Spatiotemporal Correlates of Mind Map in the Translation of Arabic Lexical Units into English

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Abstract

This paper demonstrates that the mind map is a uniquely well-suited correlation of lexical units. The various functions of lexical items are correlated by cognitive analogies between various domains of thoughts, namely: the spatial and temporal correlates of mental states during communicative interaction. This paper aims to analyze the cognitive capabilities of translators to perceive the lexical correlations between lexical units in both English and Arabic. The first point of contact between lexical units and the mind is related to the domains in which correlations can be used by the translators. The main hypothesis put forward is that the use of lexical concatenation in the epistemic domain involves the lexical relationships between premises of concepts and mental capabilities. This comes from the specific meaning of some connectives that require the manipulation of conceptual structures. The paper concluded that translators may vary concerning the degree of the mental capacity to create lexical correlations between units of both English and Arabic. This is due to the different cognitive capacities of translators to create correlations of using lexical items during the translation process.

Keywords: Mental map, spaces, schematic conditioning.

الارتباطات الزمانية المكانية للخريطة الذهنية في ترجمة الوحدات المعجمية العربية إلى اللغة الإنجليزية

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الخلاصة

يوضح البحث الحالي أن الخريطة الذهنية هي عبارة عن ارتباط سياقي منفرد للوحدات المعجمية. وترتبط الوظائف المختلفة للعناصر المعجمية بالقياسات المعرفية بين مختلف مجالات الأفكار، وهي: الارتباطات المكانية والزمانية للحالات العقلية أثناء التفاعل التواصلي. الهدف من هذه الورقة هو تحليل القدرات المعرفية للمترجمين لإدراك الارتباطات المعجمية بين الوحدات المعجمية باللغتين الإنجليزية والعربية. ترتبط نقطة الاتصال الأولى بين الوحدات المعجمية والعقل بالمجالات التي يمكن للمترجمين استخدام الارتباطات فيها. الفرضية الرئيسية المطروحة هي أن استخدام التسلسل المعجمي في المجال المعرفي يتضمن العلاقات المعجمية بين مقدمات المفاهيم والقدرات العقلية. يأتي هذا من المعنى المحدد لبعض الوصلات التي تتطلب معالجة الهياكل المفاهيمية. وخلصت الورقة إلى أن المترجمين قد يختلفون فيما يتعلق بدرجة القدرة العقلية على تكوين ارتباطات معجمية بين وحدتي اللغتين الإنجليزية والعربية. ويرجع ذلك إلى القدرات المعرفية المختلفة للمترجمين لإنشاء ارتباطات باستخدام المفردات المعجمية أثناء عملية الترجمة.

الكلمات المفتاحية: الخريطة الذهنية، الفراغات، التكييف التخطيطي.

1. Introduction:

Translators, in general, have the mental capacity to conceptualize languages according to the translation competence in the mental models of expertise. They have immediate and procedural types of memory in which the lexicons are correlated in the form of conceptual networks. Lexicons of two unrelated languages are units of cognits that can be correlated as separate networks in the human brain. In this research, the mind is a diagram organization of the translator’s mind to the information of the textual inputs.

It is also a hieratical relationship among pieces of the whole inputs. The correlations of lexical units are highlighted and described the couples, and decouples of lexis/units of both languages. This is an essential issue of conceptualizing mind mapping according to translation process research (TPR). The investigation in cognitive translation studies suggests that the "lexical units may be well – defined according to the dynamic integration of mind maps (Libben and Goral, 2015:61). According to House (2015: 115), the translation process is associated with the systems continuously, interactively evolve and adapt to the communicative needs of the spatiotemporal aspects of lexes. Libben *et al.* (2017:2) suggest that the mappings of the mind lexicons require conceptualization not only of the dynamicity of spatiotemporal varieties but a correlation as individual constructs also how they interact with each other according to the bilingual lexical processing. The mental maps of lexical correlate in the translator's mental model are default rather than exceptional in the bilingual mind storage of lexicon, due to the translation competence and expertise (Vaid and Meuter 2017:10).

