The L2 Linguistic Threshold and Reading Comprehension: Syntactic Parsing and the Extraction of Meaning from Newspaper Headlines in English L2

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Abstract

Meaning extraction on the basis of available lexical and grammatical information, i.e., syntactic parsing, is gaining attention as a crucial element in reading comprehension in L1 and L2 settings (Grabe & Stoller, 2013). However, the role that syntactic knowledge plays in the "L2 threshold" required for fluent reading comprehension has yet to be fully defined (Laufer & Kalovski, 2010). Exhibiting a telegram-like syntax, English newspaper headlines represent a reading comprehension challenge for English L2ers because of the presence of non-canonical structures and grammatical violations that include ellipsis of grammatical categories. This study explores the role of syntactic knowledge in interpreting/comprehending newspaper headlines (of different syntactic types and difficulty). Participants of this study (N=48) are Arabic-English L2ers classified into three groups of readers; a proficient reader group (N=14), an intermediate reader group (N=20) and a poor reader group (N=14). The study employs four tasks: A speed reading task (Ten (400 word) reading comprehension passages) (Millett, 2013) (used with permission); a cloze test (Brown, 1980) (used with permission); a 30-minute essay writing task; and a newspaper headline interpretation task. The findings point to: (1) a significant positive relationship between learners' reading comprehension abilities and syntactic knowledge; and (2) a joint role played by syntactic parsing and lexical knowledge in enabling accurate interpretation of headlines. Here, sufficient lexical knowledge was not enough to guarantee adequate comprehension of a headline. The concept of a vocabulary or a syntactic threshold was disconfirmed.

Keywords: Reading prerequisites, L2 threshold, reading comprehension, syntactic parsing.

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Introduction

Reading is a highly complex skill/ability that plays a major role in the acquisition of a second language (L2) (Grabe & Stoller, 2013; Nation, 1989, 2006 among many others). L2 Reading is a "complex, multifaceted, crosslinguistic and "componential construct"… [with] "functional interactions" (Koda, 2007, p. 40). Toward an understanding of the nature of reading, it has been researched from different perspectives. Reading research trends have explored it as: (1) an ability that relies on a set of cognitive as well as metacognitive skills and sub-skills (Baker, 2008; Guthrie & Kirsch, 1987); (2) a model based competency or group of competencies that can be explained in terms of bottom-up processing (Gough, 1972; Carrell, 1988; McKoon & Radcliff, 1992) or top-down interactions (Goodman, 1968; Graesser, Singer & Trabasso, 1994; Omaggio Hadley, 1979; Barnett, 1989) or as a coupling of top-down and bottom-up interactions, i.e., interactive model (Bernhardt, 1991; Eskey, 1988; Grabe, 1991; Liontas, 2002; Rumelhart, 1980); (3) a componential or holistic instructed activity involving implementations that vary with age of learning, and of whether it is being acquired as an L1 or L2 (Nation & Carter, 1989; Nation, 1990); and as (4) a skill conditioned on attainment of linguistic prerequisites that include a specific level of vocabulary knowledge (size and quality), syntactic knowledge, morphological awareness and background knowledge (Davies, 1944; Nation, 1989, 2006; Koda, 2007; Qian, 1998; Nation & Hu, 2000 among many others).

The present study belongs to research trend (4) as it explores the linguistic prerequisites for adequate reading comprehension to occur. Particularly, it explores the comprehension of newspaper headlines as an exceptional type of written input. The aim is to gain insights into the role syntactic parsing plays in reading comprehension (RC). Research on identifying prerequisites for adequate reading comprehension (e.g., vocabulary levels needed to comprehend a text) have probably been instantiated because of the necessity to understand the process of comprehension itself, a pressing need to help students to score high in

standardized tests and to get insights for teaching methodology as well. The telegram like syntax of newspaper headlines presents a good chance to test for the role of syntactic knowledge in RC. The following section sheds some light on the characteristics of newspaper headlines (henceforth NHs).

Newspaper Headlines: The Linguistic Phenomenon

NHs are basically a string of words that could allow copula dropping in both active and passive patterns. Furthermore, NHs are different from regular sentences in many other ways. Table 1 represents a comparison between regular sentences and newspaper headlines.

Table 1
A comparison between regular sentences and NHs

Regular Sentences	NHs
Vary in length	Limited
Structured into dependent and independent clauses marked by complementizers.	A sequence or a string of words without clause boundaries, subordination markers or complementizers.
Intact syntax	Possible missing functional categories (e.g., dropping of copula be)
Coherent, cohesive (with discourse markers)	Sentence fragment (without discourse markers)
Punctuated	Each word is capitalized.

Here, without logical combinations triggered by the presence of syntactic categories, word order, case assignment and reference and without surrounding context, it would be difficult to comprehend a headline. Just like garden path sentences (Examples (1& 2) below), NHs could be a challenge for L2ers because of the syntactic ambiguity arising from the unusual sequencing of grammatical units. When readers come across garden path sentences, upon reaching a specific word/position in the sentence, they reread and reanalyze the sentence. This specific point represents a breaking point in the reading line of thought (underlined in examples (1) and (2) below):

(1) The man lent the money to gamble lost it all.
(Grabe, 2009, p.29)

(2) While Anna dressed the baby spit on the bed.
(Ferreira, Christianson & Hollingworth, 2001, p. 3)

Unlike garden path sentences, in the case of NHs, we could have a variety of permissible non-canonical/flawed phrases and clauses formed to reflect one proposition with no point to trigger a reread. The following are some examples of the syntactic structures of NHs as well the source of the headline:

(3)	Insurance Companies Refund policies	NP	Huffin.Post
(4)	Syria rebels filmed beheading boy	[Passivized SVO (copula drop)]	(BBC)
(5)	Turkey's security weakened by botched coup	[Passivized SVO (copula drop)]	(BBC)
(6)	Germany train knifeman's revenge bid	[(Complex) NP (+Poss)][1]	(BBC)
(7)	Australia PM to fight party vote to oust him	[SVO Active Voice (future/infin.)]	(AFP News)

With distorted syntax, ambiguity emerges and break down in reading comprehension can be caused by inability to identify the head, modifiers, the word category (either a noun or verb in words that allow the same form for both). Here, in attempting to read a headline, the learner has to simultaneously construct complete syntactic representations including case assignment by continuously filling in the gaps and building on given input to figure out the meaning: Who did what to whom. The aforementioned characteristics of NHs, thus, allows for the exploration of the role of syntactic parsing in reading comprehension. This is mainly because comprehending a headline would be dependent on syntactic knowledge. Additionally, there is a need to understand RC with different types of written input. Duke (2005) notes:

> …that there is, at least in broad terms, a single construct called "comprehension". However, it appears that this is true only in the broadest terms. Comprehension of different types

[1] Abbreviations are as follows: Noun Phrase=NP, Possessive Case= +Poss., Subject=S, Verb= V, Object=O, Infinitive= Infin.

