LEGE ARTIS

Language yesterday, today, tomorrow

Vol. VII. No 2 2022 Special issue

LINGUISTIC CONTRASTS OUT OF CONSCIOUS CONTROL♣

Konrad Szcześniak

Palacký University, Olomouc, Czech Republic

University of Silesia, Sosnowiec, Poland

Bibliographic description: Szcześniak, K. (2022). Linguistic contrasts out of conscious control. In *Lege artis. Language yesterday, today, tomorrow. The journal of University of SS Cyril and Methodius in Trnava*. Trnava: University of SS Cyril and Methodius in Trnava, 2022, VII (2), Special issue, p. 192-207. ISSN 2453-8035

Abstract: This paper looks at how learners discover semantic and pragmatic contrasts between newly learned language forms. Following the *Principle of Contrast*, the discovery of contrasts is assumed to be a prerequisite to learning both single words and formulaic expressions. Are lexical items recorded as memory traces with or without conscious effort in the sense of the *Noticing Hypothesis*? The main claim is that the amount of detail to be extracted from input exceeds the capacity of conscious awareness. Instead, people rely on the mechanism of repetition detection, without conscious control.

Key words: formulaic expressions, *Principle of Contrast*, memory traces, *Noticing Hypothesis*, repetition detection.

1. Introduction

A long-standing question in Second Language Acquisition (SLA) studies has been how people commit new language forms to memory. More specifically, how are memory traces formed? How are contrasts between close synonyms discovered? An influential take on these questions was championed by Schmidt (1990; 1994; 1995) in his *Noticing Hypothesis*. He proposed that close attention is the key here: it is only by paying conscious attention that one can master new words, expressions, and constructions. Under the strong form of the Noticing Hypothesis, people can be predicted to fail to internalize what they do not pay attention to (Logan et al. 1996). Put another way, according to Schmidt, so-called incidental learning (also known as peripheral or subliminal learning) is not a realistic phenomenon. The possibility of learning without conscious awareness has been pondered on for a long time, but according to Baars (2002: 50), no robust evidence is available to support the idea that such learning is even possible. If this view is correct, then the secret of successful learners may consist in the mindful ability to pay rapt attention, or what Schmidt (1990: 132) called "focal awareness" of elements of input. In other words, in order to learn a new language form, it is

♣ I wish to thank three anonymous reviewers for their insightful comments and helpful suggestions, which helped me rethink the main points and improve the quality of this contribution. This study was supported by grant 914106111UVV 2021 – *Fond děkanky Pedagogické fakulty Univerzity Palackého v Olomouci*. (*Grant Fund of the Dean of the Pedagogical Faculty of Palacký University*)

not enough to understand its meaning or get the gist of what that meaning contributes to. Rather, the learner must focus specifically on the usage of the new word or expression.

Schmidt's conjecture seems compelling enough, especially in light of insights from research in cognitive neuroscience. For example, it has been known that information processed consciously is more likely to be retained in memory thanks to one important benefit of consciousness, namely the possibility to prolong the time of activation of the neurons involved in the processing of that information. As Dehaene puts it, "Subliminal information is evanescent, but conscious information is stable – we can hang on to it for as long as we wish" (2014: 89). To be sure, conscious attention (or Schmidt's "noticing mode") is certainly conducive to learning. However, the really interesting question is whether memories can be recorded in the subliminal mode, without conscious control. The hypothesis being proposed here is that the demands of learning new language forms exceed the capacity of conscious focus. Upon encountering a new word or expression, the learner is faced with too many potentially relevant features of usage to attend to consciously.

2. Material and methods

This contribution discusses perception of language forms that language learners extract from their input, understood in this article as both written and spoken language that learners are exposed to. No distinction is made between first and second language learners here. The main assumption is that a person's knowledge of language is a product of observed usage. That is, entries in the mental lexicon are shaped by what people encounter in their daily linguistic interactions, in line with cognitive linguistic usage-based models of language learning (e.g., Bybee 2010; Langacker 1987; Tomasello 2003). Usage-based theories assume that the task of laying down traces in memory relies on important skills and abilities such as pattern-finding and intention-reading. These are domain-general in the sense of being present in other cognitive tasks such as sorting the surrounding environment into mental categories. Importantly, when it comes to discovering the structure of language, the information that will ultimately be encoded in the mind emerges solely from the input.