2. **Target Text Maps:**

Holmes (1988: 96) refers that "within translation process, translator retrieves the mind map of the TT s/he wants to work on". This is called the mental representation of translating; it almost occurs in the bilingual performance of translation rather than monolingual. This has also been referred to by Honig (1991: 77) who explained that mental representation of the TT is a microstructural concept associated with the time and space of the TT (i.e., it is an image that governs the operational model of translating

process). Neubert and Shreve (1992: 14) consider that mental representation is a virtual translation (VT). It is an operational model of lexical correlations associated with space and time between the ST and not -yet -realized TT. This VT is an immediate representation of the networks[1], "a work in progress gradually conceptualized until it is linguistically incarnated in the TT". Mcelhanon (2005: 29) demonstrated that "the operational model of translation processes dealing with space and time of SL and TL are, however, elaborative to the communicative interaction", this is called spatiotemporal relations. Neubert and Shreve (1992: 22), on the other hand, discussed the relationship between the VT and the not – yet realized target texts, they referred that VT occurs in the mind of the translator and yields a "linguistic incarnation" to the TT, while the elaboration of the "not yet realized text" produces "linguistic clothing" in TT. These two concepts are two traditional metaphorical renditions of the "code or transfer systems" (see also Martin, 2010: 75).

2. Lexical Units in the Conceptual Indexing:

The schematic structure of lexical units represents a network of spatiotemporal correlations. The conceptual indexing is based on schematic structures. The latter refers to the correlation between **Ejection** which refers to someone or something, the **Ejector** performs the process of **Ejection**, where the **Ejected** undergoes the **ejection**, and a **Path** represents the trajectory of the Ejected. This process is called pattern – recognition of unit concatenations:

[1] It is located in the prefrontal cortex of the brain.

Pattern – recognition: Ejector — Ejected — Path

According to the translation process, the following examples express this pattern; and in both, the roles of **Ejector** and **Ejected** are performed by the same individual:

(*a*) John **threw** himself out of the window

ألقى جون بنفسه خارج الشباك

(*b*) John **jumped** out of the window

قفز جون خارج الشباك

The verbs "**throw and jump**" (**القى، قفز**), in both English and Arabic, refer to the process of ejection. The use of "**throw**", "**القى**", it is possible, but not necessary, that what ejects is correlated with what is ejected (**himself, نفسه**), whereas with "jump" (**قفز**), such use is necessary.

In cognitive semantics, these verbs express the role of – pattern recognition in different schematic conditionings. These are called "distinct identity patterns", they may be seen in encoding systems by conceptual indices, such that the necessity of identity in the use of "**jump**". This is encoded through correlation with the role of complex mapping, and the lack of necessary identity in "**throw**" that is encoded through correlation of the items (**himself**) in distinct complex structures (Hellan, 2000: 56).

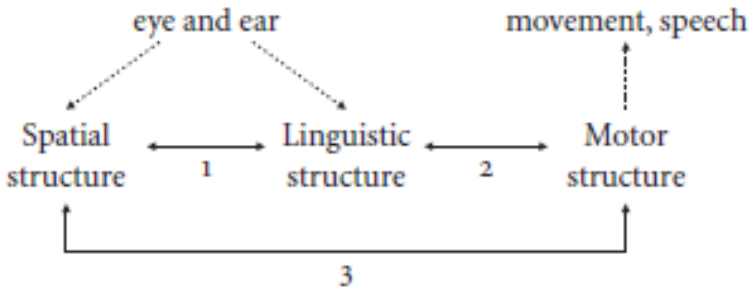

Figure (1): The cognitive architecture of the mind map in terms of different levels of information representation (Zee and Nikanne, 2000: 2)

The body of literature indicates that translators have bilingual competence and expertise for vocabulary adaptation (i.e., linguistic incarnation); they are adapted to the "lexical retrieving task" (House, 2015: 111). It has been presumed that translators make interfaces about language use more frequently because the neural associations[2] and lexical correlations[3] are conceptually stronger in indexing the "stronger links hypothesis", this applies to the correlational models of lexical units and concepts as more fluent spatiotemporal correlates. They constitute "strengths" in the lexical retrieve, access, or selection is a kind of "cognitive – effect" to the translators. Conceptual indexing has also been reported to be weaker in separate networks than other frequency effects of correlative lexical units, take the following example:

Theater	Operation theatre
	Crime theater
	Comic theater
صالة العمليات	**مسرح**
مسرح الجريمة	
مسرح الهزلي	

For translators, memory recall and competence retrieval operations magnificently mediate an effective translation between SL and TL. Some translators may vary concerning cognitive competence in finding the conceptual match (henceforth, equivalence ≡) in the conceptual indexing units. Translators are competent bilinguals whose bilingual cognitive VT is

[2] Stimulus-response associations.
[3] Mental maps of lexical units.

well-experienced via dynamic time and space; if there are weaknesses in lexical recall and retrieval inherent in bilingual competence, they would be a natural target for the remediation if they adversely impact the lexical selection. Training programs enhance the lexical retrieve for translators, strengthen lexical associations, and expand mapping networks of correlations. Translators are adapted bilinguals to shift from SL into TL because they use their lexical units. Interestingly, the variations in lexis demonstrate correlations in conceptual indexing to adapt the mechanisms to optimize the spatial and temporal needs when deriving correlations from lexical units (Diamond and Shreve, 2017: 488).