> of text, with different topics, and for different purposes, can be very different.[2] (p. 97)

Duke (2005) thus contends that reading comprhension is genre specific. His point of view is that basically reading a story would be different from reading a newspaper article. Extrapolating this rationale to the conceptualization of this study, I suggest that reading a regular sentence would be different from reading a newspaper headine given the abovementioned characteristics of NHs.

Reading Comprehension: The Process and its Prerequisites

Reading comprehension is defined as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (Snow, 2002, p. xiii). Alderson (2000) notes that reading comprehension is a two-fold process comprised of "decoding (word recognition) and comprehension" (p. 12). Perfetti, Landi and Oakhill (2005) note that:

> Comprehension occurs as the reader builds a mental representation of a text message… this representation occurs at multiple levels across units of language: word level (lexical processes), sentence level (syntactic processes) and text level. (p. 228)

In the same vein, Koda (2007) divides the process into three different components, i.e., "decoding", "text information building" and "reader-model construction" (p.4). The latter component is the one in which text information is combined with previous knowledge. In line with Koda (2007), Grabe and Stoller (2013) specify three processes associated with reading and handled by the working memory: (1) Lexical access, (2) syntactic parsing and (3) semantic proposition formation (p 14-18).[3] Here, sentence comprehension has been regarded as an "incremental integration" of lexeme meanings (Koda, 2007, p. 6). The integration of lexical meaning leads to "semantic proposition formation" which is "the process of combining word meanings and structural information into basic clause-level meaning units (Grabe and Stoller, 2013, p. 18). It has

[2] This was suggested in the context of reading comprehension for children. However, it seems plausible that the same idea applies to adults as well.

[3] Grabe and Stoller (2013) classified lexical access, syntactic parsing and semantic proposition formation as "lower level processes" as opposed to "higher level processes" (p.14).

been noted that "the process of parsing incoming text clauses for structural information that supports comprehension is something that happens almost every second during fluent reading" (Grabe, 2009, p. 199). Thus, theoretically, at least two main types of knowledge are integrated to execute meaning extraction, i.e., vocabulary knowledge and syntactic knowledge. Particularly, these two types of knowledge are important for the successful understanding of an NH.

To recap, learners are expected to access lexical and syntactic knowledge to grasp the meaning of a headline. These are prerequisites for reading proficiency.

Research on L2 reading comprehension prerequisites

Considerable empirical research has been conducted to study the role of vocabulary knowledge while syntactic knowledge has gained less attention. In what follows, an outline of relevant previous research on vocabulary and syntactic knowledge will be provided.

Vocabulary knowledge. Abundant vocabulary knowledge of lexemes in a text has been underscored as an indispensable element for reading comprehension to take place (Koda, 2007; Nation, 2006). Several studies have provided results that demonstrate a strong statistical relationship between vocabulary knowledge and reading comprehension in L2 settings (Laufer, 1992; Laufer & Nation, 1995; Qian, 1998, 2004; Schmitt, Jiang and Nation, 2011; Nation & Hu, 2000).

Qian (1998) explored the role(s) vocabulary knowledge play in the comprehension of English Academic texts by testing the claims of the "instrumentalist hypothesis" (Anderson and Freebody, 1981) in reading comprehension. The hypothesis postulates that there is a direct positive (cause and effect) relationship between vocabulary knowledge and reading comprehension. Following Anderson and Freebody (1981) and Nation (1990), Qian distinguished vocabulary knowledge into two main types; breadth of vocabulary knowledge (number of known words) and depth of vocabulary (how well a specific word is known).[4] Participants in this study were Chinese and Korean L1ers enrolled in ESL programs in Ontario (Canada). The tasks implemented in the study were a reading comprehension test, vocabulary tests (Vocabulary Levels test (measuring size of vocabulary), Word Associates Test (measuring depth of

[4] Nation (1990) postulates a number of factors that contribute to depth of knowledge in learning English L2 including word meaning, register, frequency, pronunciation, spelling, syntactic and morphological awareness.

vocabulary knowledge), and a morphological knowledge test), and interviews with a follow up questionnaire on reading comprehension strategies.[5] The outcomes support the view that increased vocabulary size as well as knowledge of vocabulary depth raise reading comprehension ability. Here, the findings indicate that depth of vocabulary knowledge predicted reading comprehension scores more than vocabulary size did. Furthermore, the results point to a positive relationship between depth of vocabulary knowledge and lexical inferencing ability. Particularly, scores of depth of knowledge determined the accuracies of inferencing. Learners with high scores in depth of knowledge measures focus on lexical meaning while those with less scores focus on word forms. Although this study mainly focused on vocabulary knowledge, a close look at the results sheds some light on the role of syntactic knowledge as well. Of particular importance to this study is the outcome that inferencing depended on word associates because it points to a role played by familiarity with syntactic structures and collocations. The learners who know the accompanying lexemes of a word be it a noun, a verb, a preposition, an adjective or an adverb scored better in reading comprehension. In the same vein, Qian (2004) highlighted the role of knowing collocations (lexical and grammatical) in facilitating reading comprehension.

Importantly, a comprehensive review of the literature on the role of vocabulary knowledge in reading comprehension not only reveals an establishment of a link between vocabulary knowledge and reading proficiency but would also disclose the emergence of a new line of research in which trials to precisely describe vocabulary knowledge numerically (i.e., percentage of words known in a text) have been made. Specifically this relationship has been conceptualized through a notion of a "linguistic threshold", a level or point of language proficiency in the L2 after which reading comprehension processes of the L1 would apply.[6] Two particular studies are representative of this research approach (Laufer, 1989 and 1992).

Laufer (1989) studied the relationship between known vocabulary and the levels of reading comprehension of a text. Laufer (1989) was particularly

[5] The Vocabulary Levels Test (Nation, 1983) provides an assessment of learners' knowledge of words at various frequency levels. The test takers should match a definition and a word. The well-known test underwent a number of modifications after its introduction by Nation (1983). The modified versions were presented by Laufer & Nation (1999), Beglar & Hunt (1999), Schmitt, Schmitt & Clapham (2001). Qian (1998) used the original test.

