



Southern African Linguistics and Applied Language Studies

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/rall20

The production of English binomials by Botswana learners of English

Naledi N Kgolo-Lotshwao & Innocent Gabajesane

To cite this article: Naledi N Kgolo-Lotshwao & Innocent Gabajesane (24 Feb 2025): The production of English binomials by Botswana learners of English, Southern African Linguistics and Applied Language Studies, DOI: <u>10.2989/16073614.2024.2445275</u>

To link to this article: <u>https://doi.org/10.2989/16073614.2024.2445275</u>

© 2025 The Author(s). Co-published by NISC Pty (Ltd) and Informa UK Limited, trading as Taylor & Francis Group



6

Published online: 24 Feb 2025.

ſ	
1	

Submit your article to this journal 🖸

Article views: 90



View related articles 🖸

🕨 View Crossmark data 🗹

Southern African Linguistics and Applied Language Studies 2025, 43(x): xxx-xxx Printed in South Africa – All rights reserved

Open Access article distributed in terms of the Creative Commons Attribution License [CC BY 4.0] (http://creativecommons.org/licenses/by/4.0)

This is the final version of the article that is published ahead of the print and online issue

Copyright © The Author/s
SOUTHERN AFRICAN LINGUISTICS
AND APPLIED LANGUAGE STUDIES
ISSN 1607-3614 EISSN 1727-9461
https://doi.org/10.2989/16073614.2024.2445275

The production of English binomials by Botswana learners of English

Naledi N Kgolo-Lotshwao^{1*} () and Innocent Gabajesane² ()

¹Department of English, University of Botswana, Gaborone ²Communications and Study Skills Unit, University of Botswana, Gaborone *Correspondence: kgolon@ub.ac.bw

Abstract: This article presents the results of a paper-and-pencil experiment investigating the production of English binomial expressions (e.g. *bread and butter, hit and run, in and out*) by advanced learners of English at university level. Previous studies have reported a low competence in English binomials by learner participants, indicating a difficulty in idiomatic expressions for English learners. In the present study, 72 participants (mean age 21 years; 16 males, 56 females) took part in a production task at the University of Botswana. In this task, participants were given one of the constituents in the binomial pair (Item A) as a cue for the second constituent (Item B). The results indicate that participants generally have productive knowledge of binomials. In instances where participants were unfamiliar with a given binomial, they relied on semantic relationships (e.g. **salt and sugar, *bread and milk*). However, this reliance on semantics yielded non-binomial expressions. Furthermore, the results show that the participants' level of study played no role in their sensitivity to binomials. Implications for the teaching and learning of English as an L2 are discussed based on these findings.

Introduction

The term binomial, a type of collocation (i.e. a recurrent combination of words), refers to 'the sequence of two words pertaining to the same form-class, placed on an identical level of syntactic hierarchy, and ordinarily connected by some kind of lexical link' (Malkiel 1959: 113). Malkiel maintained that while the constituents of a binomial, such as *snow and cold*, are reversible and even changeable by some semantically related items (compare *cold and snow* and *wind and cold*), the sequence of many binomials, such as *law and order*, has become fixed. Binomials are recurrent (frequent), familiar (conventional) expressions formed by two words from the same lexical class connected by a conjunction, where one word order is always more frequent and is considered more acceptable than the other. These are phrases in the form of 'A and B' where A and B are content words typically belonging to the same word class (e.g. *men and women, give and take, near and dear*). The constituents of binomials are not always nouns as the term 'binomial' implies (e.g. *knife and fork*), whereas some can have both a literal and figurative meaning (e.g. *bread and butter*). The different definitions of binomials given above express similar sentiments, that binomials have two coordinated components which share the same word class.

In this study, we use the term *binomial* because it is widely used in the linguistic literature for reference to the phenomena under study. Other scholars have used different labels such as 'conjoined phrases' (Tiersma 1999), 'word pairs' (Tani 2008), 'doublets' (Tani 2010), 'formulae' (Abraham 1950), 'fixed coordinates' (Birdsong 1995), and 'freezes' (Landsberg 1995). These different labels express and highlight different aspects or qualities of binomials. 'Freezes', for instance, highlights that the word order of binomials is primarily fixed or frozen (e.g. *nuts and bolts, *bolts and nuts*). However, this quality does not apply across the board, as some binomials are flexible with a variable word order (e.g. *night and day; day and night*). The term binomial, therefore, is preferred in this article because it covers this phenomenon regardless of whether the word pairs are formulaic and have a long history, or whether they have been newly created, and whether they are frozen or reversible.

