OPEN ACCESS

Vocabulary Learning and Instruction
ISSN 2981-9954
Volume 15 (2026)
https://doi.org/10.29140/vli.2026.103898

Castledown

Rethinking Phrasal Verb Acquisition: Conceptual Metaphor Instruction versus Retrieval Practice

Sam Haugh
Monash University, Australia
samr.haugh@gmail.com

Osamu Takeuchi
Kansai University, Japan
takeuchi@kansai-u.ac.jp

Abstract

Before the introduction of conceptual metaphors, traditional rote memorization tasks were the primary methods for teaching English phrasal verbs (PVs). Verb and particle combinations in idiomatic PVs were considered arbitrary, leaving learners with few options beyond memorizing lists. As a result, learners often avoided PVs in favor of single-word alternatives due to their perceived ambiguity. Research in EFL contexts later explored conceptual metaphors as a means of improving PV acquisition and reported greater effectiveness compared to rote memorization. However, subsequent reviews of the literature found that these results may reflect the inadequacy of traditional tasks rather than the superiority of conceptual metaphors. To address this issue, the present study replaced rote memorization with a more robust vocabulary learning technique: retrieval practice. Eighty-five non-English majors at a Japanese university participated in an online study during the Covid-19 lockdowns. Results revealed no statistically significant difference ($p > .05$) between the conceptual metaphor and retrieval groups, indicating that conceptual metaphors are not the only effective method for facilitating PV acquisition.

Keywords: Phrasal verbs, conceptual metaphors, retrievals, multiword units

Introduction

Phrasal verbs (PVs) are frequently used in everyday communication as an essential part of English, and second language learners must master them to achieve fluency. Gardner and Davies (2007) report that PVs occur approximately once every 192 words—more frequently than common words like "*are*," "*but*," or "*they*" (p. 347). This high frequency means that failure to understand PVs can lead to comprehension problems and unnatural language use (Siyanova & Schmitt, 2007). However, PVs pose unique challenges for learners. They often involve complex features such as separability (e.g., *turn the light off* vs. *turn off the light*), polysemy (e.g., *take off* meaning both to remove clothing and to depart), and idiomatic meanings (e.g., *give up* meaning to surrender). These characteristics make them notoriously difficult for second language learners, and as a result, they are commonly avoided in favor of more literal, single word alternatives (Liao & Fukuya, 2004).

Initially, PV constituents were considered arbitrarily formed and it was believed that the only way to learn PVs was through rote memorization (Al-Otaibi, 2019; Gardner & Davies, 2007). However, cognitive linguistics provides a framework through conceptual metaphors, which reveal systematic meanings behind language and allow learners to understand an abstract concept, such as visibility or emotion, in terms of a more concrete, physical domain. Some of these include ARGUMENT IS WAR, IDEAS ARE OBJECTS, and in the case of PVs, UNCONSCIOUS IS DOWN for *lie down*, GOOD IS UP for *cheer up*, etc. (Lakoff & Johnson, 1980). While conceptual metaphors are useful, they must be carefully applied as PVs are polysemous and require context to be fully understood. Table 1 shows how the particle *up* can be explained through several distinct conceptual metaphors.

As illustrated in Table 1, a single particle can carry several distinct metaphorical meanings. Knowing these conceptual metaphors provides learners with a strategic framework for interpreting previously unencountered PVs, which is particularly valuable given the non-compositional nature of idiomatic PVs (Ganji, 2011; Spring, 2018; Yasuda, 2010). With seemingly no other alternative to deal with PV ambiguity, conceptual metaphor instruction became a preeminent method in PV acquisition research, and several studies have shown that it can outperform traditional approaches, such as rote memorization and trial-and-error tasks (Al-Otaibi, 2019; Ansari, 2016; Gao & Zhang, 2014; Spring, 2018; Yasuda, 2010).

Table 1 *Phrasal Verb Polysemy with the Adverbial Particle 'Up'*

Conceptual metaphor	Polysemous example	Contribution to meaning
ACCESSIBLE IS UP	I needed the original contract, and luckily it turned up in the old filing cabinet.	Information is moved from a hidden state to a state where it is available for use.
MORE VISIBLE IS UP	We were worried they were lost, but the guests finally turned up at the front gate.	Moving from out of sight into the observer's field of vision or awareness.
MORE IS UP	The music was too quiet for the party, so I had to turn up the volume.	An increase in intensity or volume.