[6] Grabe and Stoller (2013) point out that the notion of a threshold originated from the work of Clark (1971) known as the short circuit hypothesis in which a language ceiling seems to be reached before L1 comprehension techniques can kick in and apply during L2 reading.

testing the controversial claims of Deville, Vandecasteele, Ostyn and Kelly (1985), that is, if 95 % of lexical knowledge represents the minimum vocabulary size required for reasonable comprehension (estimated as equivalent to learning 5000 words), then around 3300 words would be enough to achieve a lexical coverage of 90%. She set the percentage of adequate reading comprehension as 55% and higher. She reports that the hypothesis succeeded: when lexical coverage was measured as less than 95%, comprehension was hindered. The benchmark 95% was seen as a threshold for reading adequacy. She concluded that her results support the "threshold hypothesis" (Clark, 1979 cited in Laufer, 1989). The numerical representation of vocabulary knowledge as well as demonstration of the percentages of vocabulary in this way was heavily criticized. In a trial to overcome the criticism levelled at her 1989 study, Laufer (1992) further explored the relationship between vocabulary amount and reading comprehension of academic texts. This time, she compared reading comprehension scores to scores of standardized tests measuring the size of learners' vocabulary inventory. Results indicate highly significant correlations between reading comprehension performance and vocabulary size levels (obtained via the Vocabulary Levels Test and the Eurocenters Vocabulary Test). The lowest reading comprehension level at which the number of readers increased was determined as around 56% and above on the reading test. The corresponding vocabulary level was 3,000 in the vocabulary levels test and 4.88 in the Eurocenters vocabulary test.

Laufer's studies (1989, 1992) drew a lot of criticism. Generally, on the concept of vocabulary levels and their use to measure the size of learners' vocabulary as Laufer did in her 1992 study, Meara (1992) notes that:

> …the whole concept of a "vocabulary level" is much more complicated than we think it is. Dividing a large lexicon up into equal size chunks of 1000 words is at best a convenient fiction. And when these chunks are derived from frequency lists which do not reliably represent the real difficulty of words for learners, then the risk of distortion is extremely high. (p. 3)

Particularly, Laufer's results have been challenged because of the attempt to numerically specify the vocabulary threshold or ceiling. Additionally, 55% reading comprehension level was considered low. Laufer and Kalovski (2010) account for using this percentage later as being the

institutional score for passing the reading test for the University of Haifa. They clearly indicate that this score is low. Moreover, the percentage of required vocabulary coverage has been constantly increasing. Hu and nation (2000) criticized Laufer's (1989) acceptance of Deville et. al's (1985) 95% word coverage as optimum for fluent reading. Furthermore, contra Laufer (1989, 1992), Nation (2001, 2006) and Schmitt, Jiang & Grabe (2011) conclude that the percentage (95%) is not accurate. Hu & Nation (2000) indicate a level of 98 % of vocabulary knowledge for adequate unassisted reading comprehension to take place. Unassisted here refers to reading that is not interrupted by dictionary search. Furthermore, Nation (2006) tripled the number of word families needed for L2ers to adequately read an authentic text. The number was calculated earlier by Laufer as 3,000 word families, Nation (2006) estimated it at around 9,000 word families. Importantly, Schmitt, Jiang & Grabe (2011) argue that the relationship between vocabulary knowledge and reading comprehension is not linear and thus it is not a threshold, it could be a curve demonstrating that the higher the number of known vocabulary, the better the reading comprehension gets.

Syntactic Parsing. In his seminal book, Grabe (2009) contends that meaning or lexical knowledge alone cannot provide a full mental representation of a text and that syntactic knowledge/syntactic parsing provides "signaling cues" to form a meaningful mental representation out of a written text (p. 205). Additionally, he underscores that the grammar system employs these signaling cues or mechanisms to support reading comprehension by indicating information about "time, certainty, location, identifiability, event relations and noun linkages" (p. 203). Furthermore, he goes on to summarize a list of grammatical information needed for adequate comprehension on the basis of Givon (1992, 1995): (1) word order (limiting meaning possibilities); (2) semantic relations between phrasal and clausal units (i.e., thematic roles); (3) signaling important, given and new information; (4) reference and (5) author attitudes toward the event (p. 205). Importantly, grammatical knowledge accessed through parsing is not the "conscious explicit knowledge" of grammar. Rather, it is the "unconscious" syntactic representations of grammatical features acquired by L1ers and arguably L2ers as well (Grabe & Stoller, 2013; Koda 2007).

A number of studies report positive correlations between syntactic knowledge and reading comprehension. None of these studies tackled or described the role of syntactic knowledge in the L2 linguistic threshold. Reviewing these studies would show that they could be classified into two types depending on the age of L2ers. The first group of studies

provides evidence of a connection between syntactic knowledge and reading comprehension skills in ESL contexts by children and teen learners. Rabia and Siegel (2002) report a positive correlation between syntactic awareness and reading comprehension of Arabic-English L2ers between the ages of 9 and 14. Gelderen et al. (2003) studied the relationship between grammar and reading comprehension in Dutch-English L2ers in grade 8 (approximately at the age of 13). Some of the participants in this study were studying English as a third language (L3). Here, Gelderen et al. collected samples from grammatical and reading comprehension tasks of Dutch (L1 and L2), English (L2 and L3). They report a highly significant correlation between grammatical knowledge (that of L1 and L2) and English L2 and L3 reading comprehension.

The second group of studies dealt with adult ESL learners. These studies also provide some evidence indicating that there is a relationship between reading comprehension abilities and grammar scores. Following studies designed to develop the IELTS test, Alderson (2000) reports high correlations between a communicative grammar test and academic reading scores. He noticed that there were higher correlations between the grammar section scores and the reading test scores more than there were correlations between different reading test-scores. Also, on the basis of data collected from TOEFL CBT, iBT piloting, Grabe (2009) reports a high correlation between scores obtained via the structure section of the TOEFL CBT on one side and reading scores of the TOEFL CBT and the TOEFL iBT on the other side. In the same vein, Zhang (2012) reports that implicit knowledge of grammar is closely connected to reading comprehension more than explicit knowledge is. Moreover, the results in this study show that implicit grammar knowledge is more related to reading comprehension than vocabulary size is.

All the cited studies dealt with comprehension of canonical sentences and structures in English. All these results could have been extrapolated to the comprehension of newspaper headlines except for the fact that headlines follow non-canonical syntactic patterns. Importantly, reading comprehension of newspaper headlines has not been studied or researched before.

The Empirical Study

The present study adopts a cross-sectional experimental design examining Arabic-English L2ers' ability to interpret NHs of different syntactic forms and violations. Here, the null hypothesis is as follows:

H_0: Syntactic parsing/knowledge will not play a role in the interpretation of newspaper headlines. Knowing the meaning of words in a headline should be enough for the learner to get and render the right interpretation/translation of a headline.