2. Concept of Mental Lexicon

Understanding lexical inputs of the mind are based on the spatiotemporal correlations between the lexical units. The mental representations and operations enable to make decisions about specifying the specific indexing. According to the outcome of the analysis, the operational model of mental representations and the translation process is relative to direct access of linguistic and conceptual structures in the mind of the translator (Allison *et al.*, 2019: 393; see also Siyanova - Chanturia *et al.*, 2019: 509).

For this reason, translators depend on retrospections about concepts that generate correlations during the translation activity. The mental map about lexical correlations constitutes the key understanding of the nature of network organization translators. The inherent notion involves that the lexical units of languages are conceptually uncorrelated, yet they have conceptual indexing according to the mental lexicon, and the accumulative

experience that are decisive factors of developing such correlations. Thus, the mental lexicon depends on the cognitive system whose organization of correlations creates both isolation and correlation of lexical units (Allison *et al.*, 2019: 393).

A translator, in this respect, acquires (and may lose) words and modifies correlations according to the dynamic time and space of the text. This dynamicity is heightened in the case of finding the closest natural equivalence for the lexical items. The following figure shows that the cognitive dimension of the translation process needs the correlations and differentiation of “language-specific lexical units”.

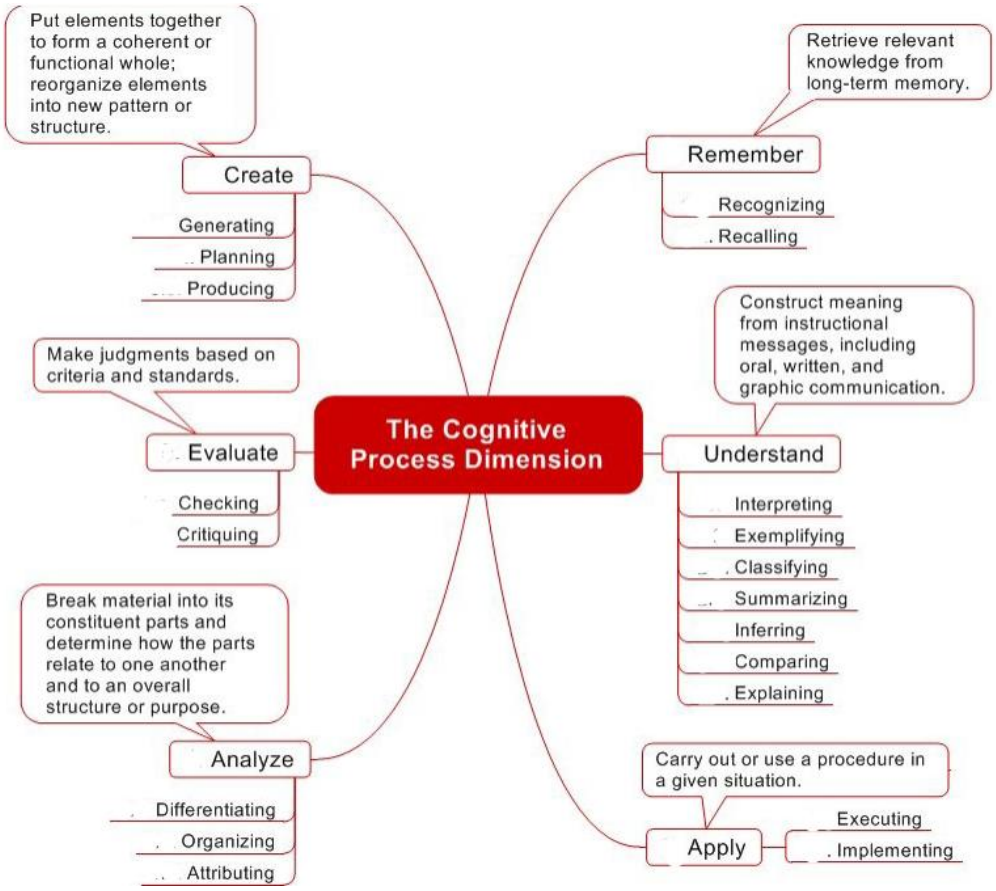

Figure (2) Cognitive Processes of Lexical Correlations

The lexical correlation is usually accompanied by understanding or the ability to recall the lexical information if it is only retained in short-term memory. In contrast, meaningful understanding of the lexical units is tied to the existing knowledge. These correlations allow the translator to integrate the new knowledge and apply it to the novel spatiotemporal templates. Translators have a large bilingual lexical storage and their lexical systems undergo more adaptable access to spatiotemporal situations of the lexical units. Thus, the study of mental lexis offers an understanding of the features of “linguistic knowledge in action”. Recently, progressed studies have been

occurred to break down the lexical units and processing through the mind map (Allison *et al.*, 2019: 393).

2.1 Language Memory Storage