No linguistic information is assumed to be innately pre-established. All knowledge of language is derived from experiences with usage, which language learners perceive, process, and categorize into grammatical constructions, defined as pairings of form and meaning and/or pragmatic functions (see Goldberg 1995). Grammatical constructions include elements of varying degrees of size and schematicity, ranging from single morphemes (*smile, -ing*), through words (*smiling*), phrases (*so far so good*), to more general patterns (like the passive construction). In line with most cognitive linguistic accounts (see Fried 2013), I treat grammatical constructions as the main unit of linguistic

 ISSN 2453-8035

knowledge. That is, knowledge of language can be thought of as being a list of all grammatical constructions that belong to that language. In what follows, I will discuss how language users learn grammatical constructions, especially phrase-sized constructions, i.e., formulaic expressions.

The main emphasis is on highlighting the richness of information that language users face. This is especially evident when learners process formulaic language, consisting of tens of thousands of fixed expressions of varying lengths. Formulaic language has recently been argued to represent a major component of linguistic proficiency (e.g., Taylor 2012; Wood 2015). Thus, it is an essential element of linguistic knowledge to be acquired, and I will attempt to demonstrate that it is also a particularly challenging learning problem because many fixed expressions are not inherently salient. This means that a learner exposed to many examples such as *one of the most* cannot rely on conscious awareness in the sense of The Noticing Hypothesis. The discussion is based on examples of phrases in English, and equivalents in Czech, Slovak, and Polish. The challenges for the language user are illustrated by means of corpus data drawn from *The Corpus of Contemporary American English* (Davies 2008), henceforth abbreviated as COCA.

3. Results and discussion

3.1 Discovering contrasts

The main problem with the Noticing Hypothesis is that "words don't come easy". Vocabulary learning may bring to mind uncomplicated images of words written down to be remembered, but there is a lot more to learn than just single word forms. First, rather obviously, even a single item conceals a wealth of information going far beyond what can be attended to consciously. When a person comes across a word, each such encounter comes with detailed characteristics that are potentially available to be recorded in memory:

> *[E]ach linguistic encounter lays down a trace in memory. The trace pertains not only to the linguistic signal as such, but also to the context in which it is encountered. The context may include the characteristics of the speaker (her accent and voice quality, for example), and features of the situation in which the utterance is encountered, as well as the presumed semantic intent of the speaker. The mental corpus is therefore vastly more rich in detail than any available text collection, in that each element is indexed for its contextual features* (Taylor 2012: 3).

All this detail surrounding a linguistic signal (whether it is a word, expression, or pattern) must be perceived and registered because it is this detail that defines the linguistic signal, setting it apart from its synonyms. This much follows from the *Principle of Contrast* (Clark 1987), under which a word has to differ in some way from other words to be allowed into the lexicon. Further, contrast is a major mechanism behind lexical acquisition: Children "assume words contrast in meaning" (ibid., 10). Children use their assumption of contrast as a tool guiding them in constructing their mental definition

 ISSN 2453-8035

of a newly learned form. For example, upon encountering the noun *pooch*, they do not conclude that it means the same as *dog*. Rather, they expect the two words to differ, and they discover the correct contrast in terms of formality, which can be inferred from details like the tone of voice and the like. The problem is that the child does not know which perceived details are important distinctive features and which are incidental (and irrelevant) peculiarities. These can only be discovered by encountering the form in question a number of times and finding that some features recur (e.g., Goldberg 2019). This suggests that the learner must register the accompanying information so it can be consulted upon the next encounter.

Of course, there is no way of knowing how much information about the usage of a word is transferred to long-term memory. It is perfectly possible for some or most details to go unnoticed and lost in transfer. However, as we will see shortly, there is good reason to believe that a lot more information gets recorded than was previously assumed. Following Taylor's hypothesis above, I assume that learners do register large amounts of information surrounding word use. Most of that information must be committed to memory *under* the threshold of conscious awareness, simply because one cannot pay focused attention to multiple stimuli at the same time. A listener cannot focus on the speaker's positive or negative tone (e.g., Bigunova 2019), volume, grammatical tense, accompanying words (collocates) or other potential details, all monitored consciously at the same time. Yet these aspects must be tracked so that those that recur can be identified, making it possible to discover contrasts. Note that even if a person consciously realizes that something about a use is a recurrent feature, this is discovered after first having recorded traces of that feature unconsciously.

In fact, upon closer reflection, many contrasts found in language are unconscious. For example, when asked to explain the difference between *land* and *ground* (Croft & Cruse 2004: 18), many speakers find they are unable to point it out. However, when asked which of the two means 'soil as opposed to sea or water', they correctly choose *land* (and they identify *ground* as meaning 'soil as opposed to the air'). In other words, speakers have the correct knowledge and understanding of the contrast, even if it has until now been unconscious.

