

Tanulmány

Tamari Narimanishvili

An Overview of Research Methodologies for Metaphor Identification:

A Case Study of the Georgian EFL Essay Corpus

Abstract

This paper provides a compact overview of several linguistic metaphor identification methodologies, including MIV, MIP, and MIPVU. It offers a comparative analysis of their frameworks and applications in prior studies. The evaluation of these methodologies involves delving into their underlying principles and highlighting their respective advantages and weaknesses in terms of accuracy, practicality, and applicability for different research questions. Moreover, by presenting a case study based on a Georgian EFL essay corpus, the paper reveals the nuanced nature and challenges of identifying metaphors in learner English. The study concludes with a brief discussion of limitations and suggests directions for future research in metaphor identification. By analyzing different approaches, this paper aims to guide researchers in selecting strategies that closely align with their specific research objectives and ensure optimal metaphor identification in L2 contexts.

Keywords: metaphor identification, written discourse, L2 research, learner English

1 Introduction

Metaphor stands out as a fundamental concept in cognitive linguistics, with its origins reaching back to Aristotle's theories. Aristotle emphasizes that a successful rhetorical metaphor seamlessly incorporates elements of precision, eloquence, and a touch of novelty, portraying it as a detachable poetic embellishment and a decorative feature of language (Aristotle 1965: 61–63). However, in 1980, Lakoff and Johnson introduced an alternative viewpoint on metaphor, suggesting that it pervades various aspects of our daily existence, extends beyond language, and constitutes our thought processes and actions (Lakoff & Johnson 1980: 3–4). According to Conceptual Metaphor Theory, a conceptual metaphor involves the association between two semantic concepts within our cognition, wherein a familiar and concrete SOURCE domain is mapped onto a more complex and abstract TARGET domain (Lakoff & Johnson 1980: 4–5). For example, TIME IS MONEY stands out as one of the most prevalent conceptual metaphors, illustrating the value of *time* by drawing on the more tangible concept of *money* (Lakoff & Johnson 1980: 7–8). Conceptual metaphors are conveyed in language through linguistic metaphors; for instance, the conceptual metaphor TIME IS MONEY finds expression in phrases like *You're wasting my time* or *How do you spend your time these days?* (Lakoff & Johnson

1980: 7–8). This paper specifically focuses on linguistic metaphors, exploring their identification within language production and underscoring their significance in EFL¹ studies.

In recent years, metaphor identification methodologies have become integral to the analysis of figurative language, particularly in EFL studies that focus on production. Within L2 research, they are essential for several reasons. Firstly, they allow for the exploration of unique figurative language patterns used by learners. Secondly, they facilitate cross-linguistic investigations, revealing how metaphor functions across different languages. Importantly, metaphor identification also enables researchers to analyze and address potential areas where L1 influence might lead to metaphorical errors in learner English. Overall, these methodologies contribute to a deeper understanding of the complex processes involved in figurative language production in L2 contexts.

This survey paper aims to provide a compact overview of existing linguistic metaphor identification procedures and evaluate their effectiveness in analyzing written discourse. The focus is on methodological considerations when analyzing learner corpora, with suggested approaches for future studies. The content is organized as follows: Section 2 reviews and compares three major methodologies for metaphor identification. Additionally, it explores how different methodologies can be combined to enhance the effectiveness of metaphor identification. Section 3 examines the nuanced nature of identifying metaphors in learner English, exemplified by a case study of a Georgian EFL argumentative essay corpus. Section 4 concludes the paper.

2 Methodologies for metaphor identification

2.1 MIV

Cameron (2003) is recognized as one of the early scholars who developed a metaphor identification procedure, specifically the Metaphor Identification through Vehicle terms (MIV), which focuses on identifying linguistic metaphors by placing emphasis on the presence of a distinct Vehicle term. A Vehicle term can be defined as a distinctive word or phrase within a discourse that deviates noticeably from the surrounding language, displaying characteristics of incongruity or anomaly (Cameron 2003: 59). In essence, the Vehicle term serves as the realization of the source domain of a potential metaphor (Cameron 2007: 132). The MIV procedure involves two essential steps: firstly, identifying potential Vehicle terms, and secondly, establishing meaningful connections between these Vehicle terms and the topic domain, which constitutes the subject or content under discussion in a given discourse (Cameron 2003: 59–60). In Cameron's (2003: 3) example sentence *The atmosphere is the blanket of gases that surrounds the earth*, the vehicle term is *blanket* because it metaphorically conveys the idea of the atmosphere providing extensive protection and coverage, making the abstract concept more tangible. An additional essential requirement for identifying metaphor is that the incongruity arising from the Vehicle term must be resolved through a transfer of meaning to the discourse's main topic, involving forms such as conceptual blending, interaction, or comparison (Cameron 2003: 60). Cameron (2003: 62–63) recommends enhancing the initial step of establishing conditions for Vehicle incongruity and meaning transfer by incorporating various