In summary, while the literature on conceptual metaphors has grown, Boers (2011) and Haugh (2024) have identified significant methodological caveats. Specifically, they argue that the majority of studies have utilized traditional approaches as control treatments without sufficient justification. This issue extends beyond research focusing solely on conceptual metaphors. For example, while Strong and Boers (2019a, 2019b) used an errorless retrieval method to effectively teach PVs, a significant methodological parallel exists between their work and earlier conceptual metaphor research (Boers, 2011; Haugh, 2024); both utilized fundamentally ineffective control tasks. These contrast tasks, which are usually variations of rote memorization, are widely regarded as inadequate for vocabulary acquisition in general and particularly ineffective for the form-meaning associations required for PV acquisition (Boers, 2011). Consequently, researchers may have inadvertently inflated the perceived effectiveness of their methods by relying on inadequate contrast tasks.

The current study addresses this issue by replacing the traditional rote memorization approach with a more robust alternative, namely the errorless retrieval method used by Strong and Boers (2019a, 2019b). Retrieval practice is widely recognized as a leading technique for transferring vocabulary from short-term to long-term memory and is arguably well-suited for PV acquisition (Barcroft, 2015; Kang, 2016). To compare the two methods, the current study employed a within-subject design to directly examine the efficacy of conceptual metaphor instruction against errorless retrieval, ensuring that individual learner differences were controlled across both conditions. Over a 10-week period, Japanese university students were randomly assigned to either the errorless retrieval or conceptual metaphor method as part of their homework. Furthermore, the study required students to work entirely from home as it was conducted during COVID-19 lockdowns. This setting offered a unique opportunity to evaluate whether these methods could facilitate PV acquisition through autonomous learning, without the benefit of direct interaction or feedback from teachers and peers.

Strong and Boers's Retrieval Method for Phrasal Verb Acquisition

Strong and Boers (2019a, 2019b) introduced an errorless retrieval method that proved effective for acquiring PVs. Their approach ensured learners would not learn incorrect PV combinations, as opposed to trial-and-error tasks. They found that "25% of the incorrect trial-and-error responses were duplicated in the delayed posttest," suggesting that feedback is often insufficient to replace an initial error with the correct form in a learner's memory (pp. 565–566). To achieve this, Strong and Boers (2019a) designed a two-step process. First, learners studied an example dialogue containing the target PV along with its meaning.

Hang out: spend time with friends.	
Speaker A	Hey, Yuki, if you're not busy after work, do you want to hang out?
Speaker B	I'm sorry, Tomoko, but I'm not feeling well today. How about tomorrow?

Next, they completed an exercise where the PV appeared in a similar dialogue but with the particle omitted. Because learners had just encountered the PV in a similar example, they were able to retrieve it accurately, ensuring an errorless retrieval process.

Speaker A	Hi, Toko. What are you doing tomorrow? Do you want to hang ___?
Speaker B	I would love to, but I have to stay home and clear my room. Sorry.

Note. From Strong and Boers (2019a, p. 300).

Errorless retrieval ensures that learners acquire accurate verb–particle pairings from the outset, reducing uncertainty and promoting confidence in PV usage (Haugh & Takeuchi, 2023; Liao & Fukuya, 2004; Strong & Boers, 2019a, 2019b). Moreover, as shown by Haugh & Takeuchi (2023), learners are able to acquire PVs without knowing the underlying meanings behind PV particles, suggesting that semantic support is not always necessary for successful acquisition.

However, applying retrieval practice to PV acquisition presents a challenge: learners are not exposed to the underlying meanings of PV particles as they are with conceptual metaphors. This lack of semantic support can perpetuate ambiguity, which is a commonly cited reason for PV avoidance (Becker, 2014; Kim, 2016; Liao & Fukuya, 2004; Yasuda, 2010). For adult learners, there is a tendency to translate words one by one, which causes confusion when encountering non-compositional PVs. This is particularly relevant for Japanese EFL learners, as Japanese typically conflates direction in verbs as a verb-framed language, whereas English as a satellite-framed language relies on prepositions and adverbial particles (Spring & Horie, 2013).

