are essential aspects of SD. These two characteristics may combine in SD on carcinogens to produce an ideological clash between the values of people at risk of cancer and the opposing values of carcinogens. Such ideological tension is created to raise people's awareness of the dangers of consuming or being exposed to carcinogens. Language is used for increasing awareness by proximizing the ideological conflict to individuals to present risk and crisis linguistically. The goal of proximization in general and axiological proximization (henceforth AP) in particular is to persuade individuals to take precautions against substances (carcinogens) that individuals have previously believed to be environmentally friendly. Depending on AP, Khalil and Al- Zubaidi (2022) have investigated how ideological conflict is employed to construct carcinogen risk in the English SD. According to the present paper, the problem is that there is a gap in the literature regarding how ideological conflict in the Arabic SD can portray carcinogen risk.

The paper intends to determine how the ideological conflict is achieved in the Arabic SD which tackles carcinogen risk. It attempts to determine the cognitive pragmatic ways used in Arabic SD to construct carcinogen risk by arguing the ideological conflict of values between people and carcinogens. The significance of the paper is that it can provide insights into the linguistic construction of carcinogen risk in the Arabic SD through the ideological conflict between carcinogens and people. It furnishes insights for Arabic scientists by promoting their awareness of

the potential of Arabic for representing a fully intellectual reflection of scientific knowledge. The aim of the paper is achieved by using Cap's (2013) proximization theory for analysis. It is a theory within cognitive pragmatics. It uses spatial, temporal, and axiological proimization strategies to form threats and crises. AP strategy has been used for analyzing the data since it is a linguistic choice for creating ideological conflict that can be used to generate threats and crises.

The paper aims to achieve the following objectives:

1. Investigating how carcinogen risk is constructed in the Arabic SD through the ideological conflict between carcinogens and people.
2. Finding out the cognitive pragmatic tools that the Arabic SD mainly relies on to construct carcinogen risk through ideological conflict.

In light of the objectives above, the paper attempts to answer the following research questions:

1. How is carcinogen risk constructed in the Arabic SD through the ideological conflict between carcinogens and people?
2. What are the cognitive pragmatic tools that the Arabic SD mainly relies on to construct carcinogen risk through ideological conflict?

The paper provides a theoretical background about cognitive pragmatics, proximization theory, AP and certain related theoretical issues. Then, it presents the results achieved by applying AP to the data using Antony's (2019) AntConc, as corpus linguistics software to get better statistical results. Thus, the paper is both qualitative and quantitative. The results are then supported by the detailed discussion that is consolidated with other references and works conducted by other researchers. Finally, conclusions that fulfill the research objectives and answer the research questions are put forward.

Literature Review

Cognitive Pragmatics

Cognitive pragmatics is the study of the cognitive principles and processes involved in the construction of meaning-in-context, while pragmatics is concerned with the study of meaning-in-context (Levinson, 1983). Cognitive pragmatists concentrate on the inferential chains which are essential for communicating the interlocutor's intention. The words and mental images that underlie the understanding of various cognitive phenomena as cognitive processes serve as the starting point. The interaction between pragmatics and cognition is the primary focus of cognitive pragmatics (Abbas, 2009; Gallai, 2019).

Cognitive pragmatics is not a combined field of cognitive linguistics and pragmatics. Instead, pragmatics has always been cognitive. This fact is evident from classic pragmatics works such as Grice's (1975) implicatures and Searle's (1975) list of ten stages that partners (text receivers) follow in interpreting indirect speech acts. This fact is supported by the Relevance Theory proposed by Sperber and Wilson in 1985. Traditional pragmatic theories have given rise to various strategies that fit into cognitive linguistic frameworks. Although the name "cognitive pragmatics" has not been used to them yet, these approaches can be categorized as cognitive pragmatic ones (Gallai, 2019).

Cognitive linguistics methodologies provide the conceptual framework for the investigation of theories connected to Discourse Space (DS) (Chilton, 2014). These DS theories include Cap's (2013) proximization theory, Chilton's (2004) Deictic Space Theory (DST), Levinson's (2003) theory of spatio-temporal frames of reference, and Werth's (1999) Text World Theory (TWT). Paul Chilton's cognitive-linguistic contributions, which theorize DS and give a

model of spatial, temporal, and modal conceptualizations along with applications to political discourse, are a foundational part of Cap's (2013) theory. According to Chilton (2014), placement is akin to a backbone for the performance of DS theories within texts. Positioning is a strategy that addresses our place inside the conceptualization and the locations of other actors and actions. It can therefore be spatial, temporal, social, epistemic, and axiological and combines distancing and proximization methods (Hart, 2018).