Translators are described as well experienced in L2 by correlating the learned lexical units in the "incarnational linguistic concepts" back to those in their L1. They correlate the concepts of new linguistic inputs to those already in memory. It is hypothesized that there is an overlap of mental representations such that all linguistic information networks would be stored in one location within the brain. On the other hand, the coordination of new acquired lexical units in L_1 and L_2 may have reference to the pattern - recognition in a context that is unique in the language. Accordingly, English lexical items and their translations into Arabic are not explained as having corresponding meanings and correlations. They also have no pattern – recognition equivalently between SL and TL, and these words have their cognitive storage system. A pivotal distinction between translators is the implication that the cognitive system must encode lexical correlations in a context-specific manner between two languages (see §3). In other words, for each lexical item, translators must make conceptual indexing to the space and time of units, to later be able to retrieve the meaning of the lexis under its appropriate schematic conditions (Segalowitz and Freed, 2004: 174). This idea allows alternatives as an outcome of adaptation with the languages after the learning (Kopeliovich 2006:102). In cognitive translation research (CTR), the linguistic information is investigated in individuals within the knowledge factors of two languages. They are stored within single mental

lexis, or among multiple or separated storages[4]. If multiple storages of lexical correlations are used, the correlations and associations between lexical units are under discussion. Studies consider that the linguistic storage is relative to the conceptual indexing representing the lexical use as free abstract meanings (see Heredia and Cieslicka, 2018: 44). These concepts are explained as labels equivalent to the lexical networks and correlated with each known conceptual structure in the mind of the translator. On this basis, this mechanism activates both SL and TL labels in the mental lexicon and becomes accessible for usage. Consequently, the translator tags the most applicable one according to the spatial and temporal correlations.

Tasks confirming the conceptual indexing and accentuating the attention gate towards *the meaning* of words are retrieving and pattern-recognition tasks of the mental lexicon and correlational processing, often garner support for the model of TPR (see Heredia and Cieslicka, 2018: 45). This mechanism states that linguistic information processing, storage, and retrieving, are subject to the learned competence in-memory storage of lexicons. Furthermore, correspondence between mind lexis occurs only through translation processes. Therefore, data about lexical items in one language is sometimes not available to another, supporting this assumption comes from investigations that are sensitive to data-driven or conceptual – indexing factors (e.g. lexical decision tasks). Combining conceptual structures of lexicons in both languages, correlations separate and connect bilingual memory stores according to the spatiotemporal correlations. For example, a mind map of the lexical units, take the following sketch:

[4] This procedure will be adopted in the analytical part of this paper.