Advantages of Conceptual Metaphors

For idiomatic language such as PVs, conceptual metaphors enable deep cognitive processing through image schemas and dual-coding, as meaning is conveyed both visually and verbally (Li & Tong, 2019). This framework suggests that PV particles are not arbitrary but can be classified under a manageable number of meaning senses. For example, the particle *up* commonly carries a sense of completion, as seen in *eat up*, *clean up*, and *dry up*. While this connection may initially appear homonymous to L2 learners, cognitive linguistics posits that the completion sense is metaphorically motivated by the prototypical sense of upward motion, grounded in our embodied experience of the physical world (Kövecses, 2008). This is often described through the image schema of a vertical scale or container: as an activity progresses toward its limit or fullness, the level rises until it reaches the top, giving rise to conceptual metaphors such as COMPLETION IS UP.

By making these semantic relationships explicit, instructors can help learners move beyond treating PV meanings as independent, unrelated entries and instead build connections in their mental lexicon (Kohl-Dietrich, 2019; Spring, 2018). Similarly, the particle *out* can signify searching or discovery in PVs such as *figure out* and *find out*, a sense motivated by the container schema, where *out* represents the movement of information from a hidden, internal space into a public, external space. This also allows learners to apply the conceptual meaning learned for one particle to PVs they have never encountered before. For example, learning the conceptual metaphor START IS OFF improves the likelihood that learners can interpret previously unencountered PVs such as *get off*, *kick off*, *set off*, and *tee off* (Ganji, 2011). The connections found between PVs of the same conceptual domain can serve as "a mapping sequence where

the target of a first metaphoric mapping becomes the source of a subsequent metaphor" (Kang, 2021, p. 174), which has been shown to be an effective strategy for dealing with non-compositional PVs (Ganji, 2011; Spring, 2018; Yasuda, 2010). Furthermore, the dual-coding of form and meaning found within conceptual metaphors is often accompanied by elaboration from the teacher through stories, images, or examples, which can spur discussion and further enhance acquisition (Li & Tong, 2019; Nassaji & Tian, 2010; Yasuda, 2010).

Despite these advantages, the conceptual metaphor method carries some pedagogical limitations. By explicitly focusing on the adverbial particle, learners may be encouraged to examine PVs as individual components rather than acquiring them as multiword units. Furthermore, adult EFL learners often draw on their developed cognitive abilities to dissect language analytically, a process that can impede the acquisition of multiword units (Christiansen & Arnon, 2017; Wray, 2002). Because PVs function as multiword units, it is essential that the verb and particle are stored together in the mental lexicon so they can be recalled as a single linguistic unit. Learners who fail to do so risk increased cognitive load and reduced fluency (Cappelle et al., 2010; Wray, 2002; Yun, 2021). Furthermore, the necessity of metaphoric awareness has been debated, and Haugh and Takeuchi (2023) found that learners are capable of acquiring PVs without knowledge of their underlying conceptual metaphors. In fact, many learners acquire PVs naturally through exposure due to their high frequency (Siyanova & Schmitt, 2007). Nonetheless, the utility of conceptual metaphors is undeniable in that they are the only method capable of addressing PVs and their underlying metaphorical meanings. However, as they do not appear to be entirely necessary to learn PVs, their purpose may be more of a facilitative tool that can supplement the acquisition process (Condon, 2008; Yasuda, 2010).

Aims of the Current Investigation

The literature on PV acquisition has tended to rely on ineffective traditional methods, such as rote memorization and trial-and-error as contrasting tasks (Boers, 2011; Haugh, 2024). As a result, it is difficult to gauge how effective conceptual metaphors and retrievals are given the design of previous investigations. The current study addresses this gap by replacing the traditional rote-learning control with the errorless retrieval method established by Strong and Boers (2019a, 2019b), which offers similarly effective pedagogical mechanisms to conceptual metaphors, albeit through different means. Lastly, as the study was conducted entirely online and required autonomous engagement over 10 weeks, attrition with each method was also investigated. The study addressed the following research questions:

1. Are there any differences in attrition between the two methods?
2. How effective are conceptual metaphors compared to retrieval practice for PV acquisition?