The positioning has to do with how mental spaces are organized as areas of conceptual space, which has an impact on grammatical formulations. It also has to do with portions of the text which are affected by how the discourse world is built inside the DS. Positioning techniques rely on the capacity to construct points of view. The deictic organization and the change in perspectives of view conceptualize these techniques (Hart, 2018). People position things around them in the world by situating them in relation to themselves along the three axes of space, time, and modality when processing any sort of discourse (Chilton, 2004). Initially, the three axes were connected to the DS, which contains the symbolic Self (I, we, etc.). The coordinates of the other processes and entities on the space (s), time (t), and modality (m) axes determine the ontological spaces in which they take place (Chilton, 2004). Accordingly, it becomes possible to conceptualize the ontological configurations (triggered by a text).

Proximization Theory

Proximization is a recent concept. Chilton (2004) is the first author to use the verbal nouns "proximate" and "proximising". Cap (2005) coined the word "proximization," which he used to denote the strategic organization of cognitive-pragmatic interpretations in (initially, political) speech (Cap, 2013). Then, "proximization has become a cognitive-linguistic, pragmatic, as well as a critical discourse analytic term which accounts for the symbolic construal of links between entities inside the DS" (Chilton 2005, cited in Cap, 2013, p. 5). It deals with the symbolic change in which the DS's periphery entities become the deictic center of the DS. Proximization is a discursive technique that makes physically and temporally far events and conditions (including remote antagonistic ideologies) seem more and more damaging to interlocutors. The actor strives to justify the measures and/or policies that they suggest to counteract the growing impact of the harmful, foreign, alien, antagonistic entities by projecting the distant entities as slowly creeping towards the partner's territory (both physically and ideologically) (Cap, 2018).

Proimization theory, according to Cap (2020), functions as an operation of forced construal that calls to mind the proximity of the external threat to enhance preventive measures. According to Cap's (2013) Spatio-Temporal-Axiological (STA) proximization model, specific lexico-grammatical choices are strategically used. As a result, the theory depends on an interdisciplinary research program that uses corpus-based, critical, pragmatic, and cognitive techniques. The linguistic establishment of the deictic core and deictic periphery depends on the lexico-grammatical choices. As a result, they support the symbolic interpretations that allow the periphery of DS to reach the deictic center (Cap, 2013).

Several cross-disciplinary presumptions govern how lexico-grammatical choices relate to the changing extralinguistic context. In terms of its offline static pre-existence and its online dynamics of new meaning production through conceptualization, it is consistent with the cognitive idea of DS. It fits with metaphorical cognitive frameworks. Additionally, proximization theory establishes linguistic representations for mental mappings to achieve specific goals pragmatically. These goals form the framework for legitimacy. The percentages of lexico-grammatical choices

that reflect the axiological, geographical, and temporal categories are always changing. These changes reflect the changing status of the dimensions of space, time, and value (Cap, 2013).

The threat comes from Outside-Deictic-Center (ODC)/ DS-peripheral entities (carcinogens). The Inside-Deictic-Center (IDC) entities (people) are thought to be invaded by the ODCs as they travel through space. The IDCs typically include both partners and actors (text producers and text receivers). Such an approach tries to demonstrate the ODCs' negative representation as being dangerous and threatening to the IDCs' positive representation. The negative portrayal of ODCs generates fear and calls for protective measures. As a result, the purpose of motivating public approval is to strengthen preventive action (Cap, 2020). The threat is of an ideological and spatio- temporal nature. As a result, proximization can be considered from the perspectives of space, time, and axiology.

Axiological Proximization

The forced construal of an ideological clash between the "home values" of the DS's Central entities (IDCs) and the alien antagonistic values of the ODCs (which occur in the DS's conceptual periphery) is the essence of AP. The ODC ideological threat will materialize within the IDC domain due to the IDC-ODC conflict, which either will or (at least) may result in a physical confrontation (Cap, 2013). AP strategy is of three categories. Each category employs certain lexico- grammatical choices to achieve AP:

Category One: Noun phrases (NPs) construed as IDC positive values or value sets (ideologies)
Category Two: Noun phrases (NPs) construed as ODC negative values or value sets (ideologies)
Category Three: Discourse forms involving the linear arrangement of lexico-grammatical choices (phrases) construing materialization in the IDC space of the ODC negative ideologies.