How is such a contrast discovered? The meaning of *land* 'soil in the context of the sea' becomes evident through its frequent occurrence near the word *sea* or *water*:

(1) *a. The sea is devouring the land.*
b. Some may have come by sea, others by land.
c. They're the fastest of all penguins in water, but on land, life takes on a slower pace.

 ISSN 2453-8035

d. ...leading them through the Red sea as on dry land.

e. ...some sea creatures developed into land animals.

f. *...no land in sight, just water.* (COCA)

It is difficult to estimate how many such uses are needed for a person to discover the contrast between *land* and *ground*. What seems obvious enough is that the discovery process involves amassing a mental corpus of collocations like *on dry land*, *land in sight*, *by land*, etc. and remembering that they were encountered in marine contexts[1].

3.2 The inconspicuous nature of formulaicity

This brings us to the second problem with the Noticing Hypothesis. Apart from individual words, learners have to learn considerable numbers of fixed phrases like *on dry land*, and these are very unlikely to be noticed consciously. This is because the lexicon includes enormous numbers of fixed expressions like *more or less*, *sooner or later*, *on the one hand*, *better late than never* (and other examples of phrases, sayings, proverbs, idioms, etc.), and what is particularly challenging about fixed phrases is that most of them look too ordinary to attract conscious attention. Consider the case of *black and white*. At first glance, it does not strike us as particularly idiomatic or worth memorizing because everything about its form and meaning seems predictable and unsurprising. This, however, is only an illusion. First, the form is fixed and has to be learned as such. Speakers of English are quite particular about the exact arrangement of the words and find its grammatical variants (like ?*white and black* or ?*black-white*) rather unnatural. The same is true of the Slovak *černo-biely* (which is preferable to ?*bielo-černy* or ?*biely-a-černy*), the Czech *černo-bílý* (as opposed to ?*bílo-černý* or ?*bílý-a-černý*), or the Polish *czarno-biały* (not ?*biało-czarny* or ?*biały-i-czarny*). Second, the meaning of this expression goes beyond a description of colors. The main sense of *black-and-white* is 'unrealistically binary or clear-cut in attempted distinctions'. This meaning has to be learned, as it is not something that can straightforwardly be "figured out" through logical thinking, without exposure to actual usage. Third, the black-white order is not universal. As one anonymous Reviewer pointed out, the arbitrariness of the color order becomes evident if we consider the Italian *bianconeri* ('white-black'), the nickname of the football club Juventus. All these are unpredictable facts, impossible to arrive at through instinct; each expression listed here has to be learned individually through experience with observed language use.

What implications does formulaic language have for language knowledge? A solid command of a language involves knowing great numbers of phrases like the ones mentioned above. How are they learned? It is rather beyond belief that all of them (or even most of them) could be mastered by means

of conscious attention. The reason people are unlikely to focus on new fixed expressions is that they are not as conspicuous as individual words. When a person comes across a new word, its novelty alone makes it salient enough to mobilize conscious focus. (In such cases, the strong form of the Noticing Hypothesis may indeed be accurate). However, the likelihood of conscious learning decreases dramatically in the case of formulaic expressions. Unlike individual words, fixed expressions do not stand out by virtue of their novelty. When faced with a piece of text, a person does not know ahead of time which expressions are fixed (to be learned) and which ones are one-off combinations (to be ignored). The only way to find out is to store each encountered sequence provisionally and hold it in memory for some time until it is encountered again. There is empirical evidence (discussed shortly below) that this is precisely what happens. However, for this mode of memory retention to be feasible, it has to be subliminal, in operation "in the background," while the person's conscious attention is focused on content. While it is of course possible for a person to shift focus to a fixed expression's form occasionally, doing so more frequently would overtax his or her attentional resources. It is certainly not the case that a person reading a book could pay attention to the spelling of all newly encountered lexical sequences. This would require focusing on form practically non-stop, as any new sequence – conspicuous or not – could be a potential candidate for a fixed expression to learn. This would overtax conscious system resources; at least some of the information must be processed outside awareness. Indeed, Schmidt himself recognized the need for unconscious processing in the first language (L1). This can be inferred from his observation that adult L2 learners "seem to have lost the still mysterious ability of children to acquire the grammatical forms of language while apparently not paying attention to them" (Schmidt 1983: 172). As it happens, there is mounting evidence that this ability is still present in adults, as confirmed by recent L2 acquisition research (e.g., Suzuki & DeKeyser 2017; Toomer & Elgort 2019).