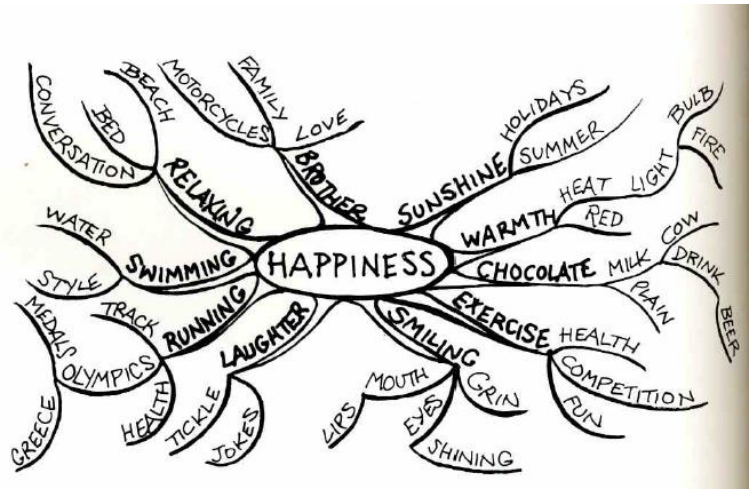

Figure (2) Correlations of Mental Lexicon

The memory works by an activation process that spreads SL from lexical units to other TL lexical units via correlations. Päivio and Desrochers (1980:98) suggest that every language user has separate lexis of a mind map as a label or tag and can be useful separately, within each label, there is information on the lexical units; albeit stored separately, the units are associated with lexical use through translation equivalents. There is a strong association between the labels of both languages in a given map, and more accessible the correlations. The translation equivalents of (**cheese**) in English, for instance, and (**جبن**) in Arabic produce a stronger correlation, as compared to the related concepts of **(cheese)** and (**bread**, **خبز**) in Arabic.

Hence, a mind map is relative to the cognitive effects in the inclusion of spatiotemporal correlates, as well as a memory storage system that is linked to the mental lexicon. The nature of these effects refers to variations in the conceptual indexing, or other responses because of the modifications in lexical type, “e.g. abstract, concrete, emotion words describing an

affective state, such as happiness, or academic - words that evoke situational features such as medicine" (Allison *et al.*, 2019: 393).

There is a reference to the lexical correlation as concrete items "e.g. *chair*, *tiger*, *bottle*" are better recalled from memory than abstract words "e.g. *dream*, *love*, *death*" (Altarriba and Bauer, 2004:389; Farley *et al.* 2012: 450). It is important to note that the lexical units score high memory storage in the accessibility of lexical correlations and often have a single translation between S^L and T^L, whereas abstract referents to the lexical units are lower in the accessibility of lexical correlations and often map onto multiple translations (see Martin, and Altarriba, 2016:62). Therefore, concrete lexis can activate spatiotemporal correlates from all storages (L^1 and L^2, and their spatiotemporal aspects) of the dual-labeling model. Many models of memory storage have been presumed through the retrieving of various lexical properties that can be correlated within underlying theoretical perspectives (Allison *et al.*, 2019: 393).

2.2 Correlational Model:

Correlational model "or connectionist approach" of linguistic inputs based on the field of "cognitive semantics". The model functions correlate the linguistic knowledge with the mechanisms that operate them. In general, the correlational model has is used to analyze the conceptual structures with the "neuronal connections" of lexical units in the mind of the participants in the communication. In describing translation process research (TPR) (see Figure, 1). Spatiotemporal are correlated between associating labels and conceptually indexed, and their correlational strength is increased as a pattern – recognition according to the functions in the contexts. The

recognition process can also arise from interactions with the dynamic space and time of the context that allows for memory storage and rules of use to link concepts together (Allison *et al.*, 2019: 393). For instance, in acquiring the interpretation of the unfamiliar words, the features of the unique letters must first be lexicalized and conceptually indexed to formulate meaningful units. Once the unit has been formulated as a word, the meaning would apply to it and the interpretations are grouped with concepts in memory.

Dijkstra and Van Heuven (2002: 176) see that the correlational model instigates that lexical inputs of the concrete appearance of word features initiate the activation of pattern – recognition. These different "lexical units" are correlated in the mental lexicon, with the underlying memory storage activation. Information about the dynamic space and time of lexical units across all of the knowledge is connected with a single lexicon, with a given pattern - recognition as idiosyncratic to a specific language. The interpretation of the lexical item is most relevant or contextually suitable to the cognitive activity. "As a correlation between L^1 and L^2 becomes strengthened through proficiency, expertise translation equivalence, or semantic links, the mental map from both languages becomes integrated to form a lexical inhibitory network (see figure, 2)". "With strong correlations, information regarding the more dominant and proficient language can be more easily inhibited and suppressed during L^2 processing to allow for more efficient communication".