Categories one and two signify ideological opposition because they are related to the values of the opposing (central vs. peripheral) physical entities in the DS (IDCs vs. ODCs). The juxtaposition of the two sets of opposing values is a requirement for the construction of the ODC negative values (Cap, 2013). The threat that motivates the ODC's (people's) bodily impact is presented by the ODC-negative values (carcinogen values). The essence of AP is such a symbolic shift "from the conceptual premise to the physical act," which strengthens its status as a proximization strategy (Cap, 2013). Regarding how pronominal NP replacements are handled in the STA techniques, Cap (2013) acknowledges that pronominal substitutes are not always included in the categories and don't always count. He argues that proximization strategies can use fewer noun phrases (NPs) as category descriptors, allowing for the explicit provision of pronominal alternatives.

As for the conceptual shift, category three entails a difficult sequential scenario that is divided into two components: the "abstract-ideological" component and the "concrete-physical" component. The ideological component depicts a conflict between the IDC and the ODC opposing values in an abstract and far-off manner. Once the physical and ideological components come together, the ODC's ideological hostility becomes a real physical threat. An ongoing shift in conflict probability levels is crucial to the transformation from abstract to physical conflict. While the physical component transforms the IDC/ODC conflict from a remote possibility to a high probability, the ideological component subsumes that potential. This symbolic process helps to understand why the third category consists of phrases arranged linearly (Cap, 2013).

Method

The paper has employed a mixed research method that combines qualitative and quantitative analysis for more reliable results. For the qualitative and quantitative analyses, Cap's (2013) AP strategy (as a component of proximization theory) was used for analysis. Through the use of corpus linguistics, mathematical computations were performed in the quantitative part of the analysis. The corpus analysis was performed using Anthony's AntConc (2019) software. AntConc is a free CorL program created by Prof. Laurence Anthony, a Director of the Centre for English Language Education, Waseda University in Japan. It was first released in 2002. There are versions available for Windows, Mac and Linux. AntConc can be freely downloaded from the webpage http://www.laurenceanthony.net/software/antconc/. On this webpage, there are links to specific online guides and videos. The version used in the current study is AntConc 3.5.8 (windows) (Anthony, 2019). AntConc is capable of reading and processing data converted to a certain format (.txt, .htm, .html or .xml). Therefore, AntFileConverter has been downloaded from the webpage above and used for converting the corpora files before they are processed by AntConc. The program is downloaded as a single file and can be run by double-clicking this file. Users can store it wherever they want on the computer. Moreover, it can be run from a USB memory stick.

The corpus was built by the researchers. The sub-genres of the corpus include scientific reports presented by governmental and non-governmental scientific associations or institutes, news stories on scientific developments, scientific articles presented in online periodicals, and those presented on websites devoted to medicine and the environment. The texts were taken directly from internet sources. The texts were then converted into Word.doc files, one file per text (article). Finally, the Word.doc files were converted to txt format (using the program AntFileConverter) and then processed by AntConc. The size of the Arabic SD is 56288 tokens. Accordingly, the formed corpus is suitable as a representative for the data in question.

Research Procedures

The procedures followed are:

1. Presenting a literature review about certain theoretical topics that form the backbone of the paper;
2. Collecting Arabic texts from different sub-genres of SD to build the corpus;

3. Generating a word.Doc file for the Arabic scientific texts collected;

4. The word. Doc file is converted to text. file format (by AntFileConverter software) to be processed by Anthony's (2019) AntConc;

5. The corpus is processed by Anthony's (2019) AntConc in relation to the AP categories to obtain statistical results;

6. The results obtained are then discussed to complement the quantitative results with qualitative evaluation;

7. Present a set of conclusions that achieve the research objectives and answer the research questions.

Results

The AP strategy consists of three categories. Both one and two recruit NPs and single-word nominals as lexico-grammatical choices. In category one, the NPs are construed as IDC positive values or value sets (ideologies). In category two, the NPs are construed as ODC negative values or value sets (ideologies). The results of analyzing categories one and two are put in one table (table one) to avoid confusion and inaccuracy. To do the corpus analysis of these categories, the word list of the corpus in AntConc has been surveyed to look for NPs that suggest positive IDC values and negative ODC values. Then, the concordance of each suspected NP is checked to assign and calculate the related instances. The File View tool has also been used in many instances for a double check. The lexico-grammatical choices that have occurred in the corpus are الأنسجة الطبيعية (normal tissues) and صحة الانسان (human health) for the IDCs and الورم الخبيث (malignancy) and أعراض خطيرة (serious symptoms) for the ODCs. The identification of the lexico-grammatical choices which establish categories one and two depends on the denotative meaning of the NPs and single-word nominal (which refer to IDCs and ODCs) because, in SD, information is presented straightforwardly rather than adopting figurative language where connotative meaning is expressed. The results are presented in table one in appendix A.