For this null hypothesis to succeed, syntactic violations disrupting comprehension/ interpretation should not be problematic if vocabulary knowledge of a given headline is attested for in translation, for instance. The experimental design addresses the following operational questions:

Q1: Is there a relationship between reading comprehension performance and syntactic competence?

Q2: Is there a connection between reading comprehension abilities and the interpretation of NHs?

Q3: Is there a correlation between learners' interpretations of newspaper headlines and their syntactic knowledge?

Q4: Sorting out misinterpretations triggered by a deficiency in lexical or syntactic knowledge, if any, did syntactic knowledge cause tangible misinterpretations?

Q5: Do the results support a vocabulary or syntactic threshold after which reading fluency is manifested?

Q6: For ESL learners, are all headlines of the same difficulty?

The following subsections introduces the design in detail. The experimental research design addresses the aforementioned questions by including measures to test for syntactic parsing/knowledge, lexical knowledge, headline interpretation performance and learners' rating of headlines in terms of difficulty.

Participants

Participants of this study are Egyptian university students majoring in English at the Faculty of Education (Divisions of General and Elementary Education), Menoufia University, Shebin Elkom, Egypt (N=48).[7] Participants were classified according to their English reading comprehension abilities into three groups of readers; a proficient reader group (N=14), an intermediate reader group (N=20) and a poor reader group (N=14). Classification was decided on the basis of a speed reading task (Millett, 2013) (used with permission).

[7] Subject morbidity in this study was relatively high. Initially, number of participants was 123. However, only 59 completed all the required tasks. Eleven participants were excluded from the study as their essays did not provide enough data to evaluate their syntax/language use score.

Tasks and procedure

The number of tasks employed in this study is four: 1) a speed reading task, 2) a headline interpretation task, 3) a cloze test (Brown, 1980) (used with permission), and 4) an essay writing Task. All tasks were paper and pencil tasks.

Task One. The speed reading task is composed of ten (400 word) reading comprehension passages (Millett, 2013) (used with permission).[8] Each passage is followed by 10 MCQs. Particularly, passages numbered 1, 2, 3, 4, 5, 6, 7, 9, 10, and 11 were used. The passages can be accessed through the following link: https://www.victoria.ac.nz/__data/assets/pdf_file/0008/1068074/4000-BNC-SRs-April-2017-readings-ok.pdf.

These reading passages are originally used as an integral part of the international ESL reading program at the Victoria University of Willington, New Zealand. The goal of using these passages is training ESL learners for understanding English passages with speeded reading. While preparing the passages and the follow up questions, Millet checked each word in the passages and in the following MCQ items against the 2013 version of the 4000 British National Corpus (BNC) list at https://www.lextutor.ca/vp/comp/ (Millet, 2018, Personal communication).[9]

The procedure. The procedure followed here was allowing the participants to read each passage for three minutes only, then they were asked to move on to answer 10 MCQs for each passage without returning to the text at any case. Instructions were given to the participants in English and in Arabic so that it would be clear for them not to return to the passages. Each passage and its questions were presented in separate sheets. The cutoff scores for the proficient reader group was (63 and

[8] I am grateful to Professor Paul Nation for suggesting Millet's set of passages when I inquired about reading passages at the 4000 BNC level or higher. I am indebted to Sonia Millet for permission to use the passages for research purposes.

[9] The BNC is a collection of written and spoken material (100 million words) available at www.natcorp.ox.ac.uk/corpus/creating.xml . Written materials represent 90% of the corpus whereas spoken materials represent 10% (Nation, 2004). The written corpus includes texts from different fields including arts and world affairs drawn from books and newspapers (85%). The spoken corpus includes social content covering lectures, and news broadcasts. Here, the BNC list allows searching for English words available in this corpus according to their frequencies. On the basis of frequencies, words are categorized as levels (e.g., 1000 vocabulary level, 2000 vocabulary level). For instance, words at the 1000 BNC level represent the first 1000 most frequent words of English within this corpus. Testing learners in vocabulary at the 1000 BNC level is equivalent to testing basic knowledge of English vocabulary.

higher), intermediate group (49-63), the poor reader group scored less than 49.

Task Two. The newspaper headline interpretation task includes 55 newspaper headlines. The headlines were carefully chosen and collected from different newspapers and news websites (BBC, CNN, AFP, and Huffington Post). The APPENDIX provides all the headlines used in the study. Here, participants were asked to provide a complete grammatical form of each given headline, to translate it into Arabic and to rate the difficulty of each headline on a scale of 1 to 3 (1= easy, 2= medium, 3= difficult). Headlines included different patterns: (1) Passivized and active SVO, (2) copula drop, (3) Complex NPs, and (4) infinitival VP indicating future tense. Participants were not allowed to use dictionaries. The time spent ranged from 90 to 120 minutes.

Task Three. In the cloze test (Brown, 1980, used with permission), each participant was provided with fill in the blank sheets with a passage containing 50 slots to fill in. Correct answers were tallied and a score (out of fifty) was recorded as a raw score. Misspellings were not counted as long as the given answer is clear enough for the researcher to recognize.

The task was repeated after three weeks with a slight modification. In the second round, learners were provided with two choices between parentheses for each empty slot. [10]

Task Four. The essay writing task is a 30-minute writing task. Participants were given the choice to write on one of two topics. The following is the prompt:

> Write an essay on ONE only of these two topics:
> Topic One: Should women have jobs and pursue a career or stay at home to take care of their families. Use specific reasons and details to support your view.
> Topic Two: Which would you prefer more, to live in a small town or a big city Provide reasons and details to support your view.

Figure 1. Prompt for the essay writing task including the two writing topics.

Essays were rated by one rater, the researcher, on a scale of 1 to 10. The rubric consulted is the ESL Composition Scale Profile (Jacobs et al. 1981, p.30). Only the language use (syntax) scale was measured. That is, the essay was not scored with respect to thesis development, variety of vocabulary used, coherence or cohesion, or misspellings. Only the score of grammar use/syntax is reported. Every Incorrect usage of a syntactic

[10] The rationale for the repetition of the this task is to dismiss the possibility that the left out answers were caused by a retrieval issue and constraints of real time processing, not by a non- target like syntactic representations.

category (Noun, verb, adjective, adverb or preposition) was counted. An incorrect usage was identified if supplied incorrectly or if it is missing. Here, the essay writing task, the cloze test and the cloze test repeated should provide a triangulation of syntactic performance.