Binomials constituted by two nouns are the largest group, followed by adjectives and verbs (Sauer 2017). Other word classes such as adverbial binomials (e.g. *up and down, here and there*) and pronouns (e.g. *you and me*) are rare. Even rarer are binomials in which the constituents do not belong to the same grammatical class, for example, *by and large*. The rule of thumb is that the constituents of a binomial should have syntactic equality; that is, they belong to the same word class.

Most binomials are connected with 'and' (e.g. *peace and quiet, fish and chips*, see also previous examples). The word 'and' is also by far the most widely used coordinator in English (see e.g. Kopaczyk and Sauer 2017). Binomials joined with other conjunctions such as 'or' (e.g. *heads or tails, make or break*), 'but' (e.g. *short but sweet, strange but true*), and 'to' (e.g. *rags to riches, hand to mouth*) are quite rare.

The word order in binomial expressions has been extensively studied (e.g. Malkiel 1959; Cooper and Ross 1975; Müller 1997; Benor and Levy 2006; Mollin 2012). These studies primarily agree that there are several semantic, metrical and phonological principles/constraints, as well as frequency, which may determine which word order gets frozen in binomials (Boers and Lindstromberg 2008). There is also agreement in the literature that semantic principles outrank metrical principles, which in turn outrank phonological principles. The semantics of *wearing* precedes *tearing* in *wear and tear*. *Wearing* also starts with a more sonorous sound than *tearing*. Therefore, two constraints favour the word order of *wear and tear* (see Benor and Levy 2006 for a survey of principles).

Some studies have used experimental techniques to investigate the ranking of these principles. For instance, McDonald and colleagues (1993) gave experimental evidence that a semantic constraint (e.g. animacy) ranks above a *metrica constrainte* (e.g. syllable count). Some studies have also shown that a more frequent word precedes the less frequent one in a binomial (Fenk-Oczlon 1989). Furthermore, it has been suggested that the frequency of occurrence of the whole expression might be another reason for irreversibility within a binomial pair (Gustafsson 1976). This implies that language users remember the word order because the binomial expression is used often enough for it to be stored in the mental lexicon in a specific form.

Fixedness and formulaicity are key criteria for a binomial expression (Kopaczyk and Sauer 2017). The arrangement of elements in a binomial pair is irreversible unless one wants to cancel the idiomatic meaning of the binomial pair. For instance, *arts and crafts* rarely ever occurs as **crafts and arts*. Gustafsson (1976) also emphasises that when the constituents of a binomial are reversed, binomials lose their idiomacy or institutionalisation. Makkai (1972) distinguishes between morphological irreversibility and idiomatic irreversibility. Morphological irreversibility is where the reversal of the word order creates an ungrammatical structure (e.g. *law and order* as **order and law*). The construction **order and law* contravenes the conventional collocation of the binomial. From the ordering of events perspective, *law* precedes *order* as it constitutes the foundation upon which *order* is established. Metrically, *law*, being shorter, precedes *order*. Thus, the reversal of the binomial would also disrupt its phonetic coherence. Conversely, idiomatic irreversibility is where binomials remain grammatical even in their reversed order (e.g. *night and day* and *day and night*). This reversal, however, causes the binomial expression to lose its idiomatic quality.

Semantic constraints that govern word ordering in binomial expressions have also been investigated. Cooper and Ross (1975) list twenty-two semantic constraints. The researchers emphasise a semantic 'me first principle', that is, the left position in a binomial expression is generally reserved for factors that describe the prototypical speaker (i.e. 'me'). For instance, *here and there* is preferred to **there and here* because it is said from the position of the speaker. The three broad categories of semantic relations observed by various researchers are synonymy (including tautology), antonymy (or contrasting pairs) and complementarity (see e.g. Leisi 1947).

Research on binomials in L2 English

Several studies have investigated the awareness levels of binomials in L2 English, using both online and offline experiments. Online experiments tap into an ongoing process using tasks such as eye-tracking and self-paced reading, whereas offline tasks (paper-and-pencil tasks) register the outcome of that process, for example, grammaticality judgement and elicitation tasks (Marinis 2013).

Siyanova-Chanturia et al. (2011) found online effects of binomial ordering preferences by native and proficient non-native English speakers using an eye-tracking task. Participants read sentences with embedded binomial phrases (e.g. *bride and groom*) and their reversed forms (e.g. *groom and bride*), which are identical in syntax and meaning, but differ in phrasal frequency. Their results showed faster reading times for phrases that were high in frequency (i.e. the binomials) compared to the lower frequency phrases (i.e. the reversed forms). They found that native and non-native speakers, regardless of proficiency, are sensitive to the frequency and word order with which phrases occur in English.