3. Data Analysis:

A total of 30 worksheets were distributed to fourth-year students at the Department of Translation / University of Mosul. The worksheet

consisted of 8 correlations formulated as a mind map (see appendix) including the lexical items starting from the word (surgery) to the word (emergency department) (see appendix). The researcher selected 13 worksheets suitable for the research strategy and dropped the remaining samples. The worksheets were distributed randomly to the students in English (SL pre-stage) in April 2020 to be translated into Arabic (TL), after 60 days period; the same worksheet was distributed in Arabic (TL post-stage) to be translated into English (TL). the worksheet consists of (8) slots to be filled by the students. The frequency test has been applied to the analysis of the lexical units. Respondents made conceptual indexing to the lexical units according to the pattern – recognition of spatiotemporal correlations of lexical units.

The main aim of this procedure is to measure the spatiotemporal correlations between the lexical units in both languages and variations among 13 translators. Statistical analysis was adopted in this paper to analyze the data inputs. The frequency test is followed as a statistical procedure that allows us to investigate the deviations of frequencies among translators.

4. Results and Discussion:

L1

Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	.00	7	53.8	53.8	53.8
		1.00	6	46.2	46.2	100.0
		Total	13	100.0	100.0	
post	Valid	.00	9	69.2	69.2	69.2
		1.00	4	30.8	30.8	100.0
		Total	13	100.0	100.0	

T1: translator 1

T1 achieved, in pre-stage, frequency (7 ≣ 0) and percentage 53.8%, as the correlational part between the lexical units in English. In the same stage, T1 achieved frequency (6 ≣ 1), with 46.2% of the valid percentage. In the post-stage, T1 achieved frequency (9 ≣ 0) and percentage 69.2%, as the correlational part between the lexical units in Arabic. In the same stage, T1 achieved frequency (4 ≣ 1), with 30.8% of the valid percentage.

L2

Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	.00	8	61.5	61.5	61.5
		1.00	5	38.5	38.5	100.0
		Total	13	100.0	100.0	
post	Valid	.00	5	38.5	38.5	38.5
		1.00	8	61.5	61.5	100.0
		Total	13	100.0	100.0	

T2: translator 2

T2 achieved, in pre-stage, frequency (8 ≣ 0) and percentage 61.5%, as the correlational part between the lexical units in English. In the same stage, T2 achieved frequency (5 ≣ 1), with 38.5% of the valid percentage. In the post-stage, T2 achieved frequency (5 ≣ 0) and percentage 38.5%, as the correlational part between the lexical units in Arabic. In the same stage, T2 achieved frequency (8 ≣ 1), with 61.5% of the valid percentage.

L3

Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	.00	6	46.2	46.2	46.2
		1.00	7	53.8	53.8	100.0
		Total	13	100.0	100.0	
post	Valid	.00	7	53.8	53.8	53.8
		1.00	6	46.2	46.2	100.0
		Total	13	100.0	100.0	

T3: translator 3

T3 achieved, in pre-stage, frequency (6 ≣ 0) and percentage 46.2%, as the correlational part between the lexical units in English. In the same stage, T3 achieved frequency (7 ≣ 1), with 53.8% of the valid percentage. In post-stage, T3 achieved frequency (7 ≣ 0) and percentage 53.8%, as the correlational part between the lexical units in Arabic. In the same stage, T3 achieved frequency (6 ≣ 1), with 46.2% of the valid percentage.

L4

Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	.00	7	53.8	53.8	53.8
		1.00	6	46.2	46.2	100.0
		Total	13	100.0	100.0	
post	Valid	.00	7	53.8	53.8	53.8
		1.00	6	46.2	46.2	100.0
		Total	13	100.0	100.0	

T4: Translator 4

T4 achieved, in pre-stage, frequency (7 ≣ 0) and percentage 53.8%, as the correlational part between the lexical units in English. In the same stage, T4 achieved frequency (6 ≣ 1), with 46.2% of the valid percentage. In the post-stage, T4 achieved frequency (7 ≣ 0) and percentage 53.8%, as the correlational part between the lexical units in Arabic. In the same stage, T4 achieved frequency (6 ≣ 1), with 46.2% of the valid percentage.

L5

Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	.00	9	69.2	69.2	69.2
		1.00	4	30.8	30.8	100.0
		Total	13	100.0	100.0	
post	Valid	.00	11	84.6	84.6	84.6

		1.00	2	15.4	15.4	100.0
		Total	13	100.0	100.0	

T4: Translator 5

T5 achieved, in pre-stage, frequency (9 ≣ 0) and percentage 69.2%, as the correlational part between the lexical units in English. In the same stage, T5 achieved frequency (4 ≣ 1), with 30.8% of the valid percentage. In post-stage, T5 achieved frequency (11 ≣ 0) and percentage 84.6%, as the correlational part between the lexical units in Arabic. In the same stage, T4 achieved frequency (2 ≣ 1), with 15.4% of the valid percentage.