Statistical Data Analyses

The obtained data were analyzed using IBM SPSS version 22. Comparisons between groups were done using either ANOVA or Kruskal Wallis test (non-parametric t-test) as appropriate. Pearson correlation was used to test correlation between numerical variables. Also, multiple linear regression was used to detect predictors of speed reading.[11]

Results and Discussion

Here, the initial research question centers around if there is a relationship whatsoever between syntactic knowledge as represented by the results of the essay writing task, the cloze test and the repeated cloze test on one side and performance on the speed reading task on the other side. The answer is yes, there was a significantly positive correlation between scores on the speed reading task, the essay task, cloze test and the repeated cloze test among the studied groups (Table 2).

Table 2

Correlations between scores of speed reading, essay score, cloze T. and cloze T. repeated.

	Speed Reading	
Parameters	Coefficient correlation r	P value
Essay (Language Use) Score	0.558	<0.001**
Cloze test	0.618	<0.001**
Cloze test repeated	0.513	<0.001**

Notes. Highly significant difference is marked with **

Table 2 above provides the correlations between speed reading, essay writing task, cloze test and the repeated cloze test, r = 0.558, 0.618 and 0.513, (P<0.001). The correlations reveal a strong relationship between reading comprehension and syntactic knowledge. Indeed, the higher

[11] I am grateful to Dr. Faten Younis, Faculty of Medicine, Menoufia University, Egypt, for running the statistical analyses in this study.

syntactic scores get, the higher the speed reading performance becomes. The results are in conformity with previous research.

The second question addressed here is whether interpretations of newspaper headlines related to syntactic parsing. Syntactic knowledge was tested by the triangulated results of the essay writing task, the cloze test, the repeated cloze test. Table 3 summarizes the correlations between scores on the speed reading task, the headline interpretation task, essay writing task, cloze test and the repeated cloze test. Here, headline interpretation scores had a significantly positive correlation with essay writing scores, the scores of the cloze test, the scores of the repeated cloze test and the speed reading among the studied participants (r = 0.596, 0.621 and 0.521; respectively (P<0.001). This finding indicates a strong relationship between the ability to accurately interpret headlines from English into Arabic and the ability to provide a complete sentential syntactic form of a fragment headline on one side and syntactic performance and reading comprehension performance on the other side.

Table 3

Correlations between Speed Reading and Headline Interpretation Responses, Essay (language use) score, Cloze test or Cloze test repeated among the studied participants (n=48)

Parameters	Headlines scores	
	Coefficient correlation r	P value
Speed reading	0.676	<0.001**
Essay syntax score	0.596	<0.001**
Cloze test	0.621	<0.001**
Cloze test repeated	0.521	<0.001**

Notes. Highly significant difference is marked with **

Predictability

Here, predictability measures, given in Table 4, clearly illustrate that headline responses, essay (language use) score, scores of the cloze test and the repeated cloze test were significantly directly associated with increased speed reading scores among the studied groups (β= 1.09, 4.19, 0.95 and 1.40; respectively)(P<0.001). [12] This provides evidence that

[12] The power of the multiple linear regression model used to analyze and determine the predictability of speed reading on the basis of the other tasks was 54%. It was found that constant of this regression (α) was 14.83.

syntactic performance can predict reading comprehension abilities in a speed a reading task.

Table 4

Multiple linear regression analysis detecting predictable factors for speed reading among studied participants (N=48)

	Headlines answers	1.09	0.18	6.22	<0.001**
	Essay Syntax Score	4.19	0.92	4.57	<0.001**
	Cloze test	0.95	0.18	5.33	<0.001**
	Cloze test repeated	1.40	0.35	4.05	<0.001**

Notes: **= Highly significant difference

Difficulty of Interpretation of Newspaper Headlines

A closer look at the percentage of accuracy rates of different groups, proficient, intermediate and poor on the headline interpretation task indicate that learner accuracy rates were the least obtained scores if compared to other tasks. Figure 2 presents the mean percentages and standard deviation of the studies group across all tasks.

The mean percentages of scores for the proficient, intermediate and poor reader groups in the newspaper headline interpretation task were 43.2 %, 34.7%, 22.1%, respectively. Compared to performance in other tasks, learners seem to be experiencing difficulty with the headline interpretation task.

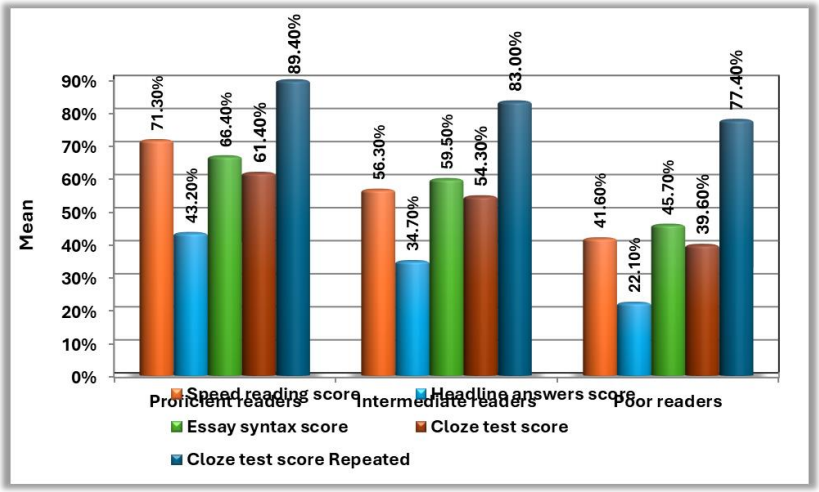

***Figure 2*. Mean percentages of proficient, intermediate, and poor reader groups across all tasks.**

Furthermore, Table 5 provides comparisons between studied groups with respect to speed reading, headline responses, essay (syntax/language use) score, scores of the cloze test and the repeated cloze test among the studied participants.

Table 5

Comparisons between Studied Groups with respect to Speed reading, Headline Interpretations, Essay writing score, Cloze test and the Repeated cloze test

Parameters	Proficient **Mean± SD**	Intermediate **Mean± SD**	Poor **Mean± SD**	Test of significance	P value	Post hoc test
Sp. R	71.3±3.9	56.3±5.2	41.6±4.5	ANOVA= 143.07	<0.001 **	P1<0.001** P2<0.001** P3=<0.001**
NH S.	23.8±5.3	19.1±5.6	12.1±7.8	Kruskal Wallis test=14.08	0.001 **	P1=0.03* P2=0.001** P3=0.007*
Essay S.	6.6±1.6	5.9±1.5	4.6±1.2	ANOVA= 7.39	0.002*	P1=0.18 P2<0.001** P3=0.009*
Cloze test	30.7±7.1	27.2±5.6	19.8±8.3	Kruskal Wallis test =12.83	0.002*	P1=0.09 P2=0.002* P3=0.006*
Cloze test repeated	44.7±2.7	41.5±3.7	38.7±5.2	ANOVA= 8.04	0.001 **	P1=0.02* P2<0.001** P3=0.05*

Notes. *Significant difference. **Highly significant difference, P1= Comparison between proficient readers and intermediate ones, P2 = Comparison between proficient readers and poor ones, P3 = Comparison between intermediate readers and poor ones.