Hamdan (2005) investigated how two different proficiency level groups of Jordanian EFL leaners at university level (first-year students versus fourth-year students) interact with English binomials. Participants completed a written elicitation task with 30 frequently used binomial items. Participants displayed a difficulty in providing the missing member of a binomial expression. Hamdan's (2005) study results indicate that the order of acquisition of binomials may be determined by some combination of transparency, frequency and cultural specificity.

Morita and Wylie (2016) investigated L2 productive knowledge of binomials by Japanese learners of English. They wanted to test which English binomials Japanese learners of English have productive knowledge of and what strategies they use to produce English binomials when they do not know them. Their results showed that learners have productive knowledge of certain binomials, and where participants were not familiar with the binomials, they relied heavily on semantic relationships between the items. The use of these semantic relations resulted in 'cancelled' binomials. Morita and Wylie (2016) recommend the explicit teaching of binomials to learners to improve their familiarity with binomials.

Using three phrasal judgement tasks, Morita et al. (2013) also investigated binomial expressions with English native speakers and Japanese L2 English speakers. The participants were asked to decide whether the presented stimulus was meaningful. The results from the first two experiments showed that participants recognised L1 binomials significantly faster than their low-frequency reversed forms; thus, it was concluded that binomials in the L1 are holistically stored and processed in the mental lexicon. In the third experiment, Japanese learners of English performed the same experiment in English to determine whether L1 word order influenced the processing of L2 binomials. The results showed no significant differences in reaction time and error rates between binomials and low-frequency reversed forms, regardless of L1 word order. This suggests that Japanese learners of English process English binomials analytically, rather than holistically.

The only study investigating strategies used to determine word order in L2 binomials was Morita et al. (2014). The results of questionnaires gathered from 124 Japanese learners showed that diverse strategies, such as world knowledge as well as the use of semantic and phonological cues, were adapted to select English binomials over their low-frequency reversed forms. However, it was also revealed that only a particular type of strategy, namely the 'me first' principle (Cooper and Ross 1975), was beneficial. This principle claims that '[f]irst conjuncts refer to those factors which describe the prototypical speaker' (Cooper and Ross 1975: 67). Based on this principle, the first conjuncts should refer to 'now', 'here', 'male', 'adult', 'positive', 'friendly', and so on. Morita et al. (2014) suggested that Japanese learners of English may not notice binomial word order differences between English and Japanese without explicitly learning this type of strategy.

English in Botswana

Botswana is a multilingual state with an estimated 26–29 languages, including English (Anderson and Tore 1997). English is the de facto official language, being the language of government communication. Government records, administrative instructions and court proceedings (except for local customary courts) are mainly in English. It is the language used for international communication, diplomacy, science, official government business and higher education (Batibo 2006).

Despite the wide usage of English in official business, a minority of Botswana residents use it as a home language. Census results show that only 3.1% of the total population speaks English at home (Statistics Botswana 2017). The language serves as a second language for most residents, with a few first language speakers.

However, English plays a central role in the language-in-education policy. It is used as the medium of instruction from Grade 2 in primary school onwards to tertiary levels (Botswana Government 1994). When students attend pre-primary schools, English is also used as the medium of instruction. Mastery of the English language is important for progression in school. For instance, most tertiary institutions, including the University of Botswana, require Grade C or higher for admission into their programmes.

Research questions

This study addresses the following research questions:

- 1. Do Botswana learners of English have productive knowledge of English binomials?;
- 2. What strategies do Botswana learners of English use to produce English binomials when they do not know the binomials?;
- 3. Does the learner's level of study (first, second, third and fourth year) affect sensitivity to binomials?; and
- 4. Does the English proficiency (writing, speaking, listening and comprehension) of the learner affect the sensitivity to binomials?

Experiment

Participants

Seventy-two participants took part in this experiment (mean age 21; 16 males, 56 females). In accordance with the University of Botswana's research guidelines, ethical clearance was not required for this study, as it involved participants who were students on campus. However, informed consent was obtained from each participant before participation. All participants were briefed on the purpose, procedures and potential risks of the study, and they provided written consent. They were not paid for their participation in the study.

All the participants were undergraduate students at the University of Botswana. 29 (40%) of the participants were Year 1 students, four (6%) were Year 2, five (7%) were Year 3, and 34 (47%) were in Year 4. They all met the entrance requirements for English language at the University of Botswana, a Grade C or higher for their Botswana General Certificate of Secondary Education (BGCSE) exams, and were all taking an English module at the university. All participants came from various L1 backgrounds since Botswana is multilingual, but had all studied English for close to 20 years since pre-primary or primary school.

Participants were asked to rate their general English proficiency in terms of speaking, writing, reading and understanding/comprehension, as shown in Table 1.