Method

Participants and Teaching Environment

The study was conducted among two intermediate and two pre-intermediate EFL classes at a Japanese university. The students (N = 85) were non-English majors who

were taking an elective English course twice a week. The ethics committee determined that the study did not require specific approval or consent, as it was solely observational and focused on existing curricular materials. Due to COVID-19, however, these classes were conducted entirely online (asynchronous online classes with a pre-recorded video after which students completed tasks) which allowed for the randomization of treatment groups within each class. The homework section of the class, which was incorporated into Google Forms was used for this study and was unrelated to the on-demand content; that is, the course textbook did not include PVs. In contrast to in-person classes, the online homework task required students to work by themselves, which was a particular point of interest for the conceptual metaphor group as discussion and negotiation of meaning are often mentioned as a component in conceptual metaphor studies (Li & Tong, 2019; Nassaji & Tian 2010). Farsani et al. (2012) considered this aspect of the process "indispensable" (p. 505) as task collaboration can generate constructive discussions around form and meaning. "In the process of elaboration, students are required to use mental simulation to enhance new information acquisition, understanding, interpretation, and memorization" (Li & Tong, 2019, p. 5). On the other hand, the need for negotiation or collaboration is not critical for retrieval practice. In fact, it is often touted as an effective method when studying individually with flashcards (Nation, 2013). Considering the above, it was hypothesized that attrition may be an issue for the conceptual metaphor group as retrievals are more simplified and straightforward.

Target PVs and Procedure

At the beginning of the semester, all students completed a level check consisting of 30 general English questions and 15 PV questions to identify the most difficult items for the treatments. Although the general English questions were identical across classes, four versions of the PV questions were created and randomly distributed to ensure that participants did not encounter all target PVs before the treatments began, reducing the likelihood of a testing effect. The known percentage for each PV is reported in Table A1 (see Appendix). The PVs were drawn from Tono (2019), a textbook that uses cognitive linguistic illustrations to explain PVs. Image-schema and conceptual metaphor explanations were adapted from this source and cross-referenced with the PHrasal VErb Pedagogical List (PHaVE List) (Garnier & Schmitt, 2015) to exclude high-frequency PVs and minimize prior knowledge. Based on the level check, the 40 most difficult PVs were selected for treatment and distributed across an eight-week schedule, ensuring an even representation of particles (*up*, *out*, *down*, and *in*). Scores for these 40 PVs were aggregated to establish a pre-test benchmark to track improvements.

On Google Forms, the target PVs, example sentences with Japanese translations, and imagery from Tono (2019) were adapted for each method. For the retrieval task, the procedure closely followed Strong and Boers (2019a, 2019b). First, the target PV was introduced alongside a Japanese translation. Then, an example conversation with a blank was shown and participants had to type in their answer. Underneath this was a Japanese translation of the entire conversation with the target answer highlighted in red. This structure was designed to minimize failure and facilitate errorless retrieval from the outset. It is worth noting that Strong and Boers (2019a, 2019b) only required participants to fill in the particle; however, the current study had both the verb and particle blanked out,

as this was considered best pedagogical practice to encourage recall of PVs as multiword units. Imagery from Tono (2019) was not used for the retrieval materials.

The conceptual metaphor method was based on the work of Spring (2018) and Yasuda (2010). In both studies, checklists were used to convey the meanings of conceptual metaphors, and a similar approach was adopted. First, as particles were studied in sets, the particle and some of its associated conceptual metaphors were introduced (for example, LESS IS DOWN, DEPRAVITY IS DOWN, etc.). The same example materials from the retrieval task were then used; however, imagery was included and there was no blank to fill in. Instead, learners had to choose which conceptual metaphor from a list was represented in the example conversation containing the target PV.

While five new PVs were introduced each week, previously studied PVs were also presented for review to facilitate consecutive retrievals, a typical practice associated with the retrieval method (Nation, 2013). Similarly, each conceptual metaphor question was reviewed the following week. This meant that the final week included a considerable workload as all previously studied PVs were reviewed. Fundamentally, this process gave the conceptual metaphor group an advantageous retrieval-like effect, but it would have been unfair to restrict this opportunity to only the retrieval group.