¹ English as a Foreign Language

sources of evidence and inter-rater procedures, including the analyst's knowledge of language and context, linguistic evidence from extensive English corpora, and consultation of *The Cobuild Dictionary* to assess the relative frequency of various senses of Vehicle terms.

As Cameron (2003: 68) notes, the identification of metaphors could be influenced by the presence of other metaphors. For instance, the word *way* is considered metaphorical when used alongside strongly metaphorical terms related to the domains of *travelling* and *distance*, such as the occurrences of *arrive at* and *stop in* (Cameron 2003: 68). This determination relies on activating a *journey* schema in the linguistic context, where meaning extends across the discourse, transforming a typically non-figurative word like *way* into a metaphor, while isolated uses without such context are excluded from identified metaphors (Cameron 2003: 68–69).

Ultimately, Cameron (2003: 74) categorizes metaphors into five subtypes: strong metaphors that were acknowledged by all analysts, e.g. *Juliet is the sun*; technical metaphors that use everyday language to explain specific concepts in a particular field, e.g. *the heart relaxes*; animating metaphors that attribute human-like qualities or actions to non-animate entities, e.g. *minerals that come out of rocks*; metaphors of different grammatical forms such as preposition metaphors, e.g. *getting through this book*; and comparison metaphors, e.g. *the rock becomes like sticky treacle*.

These subcategories are useful for exploring the nature of metaphorical expressions and examining how various forms of metaphors are distributed within a discourse. Analyzing their form involves evaluating the length and word class of the Vehicle terms. For example, comparing the frequency of single-noun vehicle terms with noun phrase vehicle terms. Moreover, identifying the most and least utilized word classes in Vehicle terms provides valuable insights for a comprehensive analysis. In a similar vein, Cameron (2003: 51–53) analyzed spoken classroom discourse data from native English-speaking primary school students. This analysis resulted in a transcription of 27 thousand words. Upon categorizing Vehicle terms by form, she found that metaphors utilizing prepositions as Vehicle terms were the most prevalent, followed by metaphors containing single verbs and phrasal verbs (Cameron 2003: 88).

However, the MIV procedure's emphasis on a Vehicle term identification presents challenges. While effective for identifying conventional metaphors signaled by anomalous words or phrases, this approach can sometimes overlook less obvious metaphorical mappings. Metaphors might be delicately embedded within a sentence or emerge from the interplay of multiple words, rather than residing solely within a Vehicle term. This limitation can prevent the discovery of novel metaphorical patterns and the nuanced ways in which metaphors shape meaning, compromising the depth and accuracy of analysis.

2.2 MIP

As outlined by the Pragglejaz Group (2007: 2), limitations in existing metaphor identification methodologies led to a need for a user-friendly and adaptable approach for analysing linguistic metaphors in natural texts. They noted that the MIV procedure encountered several identification issues, with a notable challenge arising from the emphasis on Vehicle terms rather than individual metaphorically used words (Pragglejaz Group 2007: 33). Moreover, the diversity in analysts' intuitions and the lack of clarity in defining what constitutes a metaphor posed challenges in comparing diverse research studies that analysed metaphors (Pragglejaz Group 2007: 2). To tackle these problems, the Pragglejaz Group (2007: 3) developed the

Metaphor Identification Procedure (MIP), which can be considered as offering a reliable research method for determining whether words in certain contexts convey metaphorical meaning by following four procedural steps:

1. Read the entire text to acquire a thorough understanding.
2. Identify each lexical unit within the text. (It can be carried out with the help of an automatic annotation procedure for part-of-speech tagging.)
3.
 - a. Determine contextual meanings for each lexical unit by considering how they apply to the broader context and surrounding text.
 - b. Evaluate each lexical unit to determine if it has a more basic meaning, often characterized by being more concrete, related to bodily action, historically older, or more precise. Note that these basic meanings may not align with the most frequent interpretation of the lexical unit.
 - c. Does the lexical unit have a more basic meaning in other contexts? If so, assess whether its contextual meaning contrasts with the basic one but is understandable through comparison.
4. If the answer to 3c is affirmative, categorize the lexical unit as metaphorical (Pragglejaz Group 2007: 3).