To get an idea of the degree of the inconspicuousness of fixed expressions, let us reflect on how long formulaic language remained invisible to linguists themselves. For decades, it was downplayed, apparently not an especially frequent or significant presence in language use. While the formulaic nature of language was pointed out by some authors in the second half of the twentieth century (e.g., Becker 1975; Mel'čuk 1988; Pawley & Syder 1983), these were minority views, which did not find anywhere near the empirical vindication that came in the last two decades. The prevailing opinion was that formulaic language represented, just like all idiosyncratic matter in language, a thing of periphery, of negligible relevance to language competence: "It is evident that rote recall is a factor of minute importance in ordinary use of language" (Chomsky 1964: 78). This shows just how unassuming formulaic language tends to be. It is perfectly possible for a language user to draw on a store of fixed expressions, all the while being rather unaware of doing so. As Pawley and Syder

observed, "[m]emorised clauses and clause sequences form a high proportion of the fluent stretches of speech heard in everyday conversation" (1983: 208), but these formulaic expressions are prone to hide in plain sight, apparently invisible to the very speakers using them. Note that although a speaker may both use and encounter a fixed expression multiple times, he or she fails to notice its formulaic nature. One can therefore make a case that a learner faced with a new fixed expression for the first time is even less likely to notice it for what it is. It is safe to assume that most regular-looking expressions will not attract the attention of most language learners. Items like *make reference*, *black and white*, *more or less*, *one of the most* [ADJ], and countless other such lexical combinations are hardly noteworthy material that would prompt a learner to write anything down. If that is the case, they cannot be learned through paying conscious attention to them. Rather, when they are encountered, they are registered and filed away behind the veil of conscious attention. Then, those that are reencountered can be flagged as likely formulaic expressions, and therefore good candidates to be kept.

To discover contrasts between words, a language user must build a database of extant expressions in which these words appear. These fixed phrases serve as models of use and reflections of their meanings, in line with Firth's aphoristic observation "You shall know a word by the company it keeps" (1957: 11). However, the challenge involves more than just amassing great numbers of formulaic expressions encountered in the input. In constructing the definition of a word's meaning, a language user expects to detect contrasts with close synonyms, but unfortunately, not all fixed expressions serve to reveal these contrasts. The word *land* can be found in various other uses, which are not directly relevant to the contrast between *land* and *ground*. For example, in (2a) *land* appears next to both *water* and *air*, which does not help separate the two contexts (relative to sea vs. relative to air). In (2b-c), the uses are in the "real estate" sense of *land*, and therefore of little relevance to the contrast with *ground*.

(2) a. *...threats to New York State's water, air, land, and people.*
b. *...he will have to sell some of his land.*
c. *...farmed a piece of land.* (COCA)

Apart from these, there are dozens of collocations like the ones listed in (3). In this selection, some examples (*land bridge* and *Land Down Under*) actualize the ‘sea’ semantic feature, but in all other examples the *ground-land* distinction is neutralized.

 ISSN 2453-8035

(3) *acre of land, cultivated land, fertile land, forested land, Holy Land, landline phone, land bridge, Land Down Under, land of plenty, patch of land, plot of land.* (examples attested in COCA)

To isolate any distinctive features from a mental sample of encountered uses and recurring phrases, a person faces a long list of candidate features (e.g., formality, connotations, generality, different physical properties of the referent, etc.) which can be present across the registered cases. It is implausible that a person could scan such characteristics consciously the way a language researcher or lexicographer does. Rather, what happens is that key characteristics are detected subliminally when they reappear. While a person's attention is directed at the informational content conveyed in the input, repetition detection mechanisms running in the unconscious background are busy tracking multiple coexisting features and detecting those that recur across different situations (Ruz et al. 2005). Given the number and diversity of possible candidate features, there is no way a person can hold them all in conscious awareness.

The above account rests on the assumption that language users store all encounters of expressions; single encounters too are registered, and their memory traces are not (at least immediately) lost. This point is addressed next.

3.3 Memory traces updated through experience with input

Learning new vocabulary items is widely believed to involve multiple exposures to a language form (e.g. Nation 2001: 51; Schmitt 2010:20). The required frequency is estimated to range from a couple to over a dozen encounters (e.g., González-Fernández & Schmitt 2017: 288). However, the importance of frequency conceals an internal paradox, responsible for a common mistake in reasoning. Namely, it is easy to conclude that if more encounters are necessary, then memory must not retain pieces of information encountered only once. It is tempting to assume that traces of single encounters are quickly erased from memory. However, as Bybee (2010) and Goldberg (2019) point out, erasing such traces would make it impossible to keep count of subsequent exposures. Without some record of the first experience, each subsequent encounter would appear to be the first one. In fact, children have been demonstrated to retain new words on the basis of a single exposure, a phenomenon referred to as fast mapping (Carey 2010; Carey & Bartlett 1978). Specifically, children remember something about the meaning of a new word encountered only once, even when tested a week later. As far as we know, the trace of the first encounter is never really erased, and it must remain present in memory in some form. This was first observed by Ebbinghaus (1913) in his pioneering studies of learning and forgetting, which he conducted by experimenting on himself as he

memorized sequences of syllables. He noticed that although he seemed to have forgotten a given sequence, the next time he attempted to learn it, it took him less time to learn, and its memory lasted longer. This suggests that the first experience with a piece of information leaves a trace. That trace, however faint or feeble, persists even when a person is under the impression of having forgotten the corresponding information that the trace subserves.