Participants' self-rating results show that in general, participants regarded their proficiency in spoken and written English strongly. Participants in Years 1 and 4 had similar English writing proficiency levels (27.8%). Year 1 participants rated their English reading proficiency higher than other participants (25%), followed by Year 4 (22.2%), and Year 3 (2.8%). Conversely, Year 2 participants did not self-rate this variable. For comprehension or understanding of English, Year

	Year 1	Year 2	Year 3	Year 4	Total
Speaking	22.2	4.2	6.9	30.6	63.9
Writing	27.8	1.4	5.6	27.8	62.5
Reading	25	0	2.8	22.2	50
Comprehension	13.9	1.4	4.2	16.7	36.1

Table 1: Participants' English proficiency self-rating results

4 participants (16.7%) rated themselves higher, followed by Year 1 (13.9%), Year 3 (4.2%) and Year 2 (1.4%).

Materials

This production task used 60 binomials. The binomials selected for use in this study were chosen from previous studies carried out with L2 speakers of English (e.g. Siyanova-Chanturia et al. 2011; Morita et al. 2014; Morita and Wylie 2016). Therefore, these binomials were pretested and confirmed to be more frequent than their reversed forms (e.g. *front and back* versus **back and front*) in these previous studies.

Although the members of some binomials may be connected by a preposition or a conjunction other than 'and', the study reported here is solely concerned with binomials linked with 'and' (e.g. *sweet and sour*) since it is by far the most widely used coordinator in binomials. Furthermore, binomials in this study are restricted to the lexical classes of nouns, verbs, adjectives and adverbs (since other word classes rarely combine into binomials).

Procedure

The participants were given a paper-and-pencil production task. They were presented with one of the constituents in the binomial pair (Item A) as a cue for the second item (Item B). Their task was to write in the space following 'and' what they thought the missing word was.

Data analysis

The data was analysed using the software package IBM SPSS Statistics 22. Multiple hierarchical linear regression and binary logistic regression (BLR) procedures were computed. All assumptions of parametric statistics were tested before computing both multiple hierarchical linear regression and BLR techniques.

Results

Results indicate that participants generally have a productive knowledge of binomials. Many of the binomials attracted high accuracy scores: 34 binomials (57% of materials) scored over 80%, with three binomials attaining 100% accuracy, that is, *boys and girls, up and down, men and women.* 10 items (17% of materials) attained between 50 and 79% accuracy. Table 2 shows the binomials that attracted a lower than 50% accuracy. One item (*sweet and sour*) was left out of further analysis due to experimental error.

Error analysis shows that participants used varying strategies to come up with Item B in instances where they did not know it. Table 3 presents alternate answers that were given by participants.

Binomials	Accuracy (%)
1. arts and sciences	0
2. live and learn	1.4
3. short and sweet	2.8
4. crime and punishment	2.8
5. far and wide	4.2
6. name and address	5.6
7. wear and tear	11.1
8. down and out	16.7
9. mental and physical	22.2

Table 2: Binomials with lower than 50% accuracy

Binomials	Accuracy (%)
10. victory and defeat	22.2
11. old and new	22.2
12. by and large	29.2
13. eat and drink	30.6
14. loud and clear	34.7
15. salt and pepper	44.4

The alternate answers provided by participants resulted in cancelling the binomial expression. These alternate answers and the strategies employed are considered in the discussion section.

To assess the extent to which the participant's year of study at the University of Botswana influenced their production of binomials, we ran BLR. We used dichotomous variables as dependent variables, where we considered 1 correct binomial production and 0 incorrect binomial production. The regression output was sensitive to correlations between the independent variables. We conducted Pearson correlations, which is shown in Table 4, to look for any potential multicollinearity among the variables. Our independent variables did not have any issues with multicollinearity, according to the Pearson correlation table, and we agree that our outcome was impartial.

In this study, the probability or chance of a participant producing a binomial expression was computed as a function of the year of study. The variables which were taken up under this model were as follows: Y = the dependent variable representing binomial production (0-incorrect, 1-correct), X1 = year of study (Year 1, 2, 3 and 4). The results from the BLR are summarised in Table 5.

Binomials	Non-binomial responses
live and learn	live and die
short and sweet	short and tall
crime and punishment	crime and justice, crime and law
far and wide	far and near
name and address	name and surname
wear and tear	wear and wash
down and out	down and up
mental and physical	mental and emotional, mental and health
victory and defeat	victory and failure
old and new	old and young
by and large	by and at
eat and drink	eat and sleep, eat and bath
loud and clear	loud and noisy, loud and quiet, loud and silent
salt and pepper	salt and sugar, salt and vinegar

Table 3: Alternate answers given by participants.