Here, it is evident that the obtained results demonstrate that there is a significant difference between studied participant groups regarding speed

reading, headline answers, essay (language use) score, cloze test and the repeated cloze test ($P<0.05$) and that the proficient readers had the highest mean values of speed reading, headline interpretation scores, essay syntax score, cloze test and the repeated cloze test than either of intermediate or poor readers. However, a closer look at the analyses of variance in Table 5 reveals that variance between groups was not always at the same level of significance with respect to all tasks.

Here, specifically, the headline interpretation task ANOVA results (underlined in Table 5 above) show that the differences between the proficient reader group and the intermediate reader group was not significant. While the comparisons between the poor reader group and the proficient group was highly significant, still, this might reflect a tighter gap in performance between the intermediate and the proficient groups in the headline interpretation task and might subsequently point to difficulty in interpreting headlines.

The difficulty of newspaper headline interpretation has been further verified by participants self-rating of newspaper headlines. Recall learners were asked to rate the difficulty of each newspaper headline (1= easy, 2 =medium, 3= difficult) after translating it into Arabic and providing a complete sentence form of fragment headlines in English. The ratings of translated headlines were tallied and classified. A total of 2004 headlines were ranked by learners. Any rating of a headline that was not translated into Arabic and explained in English was not included. Figure 3 below illustrates the percentage of learners' ratings of newspaper headlines as easy, medium and difficult.

Figure 3. Learners' rating of newspaper headlines

Here, it is evident that less than a quarter of the headlines were rated as easy. The rest of the headlines were either rated as difficult (39%) or of medium difficulty (37%). Here, participants' responses reflect the

challenging nature of newspaper headlines. The question here is: What is the source of difficulty? Was it lexis or syntax that causes difficulty or misinterpretations? In order to find out and pinpoint the source of misinterpretation, each misinterpretation of a headline was further classified as either being an instance of a syntactic misinterpretation (caused by inadequate syntactic parsing) or a lexical misinterpretation (triggered by unfamiliarity with words). The following subsections explores these misinterpretations in detail.

Lexical Misinterpretation

Lexical interpretation precedes syntactic parsing. Without it, syntactic parsing cannot take place. Headlines causing lexical misinterpretations were identified on the basis of incorrect translation or inaccurate inferencing. Headlines causing lexical misinterpretations were ordered ascendingly on the basis of the percentage of learners erring on this headline. Table 6 presents headlines causing the highest error rate along with the percentage of participants erring in translating and interpreting the headline.

Here, an unknown or unfamiliar word hinders comprehension of a headline. One word in a headline is enough to impair understanding of the whole semantic content of a headline. The results obtained are in line with those of Nation (1990, 1993, and 2001) and Nation and Hu (2000), that is, unknown words inhibit understanding of semantic prepositional content. Nation and Hu (2000) specified that the presence of one unknown word in a sentence or a sequence of five words hinders comprehension. The ratio is supported here as shown in Table 6 in headlines with a sequence of 4 or 5 words (e.g., headline numbers 1, 3, 4, 5, 9, 10 and 12). Furthermore, lack of knowledge of any lexeme in a given headline has been found to be problematic if the sequence exceeds 5 words.

With the lack of context and limited number of words in a headline, the inability to infer the meaning increases and subsequently leads to misinterpretations. Here, zero tolerance of vocabulary misapprehension in a newspaper headline is confirmed. The concept of a vocabulary threshold after which reading comprehension is guaranteed was not supported here, 100 % of the vocabulary available in a headline must be known for it to be comprehended. Inferencing does not seem to render accurate interpretations.

Table 6
Headlines misinterpreted by participants because of lexical unfamiliarity ordered by percentage of errors and number of participants.

ID	Headline	Percentage (Number of L2ers er on the lexical interpretation of the headline)
1	Pilots in court on drink-related charges	56% (27)
2	Sydney siege victims reveal details of harrowing ordeal	54% (26)
3	Germany train knifeman's revenge bid	52% (25)
4	The young people hit hardest by Brexit	48% (23)
5	Majority of Kenyans want Raila Odinga to quit politics	46% (22)
6	Insurance Company Refund Policies	44% (21)
7	Terrorist Attacks Prompt The U.S. To Issue Worldwide Travel Alert	44% (21)
8	A drink a day 'cuts heart disease risk by a fifth' researchers claim	44% (21)
9	Vancouver police seek witnesses to stabbing	44% (21)
10	Police shot dead in Baton Rouge	42% (20)
11	Boris Johnson is foreign secretary The world reacts	42% (20)
12	Syria rebels filmed beheading boy	40% (19)
13	Deserving student Help Committee	38% (18)
14	Under Pressure from PM	38% (18)
15	Turkey's security weakened by botched coup	38% (18)

Here, lexemes causing most interpretation errors include: Charges, plagiarism, bid, inferno, indict, harrowing, ordeal, Brexit, beheading, botched *coup*, a fifth, pledge allegiance, purge, arc, stabbing, baffle, condemn, detain, doctrine, probe, cemetery, and obesity.

Table 7 provides a summary of the frequencies of the words triggering lexical misinterpretations. *Lextutor* was used to check the frequency of usage of each word in the British National corpus. Also, the frequencies were checked using the Corpus of Contemporary American English (COCA) search engine. The frequency of usage has been checked to verify whether the misapprehension errors recorded here are due to the infrequent usage of the words in spoken or written corpora. The search results (classified by genres) show that most of these words were infrequently used in the BNC. However, in COCA, their frequencies were higher and they vary with genre. Their disappearance in the BNC and emergence in COCA is mainly because COCA is larger than the BNC. What I would like to point out here is that the different frequencies attributed to each word in each different genre (e.g., news, magazines and academics) should be taken into consideration in the design of materials for teaching reading comprehension in general and newspaper headlines in particular. Particularly, this analysis suggests the importance of exposure to words with less frequencies with respect to newspaper headlines.

One recommendation drawn out of the analyses of lexical misinterpretation is attracting ESL learners to the birth of new words in

media and newspaper headlines, and to proper names and abbreviations. Example of new word birth are the words '*Brexit' and 'ZiKa'*. The blended word '*Brexit'* triggered 48 % of the lexical errors of headline 4 as shown in Table 6 above. An example of an abbreviation that caused errors is 'PM'. Some learners did not recognize it as an abbreviation for the word *Prime Minister* and mistakenly thought that it refers to time, i.e., in the afternoon. Proper names like *Raila Odinga and Boris Johnson* were challengeable as well. Exposure to these types of lexemes is crucial in N. headline interpretation.