The homework task was framed as an opportunity for students to explore the benefits of retrieval practice by tracking how many PVs they could remember through a consistent weekly commitment of 30 minutes. Participants were encouraged to set aside a regular day each week to engage with the material and were informed that the final test was a low-stakes observation with no impact on their formal academic grades.

Finally, the treatment schedule (Table 2) was originally designed as a repeated-measures, within-participant study, allowing students to switch methods after the first

Table 2 *Treatment Schedule*

	Group A Retrievals (Contrast) Group B Conceptual Metaphors (Experiment)				Group A Conceptual Metaphors (Experiment) Group B Retrievals (Contrast)		
Treatment #1	Week 1	Build up Come up Held up	Pick up Take up	Treatment #2**	Week 6	Bring down Get down Go down	Put down Take down
	Week 2	Stand up* Blow up* Go up	Make up* Set up*		Week 7	Break down Come down Run down	Set down Settle down
	Week 3	Bring out Work out Get out*	Lay out Play out		Week 8	Bring in Built in Put in	Step in Take in
	Week 4	Hold out Speak out Wipe out	Turn out Carry out*		Week 9	Break in Come in Move in	Throw in Turn in
	Week 5	Post-test			Week 10	Post-test	

Note. *Removed due to compositionality issues.

** Data were not used as easing of COVID-19 restrictions reduced participant numbers dramatically.

post-test. However, due to pandemic-related disruptions, the analysis focused only on data from participants in Treatment #1 (n = 59). Future research may benefit from replicating this design under stable conditions, as comparing performance after switching methods could provide valuable insights. Although 40 PVs were initially selected, 26 items were excluded from the final analysis, leaving 14 items for analysis. Some of these lacked a clear conceptual metaphor or associated image schema, while others were excluded as the easing of COVID-19 restrictions confounded the results.

Results

Research Question 1

Due to the online nature of the study and the 10-week timeframe, participant attrition was a primary concern, particularly given that autonomous learning requires a high degree of self-motivation (Kormos & Csizér, 2014). In longitudinal L2 research, sustaining participation is critical, but can vary across treatment methods, which was key to examine in this study (Dörnyei, 2007). Because conceptual metaphors can be cognitively demanding and often require teacher-led conceptual explanations in a classroom setting, it was hypothesized that there may be different attrition rates between the methods if one proved more taxing on a learner's self-motivation. However, a chi-squared test showed that there was no significant association between the two methods and attrition rates of the groups ($\chi 2(1) = 1.19$, $p = .276$, $\varphi = .05$).

Table 3 *Attrition Rate*

Group	No. of participants	Sessions missed	Sessions completed	Average completed sessions
Conceptual metaphors	41	44	161	3.80
Retrievals	44	48	172	4.02

Despite the conceptual metaphor task being seemingly more cognitively demanding, participation was relatively high over the five-week period, with participants missing approximately one session on average regardless of method, as shown in Table 3. However, students who were absent for week 4, missed more than two sessions in total, or failed to complete the post-test were excluded from the analysis, reducing the number of participants from 85 to 59. Week 4 was critical as it was the final opportunity for students to learn the last set of target PVs and review all previously studied items before the post-test in week 5. As mentioned previously, attrition was not calculated for the second treatment as the easing of COVID-19 restrictions and return to face-to-face classes reduced participation dramatically.

Research Question 2

Based on the four versions of the pre-test, the least known PVs were selected as stimuli for the treatments. Participants correctly identified an average of 7% of the 14 target PVs, indicating very limited prior knowledge, and each participant was given

Table 4 *Post-test Scores*

Level	Method	Mean [95% CI]	Std. deviation	Improvement from baseline	N
Intermediate	Conceptual metaphor	6.22 [3.20, 9.24]	3.93	44%	9
	Retrieval	7.11 [5.16, 9.06]	3.91	51%	18
	Total	6.81 [5.29, 8.33]	3.86	49%	27
Pre-intermediate	Conceptual metaphor	5.94 [3.82, 8.06]	3.97	42%	16
	Retrieval	7.31 [5.19, 9.43]	3.98	52%	16
	Total	6.63 [5.20, 8.06]	3.97	47%	32
Total	Conceptual metaphor	6.04 [4.44, 7.64]	3.88	43%	25
	Retrieval	7.21 [5.85, 8.57]	3.88	52%	34
	Total	6.71 [5.69, 7.73]	3.89	48%	59