Year of study	Year 4	Year 1	Year 2	Year 3	
Year 4	1.000				
Year 1	-0.681	1.000			
Year 2	0.000	0.000	1.000		
Year 3	-0.354	0.241	0.000	1.000	

Table 4: Pearson correlation matrix

Table 5: Students' production of binomials by year of study

Year of study	Exp(B)	S.E.	Sig.
Year 1	1.36	0.51	0.54
Year 2	0.00	20096.48	0.10
Year 3	1.90	0.98	0.51
Year 4	1		
Overall percentage	56.8		
Hosmer and Lemeshow $\chi^2(2)$	0.00		1.00
-2 likelihood	93.56		
Cox and Snell	0.08		
Nagelkerke R ²	0.13		
Observation	0.00		
Hit model ratio	56.8		

* Value is significant at 5% significant level

The table shows that the Hosmer and Lemeshow test was not statistically significant ($\lambda = 0.00$, p = 1.00), indicating that the BLR model is a good-fit model and that it fit the data perfectly. The omnibus tests of model coefficients, which test the null hypothesis of no improvement in the predictors' ability to predict, were conducted as a robustness check. The tests were not significant ($\chi^2(2) = 5.75 \text{ p} = 0.12$). Therefore, the model was not a significant predictor of the dependent variable (binomial production). Thus, we came to the conclusion that a full model and a constant-only or null model (even odds) were not fundamentally different from one another. The year of study was not statistically associated with binomial expressions, which meant that the year of study was not a predictor of binomial production in this study.

Table 6 summarises that 18 cases were correctly predicted to be in the group where students correctly produced binomial expressions and 15 were wrongly predicted. Out of the 39 students with incorrect binomial production, 23 cases were correctly predicted, and 16 cases were incorrectly predicted. From these values, it can be observed that 56.9% (Hit ratio = (23 + 18)/72 = 56.9%) of data was correctly classified, and this hit ratio indicates a moderate predictive capacity.

To answer the last research question on the influence of general English proficiency, we carried out a hierarchical multiple sequential regression analysis to test the hypothesis that binominal production was a function of four variables: speaking, writing, reading and comprehension. All assumptions of regression such as linearity (linear relationship between the outcome variable and the independent variables), multivariate normality and multicollinearity, among others, were tested.

Та	ble	6:	The	classi	fication	of	results	

	Predictive			
Observed	Correct	Incorrect		
Incorrect	23 (59.0%)	16 (41.0%)		
Correct	15 (45.5%)	18 (54.5%)		
Hit observed ratio	56.9%			

Table 7: VIF values

Variables	Model 1	Model 2	Model 3	Model 4
Speaking	1.00	1.23	1.30	1.40
Writing		1.23	1.54	1.57
Reading			1.50	1.61
Comprehension				1.44

Multicollinearity among the predictor variables (speaking, writing, reading and comprehension) included in the models was detected by the variance inflation factor (VIF) and results are presented in Table 7.

All VIF values were greater than 1 but less than 4. This indicates that multicollinearity was unlikely to be a problem (Allen et al. 2009). All predictor variables were statistically correlated with binomial production, which indicates that the data was suitably correlated with the dependent variable for examination through multiple linear regression to be reliably undertaken.

The results of the hierarchical regression are summarised in Table 8. In the first step of the hierarchical multiple linear regression, one predictor was entered: Speaking. This model was

 Table 8: Hierarchical multiple regression analysis predicting binominal production from speaking, writing, reading and comprehension

Variables	Model 1 β	Model 2 β	Model 3 β	Model 4 β
Speaking	0.84*	0.59*	0.49*	0.38*
Writing		0.46*	0.30*	0.31*
Reading			0.38*	0.29*
Comprehension				0.29*
R	0.70	0.85	0.94	0.10
AR ²	0.70	0.85	0.94	0.10
ΔR^2		0.15	0.09	0.06
F change	161.24	69.83*	0*	107.71*
df1	1	1	1	1
df2	70	69	68	67
t	6.80	3.53	2.30	0.00

Note: Speaking, writing, reading and understanding of English are predictor variables. Binomial production is the criterion variable. *p < 0.05

Antonyms	Events in time order	Same conceptual category	Localised usage
Live and die	Now and later	Bread and milk; bread and tea	Arts and culture
Short and tall	Front and behind	Knife and spoon; knife and meat	Name and surname
Victory and failure	Wear and wash	Rock and soil	Salt and vinegar
Down and up	Eat and bath	Salt and sugar	Arts and crafts

Table 9: Summary – strategies used by participants.

statistically significant F(1, 70) = 161.24, p < 0.001, $R^2 = 0.70$) and explained 70% of variance in binomial production. Speaking thus made a significant unique contribution to the model. After introducing writing in the second model, the total variance explained by the model was 85% and the model was significant (F(1, 69) = 69.83, p < 0.001, $R^2 = 0.85$). The introduction of writing explained an additional 15% of variance in binomial production, after controlling for speaking (R^2 change = 0.15). Both speaking and writing were significantly associated with binomial production ($\beta = 0.59$, t =9.96, p < 0.001 and $\beta = 0.46$, t = 8.34, p < 0.001, respectively).