The application of MIP identifies only one category of metaphor, namely, indirect metaphor. This prevalent type of metaphor emerges when a word's contextual meaning deviates from its more basic sense (Steen et al. 2010: 6). Nevertheless, MIP is valuable in assisting researchers with various inquiries, such as determining the frequency of metaphorical expressions and identifying patterns within metaphorical clusters in diverse discourse contexts (Pragglejaz Group 2007: 34–35). While it proves effective in formal and contemporary standard written English contexts, careful consideration and validation are essential when applying it to spoken corpora and non-standard varieties of English (Pragglejaz Group 2007: 23). In spoken corpora, if a word is partially spoken and transcribed as a fragment, researchers may deduce the intended complete word from context; however, whether to categorize it as a lexical unit remains unspecified, underscoring the importance of researchers clearly detailing their approach in their study (Pragglejaz Group 2007: 23). Moreover, effectively establishing the basic and contextual meaning of a lexical unit involves taking into account various factors, including stylistic nuances, dialectal variations, as well as historical and geographical distinctions (Pragglejaz Group 2007: 23–24).

Beyond discourse type, the size of the database presents a substantial challenge for MIP. While Step 1 suggests reading the entire text for a thorough understanding, it lacks guidance on handling longer texts that may be impractical to read completely. In practice, researchers often adapt by focusing on relevant sections or key passages, aiming to find a balance between comprehension and the extensive content. The subsequent steps are significantly time-consuming, involving a meticulous word-by-word analysis of the text to identify metaphors, with the primary solution being an increase in the number of analysts. Recognizing the intricacy of metaphor identification, especially with MIP, the Pragglejaz Group (2007: 36) recommends a meticulous approach, cautioning analysts against premature conclusions and suggesting conducting metaphor identifications with at least two separate passes on different days.

2.3 Combination of MIV and MIP

To address specific research questions effectively, researchers can combine different metaphor identification procedures, as demonstrated by Chapetón-Castro & Verdaguer-Clavera (2012), who integrated both MIV and MIP in their study. The authors aimed to compare the use of metaphor in three types of texts: essays composed by Spanish learners of English, essays authored by native speakers of English, and editorials written by expert English writers (Chapetón-Castro & Verdaguer-Clavera 2012: 151). Initially, four raters utilized the MIV procedure to identify instances of metaphors by examining Vehicle terms in the texts. The selection of the MIV procedure was influenced by the need for time efficiency, especially since this method does not necessitate analyzing each lexical unit individually. Instead, it involves identifying Vehicle terms, i.e. words that appear unusual in a given context (Chapetón-Castro & Verdaguer-Clavera 2012: 153–154). However, the presence of unresolved cases with disagreements among raters necessitated further investigation, leading to the application of the MIP procedure to previously identified questionable Vehicle terms. Specifically utilizing steps 3 and 4 of the MIP procedure, the contextual and basic meanings of Vehicle terms were clarified, and in cases of contrast between these meanings, the Vehicle term was marked as metaphorical. The authors believe that merging the MIV and MIP procedures for metaphor identification proved to be a reliable approach for confirming raters' intuitions and addressing points of disagreement (Chapetón-Castro & Verdaguer-Clavera 2012: 169). The aforementioned integration of MIV and MIP procedures can improve time efficiency by avoiding the individual analysis of each lexical item, instead focusing on detecting Vehicle terms. Due to MIV's dependence on raters' intuitions, the engagement of multiple inter-raters is essential to ensure the validity of the results. However, in cases where only one or two raters are involved in the research, opting for the MIP procedure proves more reliable, as it enables systematic decision-making based on dictionary sense comparison for every lexical item.

2.4 MIPVU

Steen et al. (2010) introduced the Metaphor Identification Procedure Vrije University (MIPVU), which builds upon the core of MIP while incorporating significant improvements and modifications in the determination of various metaphor types. The authors of MIPVU acknowledged that MIP had a limited capability to identify solely indirect metaphors, overlooking other linguistic forms, specifically direct and implicit metaphors (Steen et al. 2010: 25–26).