Note. The maximum score for the post-test was 14.

a baseline starting score of 1 to account for chance performance. As shown in Table 4, both methods were effective for PV acquisition, though there was little difference between the two treatments. For the intermediate group, the difference in means between the two methods was only .2, while for the pre-intermediate group, a slightly larger difference was observed, with the retrieval method outperforming the conceptual metaphor method by 1.8.

A three-way mixed ANOVA was run to examine the effects of method, student level, and time on PV scores. No significant three-way interaction was observed, $F(1, 55) = 0.052$, $p = .821$, partial $\eta^2 = .001$, and all two-way interactions were also non-significant ($p > .05$). However, a robust main effect for time was observed, $F(1, 55) = 155.37$, $p < .001$, partial $\eta^2 = .739$, reflecting a significant improvement from pre- to post-treatment scores. This result was largely due to the selection of the 40 most difficult PVs, which ensured a low baseline pre-test score of 1 for all participants. While it may seem unnecessary to highlight statistical significance here, Boers (2011) noted that some studies reported significance for their experimental method simply because the contrast method performed worse on the post-test than on the pre-test. This was not the case in the current study; as shown in Table 4, both methods facilitated meaningful improvements, with a 43% increase for the conceptual metaphor group and a 52% increase for the retrieval group.

Discussion

As previous research had established that traditional approaches such as rote memorization and trial-and-error were inadequate for PV acquisition, how effective conceptual metaphors were compared to a more robust method warranted further investigation (Boers, 2011; Haugh, 2024). In the current study, the traditional rote memorization task was replaced with a well-established and effective vocabulary acquisition method: retrieval practice (Nation, 2013). The findings revealed that the

retrieval group performed just as effectively as the conceptual metaphor group, suggesting that retrieval practice is a viable alternative to conceptual metaphor instruction for PV acquisition. Future research should explore the benefits of both methods further, as well as other approaches that may prove effective. For example, Mall-Amiri et al. (2017) found that visual and auditory input enhancement were effective for PV acquisition when contrasted against rote memorization.

The finding that retrieval practice performed comparably to conceptual metaphor instruction can be explained by considering the distinct mechanisms through which each method facilitates PV acquisition. Conceptual metaphors provide learners with a principled framework for understanding the underlying meanings of PV particles, which can reduce ambiguity and support form-meaning encoding (Kövecses, 2008; Lakoff & Johnson, 1980). Retrieval practice, on the other hand, is a well-established technique for vocabulary acquisition, with its effectiveness lying in its capacity to transfer lexical items from short-term to long-term memory through repeated recall (Nation, 2013; Barcroft, 2015). Specifically, the errorless retrieval method ensures that learners do not commit incorrect verb-particle combinations to memory, facilitating accurate encoding from the outset (Strong & Boers, 2019a, 2019b). Furthermore, the cumulative review structure of the study provided both groups with repeated retrieval opportunities, which are known to strengthen lexical representations in the mental lexicon (Kang, 2016). This retrieval-like effect, available to both groups, may have attenuated any advantage that the conceptual metaphor group might otherwise have had. Finally, both methods required learners to engage with PVs as multiword units, which is essential for their accurate storage and retrieval from the mental lexicon (Wray, 2002), and may have contributed to the comparable outcomes observed.

Regarding attrition, contrary to initial expectations that conceptual metaphor instruction might be too overwhelming for students without teacher input, no differences between methods were observed. This suggests that both methods could be employed outside the classroom and that learners are capable of acquiring PVs autonomously. In previous studies, the teacher's role has been central to conveying the underlying meanings of PV particles through conceptual metaphors, a process that can be cognitively demanding and time-consuming (Al-Otaibi, 2019; Ansari, 2016; Farsani et al., 2012; Ganji, 2011; Gao & Zhang, 2014; Spring, 2018; Talebinezhad & Farhadian, 2014; Yasuda, 2010). The results of the current study suggest that carefully designed materials can facilitate this process autonomously, without direct teacher involvement.