Following its formation, a memory trace is subject to procedures that will either weaken it (by pruning the connections between participating neurons) or consolidate it (by strengthening the connections within it). Although eliminating neuronal connections may seem to defeat the purpose of creating a memory trace, such pruning is a necessary mechanism in the service of automaticity and efficiency. Synaptic pruning targets unnecessary "noisy" connections whose activation would interfere with the activation of relevant connections (e.g., McMurray et al. 2017: 134). While research focusing on the exact mechanisms of consolidation is still ongoing (e.g., Szcześniak, forthcoming), memory retention is known to be selective in the sense that persistence is conferred on those "promising" neural pathways that seem to exhibit signs of future utility. What makes a pathway look promising? One possibility is that the likelihood of future utility increases with the integration of a new trace with existing lexical knowledge when a language form is found to be consistent with a pattern. That is, it is found to exhibit features that were also present on many previous occasions. For example, the word *land* is observed to appear in uses of the *sea-land* perspective, a significant recurrence which justifies the consolidation of the underlying memory trace and of the contrast with the noun *ground*.

The mode of operation of memory discussed here is in line with the idea that language forms are retained in memory through incidental learning. Indeed, the possibility of learning lexical sequences without conscious report has been investigated and confirmed experimentally. In a widely-quoted study, Gurevich et al. (2010) show that people have the potential for verbatim recall of specific expressions encountered in the input even when they do not seem to have paid attention to form. In this study, after listening to a story, the subjects were given a surprise quiz about the expressions they just heard and were found to display above-chance recall of their exact wording. These and similar findings by others (Bordag et al. 2021; Sampaio & Konopka 2012) suggest that some retention of language uses without conscious awareness is possible.

A trace formed after the first encounter is not likely to be a permanent addition to long-term memory. Such a trace is held in temporary memory, in what has been termed (among other labels) *rehearsal buffer* (Atkinson & Shiffrin 1968) or *echoic memory* (Huron & Parncutt 1993). The term *echoic memory* refers to the retention of sounds, whose mental "echo" can still be heard for at least several

seconds after they were received. Whatever the exact duration of temporary storage, learning relies on keeping a lexical item in memory long enough to re-encounter it before its memory trace decays. Thus, the sooner an item is reencountered and the more frequently that happens, the stronger its trace in memory becomes, which is an example of what is referred to as frequency effects (e.g., Lieven 2010: 2549). This mechanism is especially critical in learning lexical sequences, which are not inherently salient enough to attract attention. Their main chance of being recorded in memory is through being registered as a repeating combination of words.

That this is what actually happens can be confirmed by appeal to a familiar nonlinguistic experience. After listening to a music album several times, people often find that they know more about it than the melodies or the lyrics. All the people I have questioned recognize the following as their personal experience. When listening to the album a third or fourth time, they are able to anticipate what song will play next, after the previous one ends. It is certainly not the case that listeners make a meticulous effort to learn the two-second transitions between songs. After all, few pay mindful attention to the silences between tracks. And yet upon the last sounds of one track, listeners find that the beginning of the next song is already playing in their mind, before they even hear the actual sounds. Let us refer to this as the *neighboring songs effect*, a manifestation of a mechanism that is hypothesized to be at work in language learning.[2] Namely, just like the ending and the beginning of two neighboring songs, a collocation too is a combination of neighboring words, whose frequent recurrence makes it worth remembering them.