Category three is the most essential category in the AP strategy. Cap (2013) presents an elaborative formula for this category. The formula is in the form of a four phraseological paradigm as follows:

> (1) NP denoting ODC value(s) followed by or combined with (2) VP denoting a remote possibility of the ODC-IDC conflict followed by (3) VP denoting a close probability of the ODC-IDC conflict followed by or combined with (4) NP denoting physical consequences of the ODC-IDC conflict.

In the Arabic language, such sequence of NPs and VPs may not occur verbatim since Arabic has a different word order from English. English word order tends to be more fixed than the Arabic one since Arabic employs optional and obligatory word orders. Moreover, in Arabic, pragmatic information is mainly indicated by word order, but, in English, such information is indicated by different syntactic constructions (Aajami, 2019; Khalil, 1999). Such a difference is a natural consequence of typological differences among languages. Therefore, in the analysis of the Arabic corpus of SD, the existence of NP of ODC value, VP of the remote possibility of ODC-IDC conflict, VP of the close probability of ODC-IDC conflict and NP of physical consequences of the ODC-IDC conflict in one structure need to be taken into consideration rather than their sequence within the same structure. However, Cap (2013) provides other flexible discourse forms for this category since some NPs and VPs do not collocate and may not occur with some NPs and VPs of other paradigms. In such cases, the NPs and VPs may occur independently rather than involving within a four-part structure.

The application of this category to the Arabic SD corpus has been performed by generating a word list in AntConc. Then, the word list was manually investigated to identify NPs that denote ODCs and the NPs that denote negative values for ODCs (already identified in table one. Next, each related NP was inserted in the search box in AntConc and then the start button was hit to display the concordances where the NPs exist, as shown in figure one for the ODC *التلوث* (pollution):

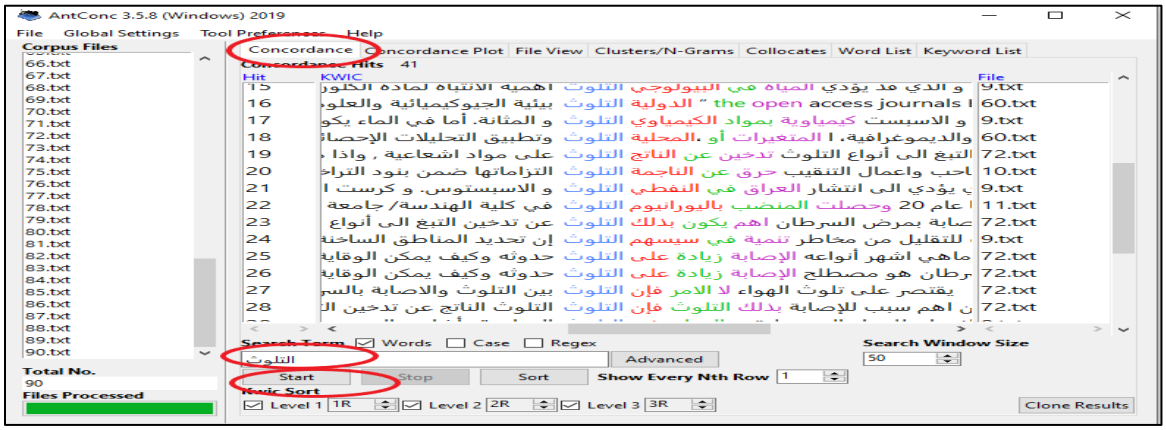

Figure 1. The concordance of the ODC item "التلوث"

Consequently, the structures or discourse forms where the ODC negative values and the ODCs themselves exist are displayed and examined to identify any conceptual shift from abstract ideological part to concrete-physical part. The results of analyzing this category in the Arabic SD corpus are presented in table two in appendix B.

The category tree is the most crucial one in the AP strategy (Cap, 2013). This is mirrored by its position in the corpus; after categorizing the ODCs' negative values, the corpus illustrates the ensuing physical harm with nearly equal relevance. Therefore, category three is the core of AP.

The total statistical results for the three categories of the AP strategy in the Arabic SD corpus are put in table three:

Table 3. *The distribution of the AP strategy categories in the Arabic SD corpus*

Category	Lexico-grammatical choices	Total instances	Percentage of instances
1	Noun phrases (NPs) construed as IDC positive values	58	2.7%
2	Noun phrases (NPs) construed as ODC negative values	1573	72.6%
3	Discourse forms involving linear arrangement of lexico-grammatical phrases construing materialization in the IDC space of the ODC negative ideologies.	536	24.7%
Total instances		2167	100%

Table three shows a clear divergence in the employment of the three categories. Figure two displays the graphic representation of the distribution of the AP strategy categories in the Arabic SD corpus:

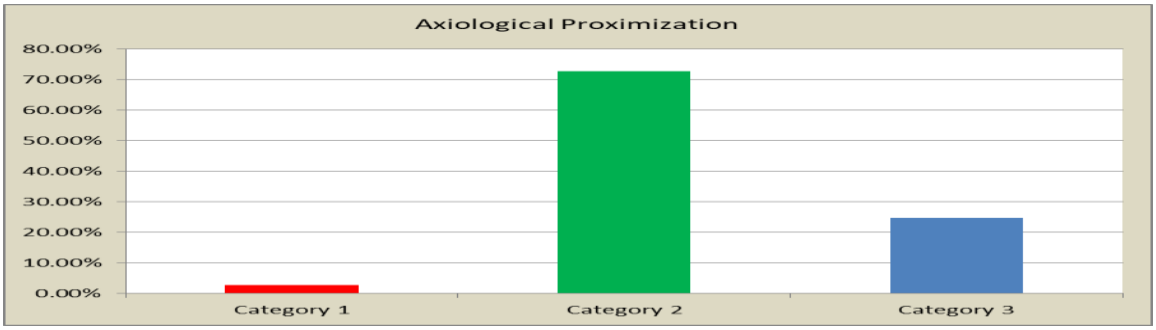

Figure two. The distribution of the AP strategy categories in the Arabic SD corpus

According to the rates of distribution of the AP strategy categories in the Arabic SD corpus, the categories can be arranged on a scale of three ranks as shown in table four:

Table 4. *The ranks and frequencies of the AP strategy categories in the Arabic SD corpus*

Category rank	Category No.	Lexico-grammatical choices	Total instances	Percentage of instances
1st	2	Noun phrases (NPs) construed as ODC negative values	1573	72.6%
2nd	3	Discourse forms involving linear arrangement of lexico-grammatical phrases construing materialization in the IDC space of the ODC negative ideologies.	536	24.7%
3rd	1	Noun phrases (NPs) construed as IDC positive values	58	2.7%

AP plays a considerable role in constructing carcinogen risk in the Arabic SD (2167 times). This outcome supports Cap's (2013) emphasis on AP as an essential proximization strategy for crisis and threat construction.

Discussion

Category two has achieved the first rank in the number of occurrences in the corpus. Category two in the AP is concerned with NPs construed as ODC negative values. The dominance of this category explicates the extent to which the ODC negative values act as the cornerstone of the ideological conflict in the corpus. According to the dominance of category two, Cap (2010) states that the main function of AP is to entail that IDCs are given different values to broaden the domain of contrast and comparison (between carcinogens and people) and increase the values attributed to ODCs for them to be rejected. Cap (2017) emphasizes the construal of ODC entities as "inherently evil" to achieve a stronger "fear-raising appeal" that promotes "an effective defense or prevention plan" (p. 36). The dominance of this category represents the instigator of the AP since, as Cap (2010) believes, the ODC elements "are then construed as potentially invading the IDCs' home territory or the territories which have been converted to the IDCs' ideology" (p. 401).

The NPs construed as ODC negative values are mainly of physical denotations such as تلوث/ التلوث/ الملوثات (tumor(s)), الاورام/ الورم/ ورم/ اورام (disease(s)), الامراض/ امراض/ المرض/ مرض (pollution/ pollutants), خطيرة + مشاكل/ اعراض/ تأثيرات/ الخ. (serious + Problems/symptoms/effects/etc.). Such physical denotation for ideological conflict is explicated by Cap (2014) who believes that the antagonistic ODC peripheral values can be physically materialized within the DS center. In addition, Cap (2010) emphasizes the fact that the actor's construal of an ongoing ideological conflict eventually comes into being in the form of a physical clash between the interlocutors and the opponent.

The second rank is occupied by category three with 536 instances (24.7%). Although category one employs straightforward lexico-grammatical choices that take little textual space in the corpus, it could not outperform category three which Cap (2013) considers the most essential category in the AP strategy. The importance of this category parallels its rank in the corpus in that, after signifying the negative values of the ODCs in category two, the corpus presents the almost equivalent significance of the shift from these negative values to the resulting physical damage. Hence, category three forms the heart of AP. This finding is supported by Cap (2008) who assures that the success of the proximization strategy depends on the construal of the eventual clash between the ODC and the IDC entities, and the most salient lemmas are those which indicate a

conflict-bound movement on the part of both ODCs and IDCs, though the latter can also be construed as passive or inert and thus easily invadable.