A direct metaphor, which includes similes, analogies, and other non-literal comparisons, expresses figurative ideas directly in language without introducing a contrast between the contextual meaning and a more fundamental, non-metaphorical sense (Steen et al. 2010: 57–58). For instance, in the sentence *He's like a favorite old coat*, MIP would not categorize *coat* as a metaphor. However, MIPVU, by defining metaphors at the conceptual level rather than the linguistic level, allows for recognizing *coat* as a direct metaphor (Steen et al. 2010: 93–94). Therefore, introducing the unconventional domain of *coat* to describe a person's traits points to an instance of conceptual metaphor mapping.

A further type of metaphor that MIPVU can identify is implicit metaphor, encompassing anaphoric cohesive elements like ellipsis or third-person pronouns that refer to words that are themselves metaphorical (Steen et al. 2010: 39–40). For instance, the pronoun *it* serves as an implicit metaphor in the sentence *Naturally, to embark on such a step is not necessarily to*

succeed immediately in realizing it, as it substitutes for the word *step*, which is a metaphorical word itself (Steen et al. 2010: 39).

Hence, MIPVU integrated extra steps to identify these additional forms of metaphors and adopted a broader term, Metaphor-Related Word (MRW), to encompass a broader range of metaphorical expressions. Steen et al. (2019: 23–24) provide a comprehensive insight into the systematic procedure employed in MIPVU, illustrating the following six basic steps of the method.

1. Identify MRWs by examining each word in the text individually.
2. If a word is employed indirectly, and its usage can be traced back to a cross-domain mapping from a more basic meaning of the word to its contextual meaning, label the word as an indirect MRW.
3. If a word is employed directly, and its usage can possibly be clarified through cross-domain mapping to a more basic entity or theme in the text, label the word as a direct MRW.
4. Label words as implicit MRWs when they are used for replacement within the lexical or grammatical structure, such as third-person personal pronouns or ellipses, conveying direct or indirect meaning that could be clarified through cross-domain mapping.
5. Designate a word as a metaphor flag when it serves as a signal that there might be a cross-domain mapping involved.
6. When a word constitutes a novel formation without a corresponding dictionary entry, examine its individual components as distinct words in accordance with the aforementioned steps (Steen et al. 2010: 25–26).

MIPVU marks indirect MRWs similarly to MIP, with minor adjustments in determining the basic and contextual meaning of the word. Since basic and contextual senses are extracted from the dictionary entries assigned to the word in question, both MIP and MIPVU suggest employing the *Macmillan English Dictionary for Advanced Learners* as the primary reference, while MIPVU adds the *Longman Dictionary of Contemporary English* as a backup source (Steen et al. 2019: 35). Moreover, in MIPVU, the basic and contextual senses are considered sufficiently distinct if they are found in separately numbered sense descriptions within the same grammatical category in the dictionary (Steen et al. 2019: 35).

Additionally, MIPVU has introduced three new metaphor tags: WIDLII (When In Doubt, Leave It In) for ambiguous words capable of both metaphoric and non-metaphoric interpretations; DFMA (Discarded For Metaphor Analysis) for instances where units are incomplete, lacking sufficient contextual knowledge for precise meaning determination; and PP (Possible Personification) capturing personification cases, such as *This essay argues* or *The White House says* (Steen et al. 2010: 33–34, 103).

Steen et al. (2019: 25–30) illustrate the guidelines of MIPVU using the VU Amsterdam Metaphor Corpus Online² (VUAMC), which contains a selection of excerpts from BNC-Baby³ corpus files annotated for metaphor by the creators of MIPVU. Since VUAMC contains approximately 190,000 lexical units annotated for metaphor, researchers can utilize it as a

² <http://www.vismet.org/metcor/about.html>

³ A subset of the British National Corpus.

valuable guide when annotating their own corpora, especially in cases where determining the metaphoricity of certain lexical units proves challenging.

While the MIPVU protocol aims to simplify metaphor identification with its step-by-step system, Nacey et al. (2019: 41) argue that the process is more complex than it appears. For new researchers, the core challenges of metaphor identification often lie in breaking down text into lexical units, establishing their basic meanings, and then comparing those meanings with their contextual sense (Nacey et al. 2019: 43). To address these challenges, Nacey et al. (2019: 64–65) have outlined the following key points. First, when identifying lexical units, avoid relying exclusively on spelling standards. Utilize resources such as the BNC Multiword list⁴, dictionaries, and stress/part-of-speech tagging to precisely identify multiword units. Second, consider the potential for multiple basic meanings of a word, extending your analysis beyond the most frequent meanings. Finally, identification of both contextual and basic senses for a word does not guarantee a metaphor. Check if the relationship is metonymic or consider if one meaning is simply a more specific version of the other.