Table 7

Frequencies of Words Causing Misinterpretations in BNC and COCA

Word	British National Corpus			Corpus of Contemporary American English (			
	Written corpus	Spoken Corpus	Humanities corpus (3.3 m. words)	Spoken	Fiction	Magazine	News
Brexit	0	0	0	10	2	298	86
indict	0	0	1	47	38	119	207
baffle	0	0	1	14	52	127	33
cemetery	0	0	1	0	0	1	0
Obesity	0	0	1	70	66	2,25	858
beheading	0	0	2	18	65	85	74
botched	0	0	2	37	16	262	402
Harrowing	0	0	3	25	10	354	377
Inferno	0	0	8	11	32	217	157
Oust	0	0	9	16	22	147	389
Plagiarism	0	0	13	84	42	68	157
Stabbing	2	0	0	35	53	231	426
Ordeal	2	0	20	78	54	596	677
Probe	4	1	10	76	84	1,82	1,674
Vow	6	0	9	30	53	426	415
Purge	6	0	14	12	12	302	268
condemn	6	7	22	76	27	421	556
Arc	7	0	22	23	1489	1,61	1,051
A fifth	7	2	32	32	29	479	726
allegiance	7	2	104	41	40	643	635
doctrine	11	14	262	68	27	1,85	774
pledge	18	1	19	1,761	430	1,067	1,782
coup	26	0	84	1,685	424	1,396	1,717

Table 7 (Cont'd)

Frequencies of Words Causing Misinterpretations in BNC and COCA

Word	British National Corpus			Corpus of Contemporary American English (			
	Written corpus	Spoken Corpus	Humanities corpus (3.3 m. words)	Spoken	Fiction	Magazine	News
charges[1]	53	23	77	9,568	2,278	5,821	12.44
bid	42	135	28	1,531	980	1,886	5,891
detail	61	36	320	2,745	3,251	5,438	2,976
detail	61	36	320	2,745	3,251	5,438	2,976

[1] The range found included contexts where charges means cost (v), expenses (N) and accusations.

Syntactic Misinterpretation

Syntactic parsing takes place simultaneously with or following lexical interpretation. If the latter is attested for and misinterpretation of a headline still exists. The reason for it can be attributed to syntactic misinterpretation (e.g., case assignment). Table 8 demonstrates an ascending order and classification of headlines causing most syntactic misinterpretations. Here, a closer look at the nature of non-target like responses reveals a tendency to interpret a complex NP as an SVO. The following are examples of these headlines:

(8) Insurance Company *Refund* Policies

(9) Deserving Student *Help* committee

Aside from the fact that lexical interpretation should have dismissed the decision of an SVO interpretation, this misinterpretation could probably be triggered by a confusion in the determination of the category of words like *refund* and *help* which can be used to denote an action or a noun. Confusion in (8) and (9) could have been resolved if learners identified that the head is a singular noun and if these strings were really instances of SVOs, their verbs should have had a singular present tense "*-s*" as an inflection marking. If this syntactic analysis/parsing had taken place, it should have disconfirmed or dismissed that this is an SVO. Thus, it is suggested here that morphosyntactic knowledge/awareness of word categories or of inflections could be considered a trigger of error in 54 percent of the cases related to these headlines (Table 8). Present tense *singular -s* morpheme has been reported to be a problem in the acquisition of morphosyntactic features by English L2ers in numerous research. Another likely account for this type of misinterpretation is the inability to accurately identify heads and their modifiers in headline examples (8) and (9). Participants were unable to identify that the words *company*, *policies*, *student*, *committee* are heads of nominal phrases that are modified by preceding modifiers. The challenge here could be due to the sequence of modifiers or to the fact that in their L1, Arabic, modifiers follow rather than precede heads. Therefore, these could be instances of errors caused by L1 transfer or interference.

The second main cause for syntactic misinterpretation of newspaper headline is the inability to identify the agent in passivized SVO patterns. Examples of passivized SVO headlines are as follows:

(10) Parents warned on use of cough and cold medicine in children.
(11) Police shot dead in Baton Rouge
(12) Syria rebels filmed beheading boy

Here, learners tend to identify the subject position to be the location of the agent (the logical doer of the action). This result is also in line with previous research findings indicating a problem in comprehension of passive forms. Zipoli (2017) ranked passive verb constructions as the most difficult forms to process in English sentences. It seems that this difficulty of interpretation aggravates in headlines with copula drop. Notably, as shown in Table 8, with an inanimate subject the likelihood of misinterpretation decreases, the following is one example of a headline with an inanimate subject:

(13) Japan Migration Theory Brought to Life.

In regular sentences, the role of copula '*be'* in recognizing these forms is highly significant. Without copula '*be'*, error likelihood increases. Koda (2007) notes that "lexical decision-making is greatly facilitated when target words are preceded by presentation of their morphological relatives" (p. 6). In passive forms, verb *to be* forms are morphological relatives to the passivized verb. Specifically, they facilitate recognition of the inverted word order in passive forms.
Copula drop and the use of infinitives also led to tense misinterpretation as evident in inaccurate responses indicating past and present interpretations of the infinitive form instead of a correct prospective or futuristic meaning. The following is an example of a headline triggering this type of error:

(14) Obama to visit Cuba

Table 8

Headlines Causing Syntactic Errors Classified by Type and ordered (most difficult to less)

Headline	Type (error cause)	Percentage*
Insurance Company Refund Policies	Complex Noun phrase (perhaps L1 transfer/position of modifiers)	54%(26)
Deserving student Help Committee	Complex Noun phrase (Perhaps L1 transfer/position of modifiers)	54% (26)
Sydney double murder accused to face court	SVO (verb-adjective conflict)	35% (17)
Parents warned on use of cough and cold medicine in children	Passivized SVO (agent identification problem (copula drop)	33% (16)
Police shot dead in Baton Rouge	Passivized SVO (agent identification problem (copula drop)	27%(13)
Syria rebels filmed beheading boy	Passivized SVO (agent identification problem (copula drop)	23% (11)
Child pulled from fast-moving flood water	Passivized SVO (agent identification problem (copula drop)	21% (10)
Pakistan's judge's kidnapped son rescued	Passivized SVO (agent identification problem (copula drop)	17% (8)
Japan Migration theory brought to life	Passivized SVO (agent identification problem (copula drop)	15% (7)
Afghan police killed in Taliban raid	Passivized SVO (agent identification problem (copula drop)	15% (7)
Germany train knifeman's revenge bid	Complex noun phrase (including possessive case)	13% (6)
Australia PM to fight party vote to oust him	SVO active (future/infinitive)	13% (6)

Table 8 (Cont'd)

Headlines causing syntactic errors classified by type and ordered (most difficult to less)

Turkey's security weakened by botched coup	Passivized SVO (agent identification problem (copula drop)	10% (5)
Under Pressure from PM	Prep N	8% (4)
Knife attack at French holiday park	NP	8% (4)
The Giant Noah's arc in Kentucky	NP prep possessive	8% (4)
(Sydney siege victims) reveal details of harrowing ordeal	SVO active (complex NP)	8% (4)

Note. * = Number of L2ers erring on the syntactic interpretation of the headline.