The last rank goes to category one where NPs are construed as IDC-positive values with a frequency of 58 instances (2.7%). Although the construal of ideological conflict between IDCs and ODCs is crucial to the AP, the positive values of IDCs in the Arabic SD corpus are not that significant and, thus, do not perform a significant AP linguistic activity in the corpus. This is because the IDCs (health and safety of people) are portrayed mainly as universal victims that are facing everlasting enemies (different types of cancer and various carcinogens). The abundant identification of ODCs and their positive values would be redundant.

Conclusion

The paper aims to investigate the cognitive pragmatic construction of carcinogens risk through an ideological conflict of values in the Arabic SD. To achieve this aim, the AP strategy (as part of the cognitive pragmatic theory of proximization) was employed to analyze the data. The paper has come to a set of conclusions. First, carcinogen risk is ideologically presented through the three categories of the AP strategy: category one (Noun phrases construed as positive values of people who are subjected to environmental carcinogens), category two (Noun phrases construed as negative values of carcinogens themselves) and category three (discourse forms of linear arrangement of lexico-grammatical choices that construe the materialization of carcinogens negative values in the people's space). Second, the Arabic SD lays more emphasis on the construction of the negative values of carcinogens risk to create robust reactions towards them. Thus, more serious preventive measures would be performed by people. Third, the positive values of people are not that influential in creating ideological conflict since the ultimate aim of Arabic SD on carcinogens is to raise awareness of the cancerous effects of some environmental products.

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Appendices

Appendix A: Table 1. The results of analyzing categories one and two of the AP strategy in the Arabic corpus

NPs of positive values for IDCs	Frequency	NPs of negative values for ODCs	Frequency
الانسجة/ الحالات/ العوامل/ الخ.+ الطبيعية (natural + Tissues / Conditions / Factors / Etc.)	28	خطر/ مخاطر/ المخاطر/ خطورة (risk(s))	459
صحة + الانسان/ الرضيع/ الاشخاص/ الكوكب/ الخ. (Health of + human/ baby/ people/ planet/ etc.)	20	الامراض/ امراض/ المرض/ مرض (disease(s))	223
حماية (protection)	10	الاورام/ الورم/ ورم/ اورام (tumor(s))	133
		تلوث/ التلوث/ الملوثات (pollution/ pollutants)	131
		اصابة/ الاصابة	112

		(injury)	
		الاصابات/ المصاب/ اصابة (injuries/ injured)	53
		اوضاع/ حالات/ الخ.+ صحية+ جسيمة/ خطيرة/ وخيمة/ الخ. (health + serious / dangerous / severe / etc. + Conditions / cases / etc.)	50
		الورم/ المرض/ النمو/ الخ.+ الخبيث (malignant + Tumor/disease/growth/etc.)	34
		الوفيات/ الوفاة (death case(s))	32
		فيروس/ الفيروسات (virus(es))	28
		مشاكل/ اعراض/ تأثيرات/ الخ. + خطيرة (serious + Problems/symptoms/effects/etc.)	25
		التهاب/ الالتهاب (inflammation)	22
		الحشائش/ المواد/ التأثيرات/ العوامل/ الخ+ الضارة (Harmful + Weeds/ Substances/ Effects/ Factors/ Etc.)	21
		السموم/ المكونات السامة (Toxins/ Toxic Ingredients)	18
		الغازات/ الجزيئات/ العناصر/ الخ.+ السامة (toxic + Gases/molecules/elements/etc.)	15
		النفايات (Waste)	15
		المخلفات/ المكونات/ المواد + الخطرة (Hazardous + Waste/ Components/ Materials)	15
		اضرار (damages)	15
		وفيات (death cases)	13
		اضطراب/ الاضطرابات (turbulence/ turmoil)	12
		التدخين/ الدور + السلبي (passive + Smoking / role)	11
		التهاب الكبد الوبائي (Hepatitis)	11
		الاورام/ الخلايا + الخبيثة (malignant + Tumors / cells)	10
		الضرر (damage)	10
		ضَعف (weakness)	10
		فقدان+ الشهية/ المناعة/ الوزن/ الخ. (Anorexia/ weight loss/ Immunodeficiency/ etc.)	10
		مادة/ غازات/ نفايات/ الخ. + ملوثة (polluted + Material / gases / waste / etc.)	10
		المصابون/ المصابات (the injured)	10
		مشاكل (problems)	9
		تلف (damage)	8

		الخلايا/ الخلية + السليمة (the healthy cell(s))	7
		مضاعفات (complications of the disease)	5
Total instances	58	Total instances	1573

Appendix B: Table 2. The statistical results of category three of the AP strategy in the Arabic corpus