3.4 Contrasts of diverse kinds

The above discussion has highlighted the importance of detecting recurring elements in the input for retaining their memory traces. Recurring elements are significant because it is on their basis that contrasts are established. What the above examples could only outline is the fact that almost any aspect of use could turn out to be a recurring feature responsible for an important contrast. Upon encountering a language form, a language user has no way of knowing which aspects to pay attention to. The only solution is to register as many details as possible (though, of course, there is a limit on the number of details a person can perceive, consciously or subliminally). For example, is a newly encountered lexical combination a formulaic expression? Its formal aspect may turn out to be significant if it is encountered again. If it is, a formal contrast is established between the expression and other similar sequences. But what if a frequently encountered expression is occasionally found to be worded slightly differently? For example, in Slovak the expression *better late than never* has a number of variants. Apart from *lepšie neskôr ako nikdy*, it can also be found as *radšej neskôr/neskoro ako nikdy*. Does the formal contrast matter (should the alternative form be registered as a separate

 ISSN 2453-8035

expression or should it be considered a free variation)? That obviously depends on whether or not the formal contrast correlates with a contrast in usage. As it turns out, there are no significant usage differences that would justify treating these variants as separate lexical items. But this only puts the question one step back: How are contrasts in usage discovered? The problem is that the number of possible parameters to keep track of exceeds the powers of conscious awareness. Some contrasts may lie in formality, the speaker's attitude (approving, critical, etc.), the kinds of contexts in which an expression tends to appear, and many other dimensions. And of course, such contrasts do not become evident until a number of attestations have been observed, making it possible to triangulate on the relevant features of usage. A single attestation may not reveal which observed features are relevant; much less is it sufficient to discover all the informational detail contained even in an ordinary-looking lexical item such as *know* or *knowledge* (see Uberman 2019). If the Noticing Hypothesis were correct in its claim that one can only learn something by paying close attention to it, many critical features would escape notice. Discovering contrasts would then be a very difficult and protracted process.

4. Conclusions

This contribution has focused on the role of attention in learning new language forms and consolidating previously encountered forms. Noticing is conducive to better memory retention, and so are other forms of conscious attention found in tasks such as finding L1 equivalents. However, the main claim of this contribution is that conscious "focal awareness" of new language forms is not an absolute pre-requisite. Although we can posit the correlation "the more attention can be mobilized, the greater the chances of successful learning", ample evidence suggests that people can and often do retain elements of input without apparently attending to their spelling or pronunciation.

What makes conscious noticing particularly implausible is the importance of contrast in language. Because contrast is the *raison d'etre* of each language form, mastering each new language form is contingent on discovering how it contrasts with other language forms. I have argued that a lexical contrast does not typically reveal itself through a single attestation. Only after a number of encounters can a pattern be detected. This entails two serious challenges for the Noticing Hypothesis. First, a sample of recurring uses must be collected. This means people retain most encountered phrases, whether they pay attention to their form or not. Retaining long successions of phrases is something unlikely to be accomplished through conscious focus – most lexical sequences are recorded subliminally. Second, once a given language form has been attested in a number of uses, these must then be searched for features they have in common. Here the challenge for the Noticing Hypothesis is even more serious than in the case of extracting lexical sequences from the input and committing them to memory. Given that any aspect of a lexical use may be significant (while other aspects may

turn out to be random noise), the task involves comparing multiple stored instances. It is unlikely that a language user could consciously browse her mental record of all the experiences with a language form. One cannot perform a retrospective review of stored attestations in search of recurring features that are responsible for contrasts between language forms. Discovering contrasts involves a lot more processing than conscious awareness can handle. The staggering amounts of information extracted from the input surrounding even a single language form cannot but mobilize multiple mental procedures and most of them represent unconscious processing.

Notes

1**.** I do not attempt to discuss the discovery process in much detail here. It is likely to involve multiple mechanisms going beyond a simple comparison of contexts. Entries in the mental lexicon are developed through the discovery of patterns such as those visible in metonymic or metaphoric extensions pointed out by Kiełtyka (2019). He shows that animal-specific lexical items such as *watchdog* or *songbird* have motivated meanings, a fact no doubt exploited by learners.

2. This phenomenon has, to the best of my knowledge, not been researched, but it has been noted by music fans, as in one reddit.com discussion thread titled "You know you've listened to an album too much when your brain plays the intro to the next song before it actually starts playing."

Abbreviations

COCA – *The corpus of contemporary American English.*

L1 – first language

References

Atkinson, R.C. & Shiffrin, R.M. (1968). Human memory: A proposed system and its control processes. In *The psychology of learning and motivation: Advances in research and theory.* Spence, K.W. & Spence, J.T. (eds.). New York: Academic Press. Vol. II, p. 89-195.

Baars, B.J. (2002). The conscious access hypothesis: Origins and recent evidence. In *Trends in cognitive sciences*, 6 (1), p. 47-52.

Becker, J.D. (1975). The phrasal lexicon. Bolt Beranek and Newman report no. 3081, AI Report no. 28. In *Theoretical issues in natural language processing*. Shank, R. & Nash-Webber, B.L. (eds.). Cambridge: Bolt Beranek and Newman, p. 60-63.