The third model in which reading was introduced was significant (F(1, 68) = 107.71, p < 0.001, $R^2 = 0.94$) and explained 94% of variance in binomial production. The introduction of reading explained an additional 9% of variance in binomial production, after controlling for speaking and writing (R^2 change = 0.09). All these factors were significantly associated with binomial production: speaking ($\beta = 0.49$, t = 13.78, p < 0.001), writing ($\beta = 0.30$, t = 7.81, p < 0.001), and reading ($\beta = 0.38$, t = 10.38, p < 0.001).

In the last model, all variables were entered at the same time. The model was significant (F(1, 67) = 69.83, p < 0.001, $R^2 = 0.94$), and explained 100% of variance in binomial production. The introduction of the comprehension variable thus explained an additional 6% of binomial production after controlling for speaking, writing and reading. All variables in the model were significant influencers of binomial production: speaking ($\beta = 0.38$, p < 0.001), writing ($\beta = 0.31$, p < 0.001), reading ($\beta = 0.29$, p < 0.001) and comprehension ($\beta = 0.29$, t = 8.34, p < 0.001).

Overall, the regression analysis revealed that all four variables were significant predictors of binomial production, but differed in effect size.

Discussion

The study set out to establish whether Botswana learners of English have a productive knowledge of binomial expressions. Guided by the research questions, we established that most participants did have a productive knowledge of binomials, as evidenced by the overall accuracy score. Participants were able to provide Item B and keep the words of the binomial in the established order. This indicates that the learner participants were proficient in the English language. This finding is different from results found in other studies on EFL intermediate and advanced learners. For instance, Morita and Wylie (2016) and Boonnoon (2020) demonstrated low competence in English binomials for their learner participants, indicating that English idiomatic expressions pose difficulty for non-native English speakers. For the present study, we found that even where participants failed to provide Item B of the binomial, they relied on various strategies. These strategies, however, resulted in cancelling the binomial expression.

Interestingly, participants understood the pairing of items within a binomial. Even where they provided erroneous responses, they kept to the word class of Item A. This shows that they understood that only words that belong to the same word class can be joined to form a binomial expression. For instance, we did not have any participant giving Item B as a verb when Item A was a noun.

Error analysis of the erroneous responses displayed certain strategies that participants relied on to guess Item B (summarised in Table 9). For the most part, participants relied on sense relations such

as antonyms. Antonyms, that is, word opposites in meaning, were used for instance in constructions such as *live and die, short and tall*, and *down and up*. Here, participants relied on the opposite meaning to guess Item B of the binomial expression. In *victory and failure*, for example, participants relied on the opposing ends of an achievement spectrum to complete the binomial.

Participants also relied on the ordering of events in terms of time, order and arrangement. Here, participants looked at Item A and considered what logical sequencing would follow from it. Examples of erroneous responses given using this strategy include *wear and wash, eat and bath, and now and later.* For the respondents, *washing* follows *wearing.* Therefore, they expected the second item of the binomial expression to be based on this order of events.

In other instances, participants gave Item B based on it being in the same conceptual category with Item A. For the target binomial expression *bread and butter*, some participants gave *milk* and *tea* as Item B. These items are related to *bread* as they are usually presented together. Other erroneous responses include *knife and spoon, knife and meat, rock and soil,* and *salt and sugar*. These responses were rather surprising as binomials such as *bread and butter* and *rock and roll* are quite frequent in usage. This implies that the participants who got the binomials wrong have no stored knowledge of these binomial expressions, such that they rely on conceptual relations to provide Item B. For instance, *salt and pepper* got an accuracy score of 44%, while *rock and roll* got 54%. *Knife and fork* posed a challenge as the binomial expression is mostly used as *fork and knife* in Botswana L2 English. When given the correct order, some participants (20%) could not figure out Item B.