Also, there seems to be difficulty in interpreting adjectives following the *–ed* form. A number of participants syntactically interpreted *kidnapped* in example (15) below as a verb.

(15) Pakistan's judge's kidnapped son rescued

Here, again, the role of morphological awareness during syntactic parsing plays a critical role in interpreting speech parts and grammatical categories. Koda (2007) highlights the role of morphological analysis in reading comprehension:

Morphological analysis…bolsters the capacity for identifying familiar components in an unfamiliar word, thereby allowing learners to extract partial information from familiar parts. Without such competence, lexical inferencing would be seriously hampered. (p. 6)

Importantly, here, determining a syntactic threshold or a point of syntactic performance (in any of the tasks measuring syntactic accuracy)

after which proficient reading could take place or accurate comprehension of a headline could be guaranteed was not attainable. In fact, on the basis of the headline responses, it is strongly suggested that there is no syntactic threshold for reading comprehension. Rather, it could be a status, arguably, a native like syntactic mental representation, determined by a descriptive evaluation of L2ers' syntactic performance. This evaluation or syntactic profile can be reached or drawn by checking against list covering performance of different syntactic forms (canonical and non-canonical) obtained in communicative and non-explicit ways.

To recap, participants' misinterpretations of English newspaper headlines of different types and syntactic difficulty point to difficulty in recognizing inverted word order in passivized SVO patterns with copula drop, inaccurate morphological analysis caused by confusion in determining word category or the presence of a noun-verb confusion. The noun-verb confusion was confirmed in cases where a word could be used as either a noun or a verb. Lexical inferencing is specifically hindered when morphosyntactic analysis in these cases is not conducted properly.

Conclusion

As outlined earlier, the conceptualization of proficient reading or reading fluency necessitates learners' ability to integrate vocabulary knowledge and syntactic knowledge in reading comprehension. Meaning cannot be extracted from text without them. The obtained results point to a significant relationship between learners' reading comprehension abilities and syntactic knowledge: The higher the grammar score gets, the higher the reading comprehension rate is. The findings also suggest that accurate interpretation of newspaper headlines depends on syntactic parsing as well as lexical knowledge. Importantly, there are cases where sufficient lexical knowledge was not enough to ensure adequate comprehension of a newspaper headline. This was clearly shown by classifying and ordering the headlines causing syntactic and lexical misinterpretation. The findings indicate the difficulty and challenging nature of newspaper headlines. Therefore, it is strongly suggested that ESL learners should be taught and exposed to newspaper headlines of varying syntactic types and at different levels of difficulty to enable comprehension. Newspaper headlines represent an exceptional case of propositional formation (semantic and syntactic) that needs to be fully covered in English L2 pedagogy.

The concept of a linguistic threshold of vocabulary or syntactic knowledge has not been supported with respect to comprehension of

newspaper headlines in English L2. The study reports zero tolerance of vocabulary misapprehension or unfamiliarity in this case, that is, 100 % of the vocabulary available in a headline must be known for it to be comprehended. Inferencing does not seem to render accurate interpretations. The lexical knowledge needed here is depth of knowledge of a vocabulary item. A syntactic threshold could not be attested for either. In cases of full knowledge of word roots, misinterpretation caused by inaccurate syntactic parsing led to inability to identify speech parts and grammatical categories.

Finally, we have to look for innovative ways to teach the non-canonical forms of newspaper headlines. Teaching them should not be limited to translation classes. Perhaps we need to include them in reading classes in our curricula nationwide.

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Appendix

Insurance Company Refund Policies
Deserving student Help Committee
The people raising baby dragons
Under Pressure from PM
Workers Protest Pay cuts
Wife arrested in Terrorist attack.
Japan Migration theory brought to life
Pakistan's judge's kidnapped son rescued
The young people hit hardest by Brexit
Trump's wife accused of plagiarism
Child pulled from fast-moving flood water
Obama to visit Cuba
Knife attack at French holiday park
Taiwan bus inferno kills 26
Germany train knifeman's revenge bid
Pilots in court on drink-related charges
Turkey's security weakened by botched coup
Police shot dead in Baton Rouge
Unusual US ZIKA case baffles experts
Turkey's purge widens to education
Boris Johnson is foreign secretary The world reacts
The sea creature no one can find
The giant Noah's arc in Kentucky
The moon nobody noticed for a century
Syria rebels filmed beheading boy
Parents warned on use of cough and cold medicine in children
1billion UK aid goes to the world's most corrupt countries
• Terrorist Attacks Prompt The U.S. To Issue Worldwide Travel Alert
• Ten reasons to donate to our mental health appeal
• Tesco set to axe 10,000 jobs
• Ukraine: 13 killed in fight with Russia-backed rebels
• 21 killed in Shikarpur blast
• China indicts Jackie Chan's son on drug charge
• A drink a day 'cuts heart disease risk by a fifth' researchers claim
• Hindu-Muslim clash in northern India, 4 Muslims killed
• Charlie Hebdo shooting: World leaders condemn attack in Paris
• Efforts being made to curb child begging
• Police detain man armed with knife outside Parliament House in Canberra
• Sydney double murder accused to face court
• British unemployment hits new six-year low
• Russia's new military doctrine names NATO as key risk
• Japan to launch new spy satellite
• Sydney siege victims reveal details of harrowing ordeal
• Australia PM to fight party vote to oust him

• Saudis pledge allegiance to new king
• India proposes special police units to probe crimes against women
• Majority of Kenyans want Raila Odinga to quit politics
• Afghan police killed in Taliban raid
• False-gunman warning panics Los Angeles airport passengers
• Vancouver police seek witnesses to stabbing
• Ukraine ceasefire agreed at Belarus talks
• Thieves target cemetery in Germany
• Prime Minister visits Hungary's Orban despite East-West Ukraine tensions
• Scientists urge action on obesity in women to cut risks to babies
• Obama, Danish leader vow to fight terrorism