Bigunova, N. (2019). Cognitive pragmatic regularities in communicative manifestation of positive evaluation. In *Lege artis. Language yesterday, today, tomorrow. The journal of University of SS Cyril and Methodius in Trnava.* Trnava: University of SS Cyril and Methodius in Trnava, IV (1), June 2019, p. 2-46.

Bordag, D., Opitz, A., Polter, M. & Meng, M. (2021). Non-native readers are more sensitive to changes in surface linguistic information than native readers. In *Bilingualism: Language and cognition*, 24 (4), p. 599-611.

Bybee, J.L. (2010). *Language, usage and cognition*. Cambridge: Cambridge University Press.

Carey, S. (2010). Beyond fast mapping. In *Language learning and development*, 6 (3), p. 184-205.

Carey, S. & Bartlett, E. (1978). Acquiring a single new word. In *Papers and reports on child language development*, 15, p. 17-29.

Chomsky, N. (1964). *Current issues in linguistic theory*. The Hague: Mouton & Co.

Clark, E. (1987). The principle of contrast: A constraint on language acquisition. In *Mechanisms of language acquisition.* MacWhinney, B. (ed.). Mahwah: Lawrence Erlbaum Associates, p. 1-33.

Croft, W. & Cruse, D.A. (2004). *Cognitive linguistics*. Cambridge: Cambridge University Press.

Davies, M. (2008). *The corpus of contemporary American English: 520 million words, 1990-present*. Available at: http://corpus.byu.edu/coca/

Dehaene, S. (2014). *Consciousness and the brain: Deciphering how the brain codes our thoughts*. New York: Viking Penguin.

Ebbinghaus, H. (1930). *Memory: A contribution to experimental psychology* (Transl. by Ruger, H.A. & Bussenius, C.E.). New York: Teachers College, Columbia University. Available at: https://archive.org/details/memorycontributi00ebbiuoft

Firth, J.R. (1957). *Papers in linguistics 1934–1951*. London: Oxford University Press.

Fried, M. (2013). Pojem konstrukce v konstrukční gramatice. *Časopis pro moderní filologii* 95 (1), p. 9-27.

Goldberg, A.E. (1995). *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.

Goldberg, A.E. (2019). *Explain me this. Creativity, competition, and the partial productivity of constructions*. Princeton: Princeton University Press.

González-Fernández, B. & Schmitt, N. (2017). Vocabulary acquisition. In *The Routledge handbook of instructed second language acquisition*. Loewen, S. & Sato, M. (eds.). New York: Routledge, p. 280-298.

Gurevich, O., Johnson, M.A. & Goldberg, A.E. (2010). Incidental verbatim memory for language. In *Language and cognition*, 2 (1), p. 45-78.

Huron, D. & Parncutt, R. (1993). An improved model of tonality perception incorporating pitch salience and echoic memory. In *Psychomusicology: A journal of research in music cognition*, 12 (2), p. 154-171.

Kiełtyka, R. (2019). Patterns of metaphor-metonymy interaction in animal-specific complex lexical units. In *Linguistica silesiana*, 40, p. 225-256.

Langacker, R.W. (1987). *Foundations of cognitive grammar*. Stanford: Stanford University Press. Vol. 1: Theoretical prerequisites.

Logan, G.D., Taylor, S.E. & Etherton, J. (1996). Attention in the acquisition and expression of automaticity. In *Journal of experimental psychology: Learning, memory, and cognition*, 22 (3), p. 620-638.

McMurray, B., Kapnoula, E.C. & Gaskell, M.G. (2017). Learning and integration of new word-forms: Consolidation, pruning, and the emergence of automaticity. In *Speech perception and spoken word recognition*. Gaskell, M.G. & Mirković, J. (eds.). New York: Psychology Press, p. 116-142.

Mel'čuk, I. (1988). Semantic Description of Lexical Units in an Explanatory Combinatorial Dictionary: Basic Principles and Heuristic Criteria. *International Journal of Lexicography*, 1 (3), p. 165-188.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.

Pawley, A. & Syder, F.H. (1983). Two puzzles for linguistic theory: Nativelike selection and nativelike fluency. In *Language and communication*. Richards, J.C. & Schmidt, R.W. (eds.). New York: Routledge, p. 191-226.

Ruz, M., Worden, M.S., Tudela, P. & McCandliss, B.D. (2005). Inattentional amnesia to words in a high attentional load task. In *Journal of cognitive neuroscience*, 17 (5), p. 768-776.

Sampaio, C. & Konopka, A.E. (2012). Memory for non-native language: The role of lexical processing in the retention of surface form. In *Memory*, 21 (4), p. 537-544.