ODC NPs & NPs of negative values for ODCs	Example instances	Frequency
مواد/ الموادة/ مادة/ المادة (material(s))	ممكن أن يكون العمال قد تعرضوا لمواد أخرى حفزت المرض و طورته بدرجة أكبر (سرطان الدم).... (The workers may have been exposed to other substances that stimulated the disease and developed it to a greater degree (leukemia)) وقت اشعال الشمعة فانها تطلق كمية كبيرة من السموم في الجوومادة البارافين هي مادة شديدة الخطورة على صحة الانسان .... (At the time of lighting the candle, it releases a large amount of toxins into the atmosphere, and paraffin is a very dangerous substance to human health)	99
اللحم/ اللحوم(meat(s))	ان تناول شريحة من اللحم اسبوعياً من شأنه ان يرفع احتمالية الاصابة.... (Eating a slice of meat a week would increase the risk of infection.) ان استهلاك اللحوم الحمراء ممكن ان تكون من مسببات الامراض السرطانية المحتملة للانسان. (WHO confirmed that the consumption of red meat could be a possible cause of cancerous diseases for humans.)	45
عوامل/ العوامل (factor(s))	لمن هم دون سن الخمسين الى جانب عوامل اخرى تساهم في زيادةهذه المخاطر .... (For those under the age of fifty, along with other factors that contribute to increasing these risks.)	45
السكر/ السكريات/ السكري/ السكروز (sugar / sugars / diabetes / sucrose)	ان تناول كميات عالية من السكريات ادى الى انتشار الخلايا السرطانية من الثدي الى الرئتين .... (Eating high amounts of sugars led to the spread of cancer cells from the breast to the lungs.)	43
زيادة+ الوزن/ استعمال السيارات/ هرمون الاستيرون/ الانشطة الفرنسية/ التدخين/ الخ. (Weight gain/ use of cars/ testosterone/ French activities/ smoking/ etc.)	يؤدي تناول الكثير من السعرات الحرارية للسكر إلى زيادة الوزن الذي يزيد هو أو السمنة من خطر إصابتك بالسرطان (Eating a lot of sugar calories leads to weight gain, which or obesity increases your risk of cancer)	34
استخدام(use)	ان التعرض لجزيئات نانو اكسيد التيتانيوم يؤثر سلباً على بكتريا الامعء المفيدة ممايؤدي الى عواقب وخيمة .... (The exposure to titanium dioxide nanoparticles negatively affects the beneficial gut bacteria, which leads to serious consequences....)	27
تلوث/ ملوثات/ الملوثات (pollution/ pollutant(s))	هذه المرة الاولى التي صنف فيها الخبراء تلوث الهواء الخارجي كسبب للسرطان .... (This is the first time that experts have classified outdoor air pollution as a cause of cancer.) ان بعض الملوثات قدد تتراكم في اجسلم السيدات وتودي الى حدوث الاورام بمرور الوقت. (Some pollutants may accumulate in the body of women and lead to tumors over time.)	25