Limitations and Conclusion

The online nature of the study came with several limitations. First, it was difficult to monitor how participants engaged with the assigned tasks, and it remains possible that some students bypassed the conceptual metaphor discussion and relied on their own preferred memorization strategies instead. Feedback indicating the correct conceptual metaphor for each question was provided alongside a score to encourage adherence to the procedure; however, compliance could not be fully verified. Furthermore, the conceptual metaphor method is typically accompanied by opportunities for negotiation of meaning, as learners work to decipher the idiomatic language of PVs (Farsani et al.,

2012; Li & Tong, 2019; Nassaji & Tian, 2010). These collaborative opportunities were not possible in the online environment, and future studies should replicate this design in a classroom setting to investigate the impact of discussion and teacher explanation on the conceptual metaphor method. Additionally, the exclusion criteria permitted participants to miss up to two sessions before being removed from the analysis. While this decision was made to retain an adequate sample size, it represents a methodological limitation as some participants may not have received the full treatment, potentially affecting the reliability of the results.

Finally, the study offers insight into the effectiveness of both methods among Japanese EFL learners in an online environment. Building on the observations of Boers (2011) and Haugh (2024), future studies should continue to explore knowledge gaps regarding PVs, conceptual metaphors, and retrieval practice. The results of the current study revealed no significant difference between methods, suggesting that conceptual metaphors may not be inherently superior in facilitating PV acquisition.

Funding

This study received no funding.

Disclosure statement

The authors report there are no competing interests to declare.

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Appendix

Table A1 *Ranking of the Phrasal Verbs According to Difficulty*

No.	Contextualized PV	Known %	No.	Contextualized PV	Known %
1.	Stand up for freedom.	0%	31.	Set someone up.	14%
2.	Put in the effort to do.	0%	32.	Bring down the price.	15%
3.	The chip is already built in.	0%	33.	Put me down.	15%
4.	Be taken in.	0%	34.	Call in sick.	18%
5.	Traffic builds up.	0%	35.	Get down to business.	18%
6.	Blow up for his mistakes.	0%	36.	Take down the plane.	19%
7.	The airplane is held up.	4%	37.	Give in to threats.	19%
8.	Bring a new album out.	4%	38.	Follow up on the case.	21%
9.	I can't work him out.	4%	39.	Carry out the merger.	22%
10.	Get someone out to the hospital	4%	40.	Time is running out.	26%
11.	Be laid out in the contract.	4%	41.	Snow comes down.	29%
12.	How things play out.	4%	42.	Settle down and start a family.	29%
13.	Supplies do not hold out.	4%	43.	Break down in tears.	33%
14.	Bring in experts.	5%	44.	Keep up the good work.	33%
15.	Step in to provide help.	5%	45.	Bring up another topic.	36%
16.	Get a DVD player thrown in.	5%	46.	Set the sofa down.	36%
17.	Turn in a fine performance.	5%	47.	Run down the battery.	37%
18.	Pick up from where we left off.	5%	48.	Put up with the situation.	39%
19.	Come in first.	7%	49.	I have to drop out.	39%
20.	Speak out against nuclear power.	7%	50.	Leave anyone out.	39%
21.	Move in with someone.	10%	51.	The ship goes down.	39%
22.	One's weight goes up.	10%	52.	Turn down the proposal.	39%
23.	Take up jogging.	10%	53.	Shut down his factory.	44%
24.	Something has come up.	11%	54.	The dress stands out.	46%
25.	Make up a large percentage of a population.	11%	55.	Join in the conversation.	48%
26.	Wipe out the entire village.	11%	56.	Let's just calm down.	56%
27.	Bring down the ceiling.	11%	57.	War breaks out.	56%
28.	Break in shoes.	14%	58.	Fill in an emotional gap.	57%
29.	Fit in with others.	14%	59.	Turn down the volume.	67%
30.	Turn out well.	14%	60.	Turn up the volume.	71%