Schmitt, N. (2010). *Researching vocabulary. A vocabulary research manual*. New York: Polgrave Macmillan.

Schmidt, R.W. (1995). Consciousness and foreign language learning: A tutorial on the role of attention and awareness in learning. In *Attention and awareness in foreign language learning*. Schmidt, R.W. (ed.). Honolulu: Second Language Teaching and Curriculum Center, University of Hawaii, p. 1-63.

Schmidt, R.W. (1994). Implicit learning and the cognitive unconscious: Of artificial grammars and SLA. In *Implicit and explicit learning of languages*. Ellis, N.C. (ed.). London: Academic Press, p. 165-209.

Schmidt, R. (1983). Interaction, acculturation, and the acquisition of communicative competence: A case study of an adult. In *Sociolinguistics and language acquisition*. Wolfson, N. & Judd, E. (eds.). Rowley: Newbury House, p. 137-174.

Schmidt, R.W. (1990). The role of consciousness in second language learning. In *Applied linguistics*, 11 (2), p. 129-158.

Szcześniak, K. Attention and memory. In *Handbook of cognitive semantics*. Li, Th.F. (ed.). Leiden: Brill. (forthcoming).

Suzuki, Y. & DeKeyser, R. (2017). The interface of explicit and implicit knowledge in a second language: Insights from individual differences in cognitive aptitudes. In *Language learning*, 67 (4), p. 747-790.

Tomasello, M. (2003). *Constructing a language. A usage-based theory of language acquisition*. Cambridge: Harvard University Press.

Taylor, J.R. (2012). *The mental corpus. How language is represented in the mind*. Oxford: Oxford University Press.

Toomer, M. & Elgort, I. (2019). The development of implicit and explicit knowledge of collocations: A conceptual replication and extension of Sonbul and Schmitt (2013). In *Language learning*, 69 (2), p. 405-439.

Uberman, A. (2019). A comparative study of the frame of KNOWLEDGE in English and Polish: Preliminaries. In *Lege artis. Language yesterday, today, tomorrow. The journal of University of SS Cyril and Methodius in Trnava.* Trnava: University of SS Cyril and Methodius in Trnava, IV (1), June 2019, p. 335-372.

Wood, D. (2015). *Fundamentals of formulaic language*. London: Bloomsbury.

Contact data

	*name:*	**Konrad Szcześniak**
	academic title / rank:	dr. hab. (Linguistics) Assistant Professor
	department:	Institute of Linguistics
	institution:	University of Silesia, Sosnowiec, Poland and Faculty of Pedagogy Palacký University Olomouc, Czech Republic
	e-mail:	konrad.szczesniak@upol.cz
	fields of interest:	Cognitive semantics, grammatical constructions, language acquisition, attention.

Resumé

The present paper focuses on the conditions under which new language forms are learned. The main question being asked is whether lexical items can be recorded in memory incidentally, without conscious awareness. In keeping with cognitive linguistic usage-based models of language learning, it is assumed that the acquisition of language relies heavily on the input, the elements of which must be memorized. What is meant by elements of input are any language forms found in input to which learners are exposed. These forms are not only words, but also formulaic expressions. The latter pose

a particular learning challenge as they tend to be not as inherently salient as individual lexical items. Building lexical entries in the mental lexicon is argued to be contingent on unconscious perception sensitive to usage features which are responsible for establishing contrasts between newly learned words and their synonyms which are already known to the learner, in accordance with the Principle of Contrast (Clark 1987). Among the procedures known to run outside conscious awareness is the ability of learners to register recurring elements or what is referred to as repetition detection. In the context of language acquisition and processing, this ability is closely associated with what cognitive authors call sensitivity to frequency effects. For example, the frequency of an expression increases its entrenchment, which translates into benefits in the form of higher processing speeds. These would not be possible without repetition detection which makes it possible to keep track of linguistic encounters. The need for unconscious detection is all the more evident, given that frequency effects occur at all levels of language processing. Apart from sensitivity to recurring word combinations, a learner must also register recurring aspects of meaning, features of context, the speaker's tone and other elements underlying key contrasts between newly learned language forms. All these make the idea of conscious attention as a prerequisite of successful learning rather implausible. Thus, processing formulaic language with all the semantic and pragmatic contrasts that it entails is a challenge to the Noticing Hypothesis (Schmidt 1990; 1994; 1995)

Key words: formulaic expressions, Principle of Contrast, memory traces, Noticing Hypothesis, repetition detection.

Article was received by the editorial board 15.11.2021;
Reviewed 21.02.2022 and 16.03.2022.
Similarity Index 0%