L6

Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	1.00	13	100.0	100.0	100.0
post	Valid	.00	3	23.1	23.1	23.1
		1.00	10	76.9	76.9	100.0
		Total	13	100.0	100.0	

T4: Translator 6

T6 achieved, in pre-stage, frequency (13 ≣ 1) and percentage 100%, as the correlational part between the lexical units in English. In the same stage, T6 achieved frequency (0 ≣ 0), with Ø of the valid percentage. In post-stage, T6 achieved frequency (3 ≣ 0) and percentage 23.1%, as the correlational part between the lexical units in Arabic. In the same stage, T6 achieved frequency (10 ≣ 1), with 76.9% of the valid percentage.

L7

Test	Frequency	Percent	Valid Percent	Cumulative Percent

pre	Valid	.00	8	61.5	61.5	61.5
		1.00	5	38.5	38.5	100.0
		Total	13	100.0	100.0	
post	Valid	.00	8	61.5	61.5	61.5
		1.00	5	38.5	38.5	100.0
		Total	13	100.0	100.0	

T4: Translator 7

T7 achieved, in pre-stage, frequency (8 ≣ 0) and percentage 61.5%, as the correlational part between the lexical units in English. In the same stage, T7 achieved frequency (5 ≣ 1), with 35.5% of the valid percentage. In the post-stage, T7 achieved frequency (8 ≣ 0) and percentage 61.5%, as the correlational part between the lexical units in Arabic. In the same stage, T7 achieved frequency (5 ≣ 1), with 38.5% of the valid percentage.

L8						
Test			Frequency	Percent	Valid Percent	Cumulative Percent
pre	Valid	.00	2	15.4	15.4	15.4
		1.00	11	84.6	84.6	100.0
		Total	13	100.0	100.0	
post	Valid	.00	7	53.8	53.8	53.8
		1.00	6	46.2	46.2	100.0
		Total	13	100.0	100.0	

T4: Translator 8

T8 achieved, in pre-stage, frequency (2 ≣ 0) and percentage 15.4%, as the correlational part between the lexical units in English. In the same stage, T8

achieved frequency (11 ≣ 1), with 84.6% of the valid percentage. In post-stage, T8 achieved frequency (7 ≣ 0) and percentage 53.8%, as the correlational part between the lexical units in Arabic. In the same stage, T8 achieved frequency (6 ≣ 1), with 46.2% of the valid percentage.

5. Conclusions:

Mind Map is a "directory screen" for creating lexical concatenations in the performance of participants in a speech community. They constitute the basis for making sentences in their appropriate contexts. This lexical network immediately creates a new display on which the word can be entered for the new "Mind Map". Once the lexical item, "conceptual structure", is sparked, the mind automatically draws space and time of "Mind Map" in the middle of the display screen. In the same way as the addition of main themes and branches to the lexical units, each main branch is simply identified as a keyword entry in your cognitive system. All sub-branches are automatically positioned and temporalized, each correlation inheriting the correlation of the main theme. According to the test of the study, the conclusions can be summarized in the following:

1. In the pre and post-stages of the test, "Mind Mapping" encourages to get the lexical correlation down with flow and precise "conceptual structures" and the correct placement of both English and Arabic.
2. The "Mind Mapping" provides an excellent separation of the creative and editing parts of the communication process.
3. Once created, branches can be correlated, moved, and even the complete structure reorganized as required.

4. In the translation process, every single lexical unit can be picked up and moved to any other spatial and temporal correlations on the Mind Map.
5. Translators are varied in a mind map to find the natural equivalents between lexical items due to their differences in cognitive capacities and background knowledge.
6. Differences in conceptual structures may create differences in the mind map of the lexical correlations spatially and temporally.