Another strategy that participants relied on to complete the task was to rely on localised usage of collocation, what Morita et al. (2014) terms world knowledge. For instance, there is a Department of Arts and Culture under the Government of Botswana. As a result, participants are used to this pairing of the words. Therefore, for the target binomial *arts and sciences* – a pairing commonly used in academic and interdisciplinary contexts – participants (93%) instead produced *arts and culture and arts and crafts*, with 7% not giving a response. While *arts and crafts* is a well-formed binomial expression, its selection in this context suggests that participants were relying on familiarity rather than aligning with the expected academic collocation. This reinforces the idea that participants drew on localised usage and world knowledge rather than conventional binomial pairings specific to certain domains. *Salt and vinegar* is a popular flavour of potato crisps. As such, the target *salt and pepper* binomial was not correctly provided. It is not a common tradition to have salt and pepper with meals in Botswana. *Name and surname* also showed a similar pattern, where *name* is taken to refer to a first name. Most official and business forms would require one to provide a first name and surname. This pairing also conforms to the ordering of events strategy, where participants expect to be asked for a surname once they have given their (first) names. The strategies used therefore sometimes overlap.

For the learner's level of study (first, second, third and fourth year), no effect was established. In short, the findings reveal that the students' level of study does not influence their proficiency in the production of binomials.

When it comes to the general language proficiency (speaking, writing, reading and comprehension) of the learner, results showed that the best predictors for binomial production were speaking and writing, followed by reading, then comprehension. Participants perceived themselves as competent speakers of the English language. A previous study on students' attitudes towards Botswana languages on campus had found that many students give English as their second language, rather than an indigenous language (Letsholo and Matlhaku 2017). Many schools also have an 'English-only environment' speaking policy, such that students become proficient in spoken English. In university settings, students are also expected to produce written materials in English as it is the medium of instruction. This general proficiency in the English language favoured the participants in their production of binomials. Students should therefore be encouraged to practise their different skills in the English language as this will improve their overall competence as well as binomial competence.

The results of this study also imply that learners need more exposure to binomials, especially non-frequent ones, which need to be taught explicitly. The use of binomials makes spoken and written language more interesting. As a result, their mastery, as stated by Alotaibi and Alotaibi (2015), may enhance the learners' oral and written skills in the target language. Therefore, it is

important that English classes teach binomials so that English learners' speech and writing become more natural in production and they can communicate more effectively in the target language.

Conclusion

To summarise, this L2 research investigating the production of binomial expressions by Botswana learners of English has shown that these learners are sensitive to binomial word order, with some limitations. Learners employ various strategies to overcome instances where they encounter unfamiliar binomials. Therefore, binomials and collocation need to be explicitly taught so that learners are conversant in them. Study results also indicate that there is an advantage for learners to use English outside formal learning (e.g. leisurely reading) as this improves their competence.

ORCID iDs

Naledi N Kgolo-Lotshwao – https://orcid.org/0000-0001-5020-7198 Innocent Gabajesane – https://orcid.org/0009-0009-3063-8965

References

Abraham RD. 1950. Fixed order of coordinates. Modern Language Journal 34: 276–287.

- Allen M, Titsworth S, Hunt SK. 2009. *Quantitative Research in Communication*. London: SAGE. https://doi.org/10.4135/9781452274881
- Alotaibi AM, Alotaibi MA. 2015. The acquisition of binomials by Kuwaiti EFL learners. *International Journal of English Linguistics* 5(3): 63–71. https://doi.org/10.5539/ijel.v5n3p63
- Anderson L-G, Tore J. 1997. Languages in Botswana. Gaborone: Longman Botswana.
- Batibo HM. 2006. The imposition of English on the triglossic structure of language use in African countries. In: Arua AE, Bagwasi, MM, Sebina T, Seboni B (eds), *The Study and Use of English in Africa*. New Castle: Cambridge Scholars. pp. 133–141.
- Benor SB, Levy R. 2006. The chicken or the egg? A probabilistic analysis of English binomials. *Language* 82(2): 233–278. https://doi.org/10.1353/lan.2006.0077
- Birdsong D. 1995. Iconicity, markedness and processing constraints in frozen locutions. In: Landsberg M (ed.), *Syntactic Iconicity and Linguistic Freezes: The human dimension*. Berlin: Mouton de Gruyter. pp. 31-45. https://doi.org/10.1515/9783110882926.31
- Boers F, Lindstromberg S. 2008. How cognitive linguistics can foster effective vocabulary teaching. In Boers F, Lindstromberg S (Eds.), Cognitive Linguistic Approaches to Teaching Vocabulary and Phraseology (pp. 1–64). De Gruyter Mouton. https://doi.org/10.1515/9783110199161.1.1
- Boonnoon S. 2020. Exploring Thai EFL students' knowledge of English binomials. English Language Teaching 13(2): 48–56. https://doi.org/10.5539/elt.v13n2p48
- Botswana Government. 1994. The Revised National Policy on Education. Gaborone: Government Printer.
- Cooper W, Ross J. 1975. World order. In: Grossman R, San LJ, Vance T (eds), *Papers from the Procession on Functionalism*. Chicago: Chicago Linguistic Society. pp. 63–111.
- Fenk-Oczlon G. 1989. Word frequency and word order in freezes. *Linguistics Journal* 27(3): 517–556. https://doi.org/10.1515/ling.1989.27.3.517
- Gustafsson M. 1976. The frequency and 'frozenness' of some English binomials. *Neuphilologische Mitteilungen* 77: 623–637.
- Hamdan J. 2005. Interacting with binomials: evidence from Jordanian EFL learners. Poznan Studies in Contemporary Linguistics 40: 135–156.
- Kopaczyk J, Sauer H. 2017. *Binomials in the History of English*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781316339770
- Landsberg M. 1995. Semantic constraints on phonologically independent freezes. In: Landsberg M (ed.), *Syntactic Iconicity and Linguistic Freezes: The human dimension*. Berlin: De Gruyter Mouton. pp. 65–78. https://doi.org/10.1515/9783110882926.65
- Leisi E. 1947. *Die tautologischen Wortpaare in Caxton's Eneydos: Zur synchronischen Bedeutungsund Ursachenforschung* [The Tautological Word Pairs in Caxton's Eneydos: On Synchronic Meaning and Causal Research]. Cambridge, Massachusetts: Murray.