24	توجد مجموعة من العوامل البيئية التي تؤدي الى الاصابة بالسرطان.... (There are a number of environmental factors that lead to cancer.)	العوامل+ البيئية/ البيولوجية/الغذائية/ الفيزيائية/ الخ (environmental / biological / nutritional / physical / etc. + factors).
23	تمثل المخاطر الناجمة عن التدخين السلبي وعلاقته بسرطان الرئة .... (The risks posed by passive smoking and its relationship to lung cancer...)	التدخين/ التدخين (smoking)
23	تكرار حروق الشمس اثناء الطفولة هو اكثر خطرا من التعرض الزائد لاشعة الشمس (Repeated sunburn during childhood is more dangerous than excessive exposure to the sun)	التعرض(exposure)
22	يعرف بالفثالات وهي مركبات تنتمي الى فئة المواد الكيميائية التي ترتبط بالسرطان (Known as phthalates, they belong to a class of chemicals linked to cancer)	المواد/ مبيدات الحشرات/المركبات/ التفاعلات + الكيميائية (Substances /insecticides/ compounds/ reactions + chemical)
20	يعتبر الفشار المصنوع في الميكرويف من الاطعمة التي تتسبب بسرطان الرئة .... (Popcorn made in the microwave is considered one of the foods that cause lung cancer.)	الاطعمة(foods)
20	يكون الانسان سبباً في مجموعة من العوامل الاخرى التي تؤدي الى اصابته بالعديد من الامراض الخطرة .... (A person is the cause of a number of other factors that lead to his infection with many dangerous diseases.)	العوامل(factors)
18	ويكون الاشخاص الذين يعانون من السمنة اكثر عرضة للاصابة بسرطان القولون بنسبة 30% .... (People who are obese have a 30% higher risk of developing colon cancer.)	السمنة(obesity)
14	تم اضافة مغلي الفواكه الحاوي على كمية عالية من السكر الى قائمة المشروبات التي تشكل خطورة على الامعاء .... (Boiled fruits containing a high amount of sugar have been added to the list of drinks that are dangerous to the intestines....)	مشروب/ المشروب/ مشروبات/ المشروبات (drink(s))
13	تؤدي وراثة انماط طافرة من هذه الجينات الى زادة كبيرة في خطرالاصابة بالورام السرطانية .... (Inheritance of mutated patterns of these genes leads to a significant increase in the risk of developing carcinomas....)	الجينات(genes)
11	الكثير من الناس لم يكونو على علم بالمكونات التي تستخدم في منتجات العناية الشخصية المليئة بالسموم الضارة التي ممكن ان تؤدي الى عواقب كارثية .... (Many people were not aware of the ingredients that are used in personal care products that are full of harmful toxins that can lead to catastrophic consequences....)	منتج/ منتجات/ المنتج/ المنتجات (product(s))
10	ان تركيز الكادميوم والزك والمنغنيز والنحاس في التربة يرتبط ارتباطاً احصائيا بمعدلات الاصابة بالاورام الخبيثة .... (The concentration of cadmium, zinc, manganese and copper in the soil is statistically correlated with the rates of malignant tumors ....) ان مادة التيتانيوم E711 تعتبر من المواد الخطرة التي تسبب سرطان القولون .... (Titanium 711 is considered a dangerous substance that causes colon cancer.)	الزنك/ الكادميوم/ الزرنيخ/ ثاني اكسيد الكبريت/ التركلازوان/ التيتانيوم/ الاسبستوس (Zinc / Cadmium / Arsenic / Sulfur dioxide / Triclazoane / Titanium / Asbestos)

السجائر/ الاركيلة (cigarettes/ hookah)	ان الاركيلة اقل خطرا من السجائر الا ان تدخين الاركيلة مرتبط بالعديد من المشاكل الصحية ومنها تلك المسببة للامراض السرطانية .... (Hookah is less dangerous than cigarettes, but hookah smoking is linked to many health problems, including those that cause cancerous diseases.) حيث ثبت احتواء دخان السجائر على مايزيد على 400 مادة معضمها مواد مسرطنة .... (It has been proven that cigarette smoke contains more than 400 substances, most of which are carcinogenic.)	5
الرصاص(lead)	يؤدي التعرض المتكرر الى مادة الرصاص الى زيادة خطر الاصابة بسرطان المعدة .... (Repeated exposure to lead increases the risk of stomach cancer.)	4
دهن/ الدهن/ الدهنية (fat / fatty)	تحتوي جميع الزيوت النباتية على مستويات عالية من الاحماض الدهنية . يسبب هذا الفائض مشكلات صحية قدد تتضاعف لتصل الى حالات مرضية .... (All vegetable oils contain high levels of fatty acids. This surplus causes health problems that may multiply to reach sick cases.)	3
المُحليات(sweeteners)	تحتوي هذه المنتجات على مركبات الاسبارتم المسرطنة والنتجات المعدلة وراثياً والمُحليات المصنعة والمواد المعدلة وراثيا والتي تسهم جميعها في احداث الاورام السرطانية .... (These products contain carcinogenic aspartame compounds, genetically modified products, artificial sweeteners, and genetically modified materials, which all contribute to the occurrence of cancerous tumors....)	2
اليورانيوم (uranium)	كرست المحاضرة جزءاً للتلوث ... تطرق فيها الى اليورانيوم المنضب وتأثي الاشعاع النووي في الاصابة بسرطان الجلد والدم. (The lecture devoted a part to pollution... touching on depleted uranium and the effect of nuclear radiation on skin and blood cancers.)	2
النفايات(waste)	ان تأخذ على عاتقها المسؤولية بقدر مايتعلق الامر بالمخلفات وتاثير مشاريعهم النفطية على البيئة وتسبب ذلك بمخاطرصحية جسيمة .... (To take upon themselves the responsibility as far as waste is concerned, and the impact of their oil projects on the environment, causing serious health risks ....) الاسبستوس وغاز الرادون ومبيدات الحشرات والنفايات الخطيرة تؤدي الى سرطانات الكبد والرئة .... (Asbestos, radon gas, pesticides and dangerous waste lead to liver and lung cancers....)	3
الاشعة(rays)	الاشعة فوق البنفسجية الصادرة عن الشمس تسبب سرطان الجلد .... (Ultraviolet rays from the sun cause skin cancer...)	1
Total instances		536