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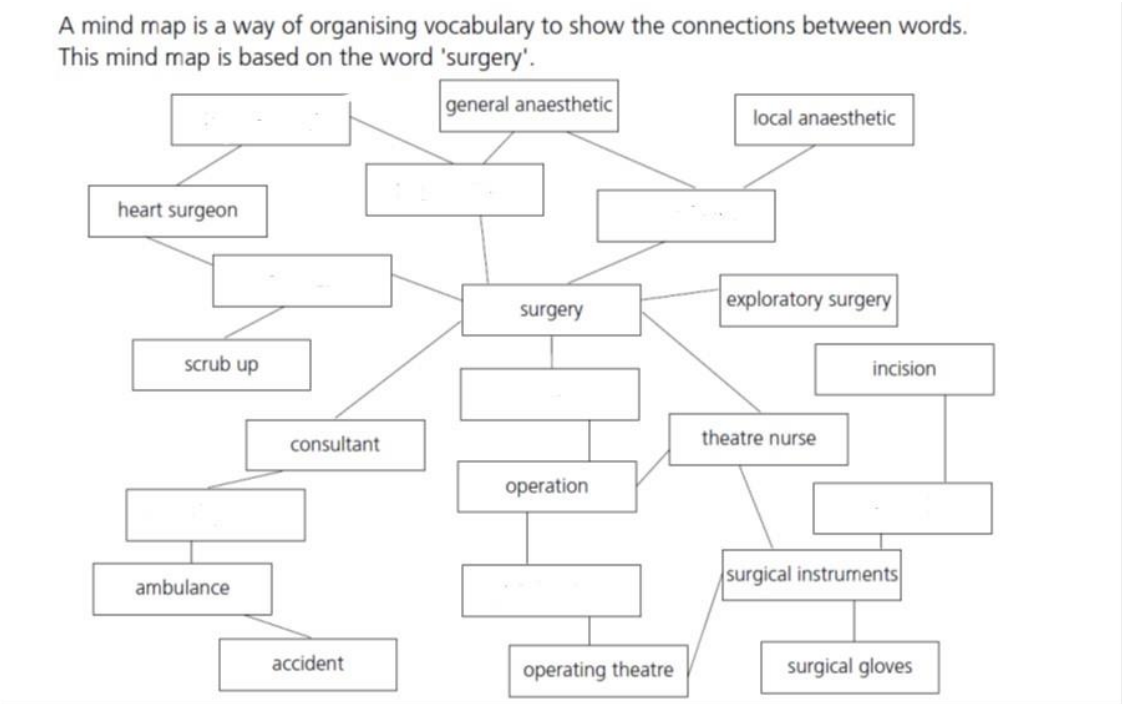
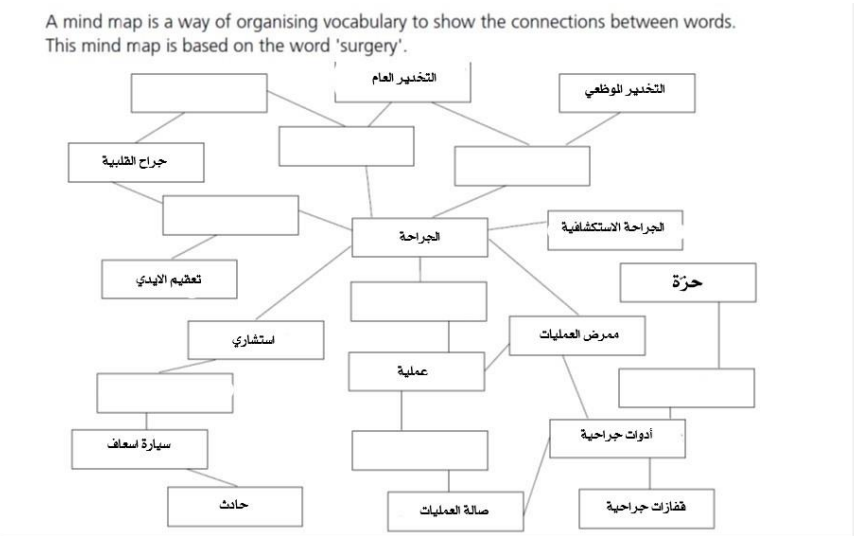
Appendix


A mind map is a way of organising vocabulary to show the connections between words.
This mind map is based on the word 'surgery'.
general anaesthetic
local anaesthetic
heart surgeon
surgery
exploratory surgery
scrub up
incision
consultant
theatre nurse
operation
ambulance
surgical instruments
accident
operating theatre
surgical gloves


A mind map is a way of organising vocabulary to show the connections between words.
This mind map is based on the word 'surgery'.
التخدير العام
التخدير الموضعي
جراح القلبية
الجراحة
الجراحة الاستكشافية
تعقيم الايدي
حرّة
استشاري
ممرض العمليات
عملية
سيارة اسعاف
أدوات جراحية
حادث
صالة العمليات
قفازات جراحية