Letsholo R, Matlhaku K. 2017. Attitudes of University of Botswana Faculty of Humanities students towards minority languages. Southern African Linguistics and Applied Language Studies 35(3): 245–257. https://doi.org/10.2989/16073614.2017.1373367

Makkai A. 1972. Idiom Structure in English. The Hague: Mouton. https://doi.org/10.1515/9783110812671

- Malkiel Y. 1959. Studies in irreversible binomials. *Lingua* 8: 113–160. https://doi. org/10.1016/0024-3841(59)90018-X
- Marinis T. 2013. Online psycholinguistic methods in second language acquisition. In: Chapelle CA (ed.), *The Encyclopedia of Applied Linguistics*. Hoboken: Wiley-Blackwell. pp. 4307–4315.
- McDonald JL, Bock K, Kelly MH. 1993. Word and world order: Semantic, phonological, and metrical determinants of serial position. *Cognitive Psychology* 25: 188–230. https://doi.org/10.1006/ cogp.1993.1005
- Mollin S. 2012. Revisiting binomial order in English: Ordering constraints and reversibility. *English Language and Linguistics* 16(1): 79–101. https://doi.org/10.1017/S1360674311000293
- Morita M, Wylie J. 2016. Productive knowledge of English binomials by Japanese learners of English. *Hiroshima Studies in Language and Language Education* 19: 83–92.
- Morita M, Sakaue T, Murao R, Matsuno K. 2013. Processing of binomials by native speakers and second language learners. Poster session presented at *EuroSLA 23*, Amsterdam, Holland.
- Morita M, Sakaue T, Murao R, Matsuno K. 2014. Strategies used by Japanese learners of English to determine word order in binomials. *ARELE: Annual Review of English Language Education in Japan* 25: 65–78.
- Müller G. 1997. Beschränkungen für Binomialbildung im Deutschen [Restrictions on Binomial Formation in German]. *Zeitschrift für Sprachwissenschaft* 16: 5–51.
- Sauer H. 2017. The world in two words: Binomials in two English translations of the Lotus Sutra. *Linguistica Silesiana* 38: 7–37.
- Siyanova-Chanturia A, Conklin K., Van Heuven WJ. 2011. Seeing a phrase "time and again" matters: The role of phrasal frequency in the processing of multiword sequences. Journal of Experimental Psychology: Learning, Memory, and Cognition, 37(3), 776.
- Statistics Botswana. 2017. *Botswana Demographic Survey Report 2017*. https://www.statsbots.org. bw/sites/default/files/publications/Botswana%20Demographic%20Survey%20Report%202017.pdf
- Tani A. 2008. The word pairs in *The Paston Letters and Papers* with special reference to text type, gender and generation. In: Masachiyo A, Michiko O, Masayuki O (eds), *Historical Englishes in Varieties of Texts and Contexts*. Frankfurt: Peter Lang. pp. 217–231.
- Tani A. 2010. Word pairs in Late Middle English prose. Doctoral dissertation. University of Glasgow, UK.
- Tiersma PM. 1999. Legal Language. Chicago: University of Chicago Press.