2.5 MIPVU-based hybrid protocol

Simon et al. (2023) developed the MetaID protocol, a morpheme-based hybrid methodology that expands upon MIPVU's core principles. MetaID's key innovation is its ability to analyze individual morphemes, i.e. the smallest meaningful units of a language (Simon et al. 2023: 2). This granular approach is necessary for agglutinative languages like Hungarian, where a single word can contain several metaphor-related morphemes. Other key differences from MIPVU include MetaID's omission of the WIDLII category, prioritizing the identification of the broadest possible range of metaphors, and its use of six additional tags for more accurate MRW labelling (Simon et al. 2023: 9–13). These features give MetaID several advantages: suitability for agglutinative languages, greater precision in results, and the ability to reveal deeper semantic relationships within metaphors. Consequently, it can be a valuable tool for future research into metaphor identification in other agglutinative languages beyond Hungarian. One such example is the Georgian language, which currently lacks metaphor identification research due to its complex agglutinative morphology.

2.6 MIPVU vs. MIV

In essence, MIPVU and MIV share some similarities because both procedures aim to identify metaphors in written discourse, focusing on distinguishing metaphors based on their basic and contextual senses. MIPVU analyzes single words, whereas MIV permits a larger number of multiword items (Cameron 2003: 76–77, Steen et al 2010: 27). In terms of determining lexical units in the text, MIV shows lower precision; for example, it groups all verb + preposition vehicle terms together in a phrasal verb category without differentiating between verbs with prepositions and verbs with particles (Cameron 2003: 77). MIV, unlike MIPVU, also puts emphasis on a dynamic process of language use in discourse, which goes beyond individual metaphors and shows the dynamics of metaphor connection and interaction across discourse (Cameron 2003: 8). For examining the senses of words, MIPVU necessitates the systematic use of a dictionary, while MIV predominantly leans on analysts' knowledge of language and

⁴ <http://www.natcorp.ox.ac.uk/docs/multiwd.htm>

context supported by the dictionary and corpus information (Cameron 2003: 62–63, Steen et al. 2010: 16). In terms of the analysis procedure, MIPVU demonstrates greater consistency by initially dividing sentences into lexical units and afterwards establishing their metaphoricity through a clearly formulated step-by-step process. In summary, MIPVU shows a higher level of reliability than the MIV protocol, offering researchers a more precise procedure and striving to minimize intuitive judgments. Table 1 illustrates the major characteristics of the three metaphor identification procedures discussed above: MIP, MIV, and MIPVU, aiding in the comparison of their key features.

	MIV	MIP	MIPVU
Basic unit of analysis	Vehicle terms that can be either single words, multi-words, or phrases	Single words ⁵	Single words ⁶
Number of the procedural steps	2	4	8
Types of metaphors identified	Strong, technical, animating, and comparison metaphors; metaphors of different grammatical forms	Indirect metaphors	Indirect, direct, and implicit MRWs
Major validation strategies	Analysts' knowledge and inter-rater reliability	Dictionary information and inter-rater reliability	Dictionary and corpus information; inter-rater reliability

Table 1. Key features of the three metaphor identification procedures

2.7 Further methodologies

2.7.1 CMA

In addition to the abovementioned well-established manual metaphor identification methodologies, there are other approaches that are less common and have been employed in only a limited number of studies. One such approach is Charteris-Black's (2004) Critical Metaphor Analysis (CMA), which is an analytical framework that directs its focus toward studying metaphors through a critical discourse analysis lens. It involves three levels of analysis: metaphor identification, interpretation, and explanation. The metaphor identification method used by CMA comprises two stages, with the initial phase involving a comprehensive examination of a text sample from the corpus to identify potential metaphors (Charteris-Black 2004: 35). The author acknowledges variations in the size of text samples based on corpora but does not provide clarification on the criteria for determining the sample size. For instance, in the analysis of sports reports from a tabloid corpus containing approximately 26.8 million words, the author

⁵ Exceptions to the basic unit of analysis being a single word include phrasal verbs, compounds, and polywords (Pragglejaz Group 2007: 23–24).

⁶ Exceptions to the basic unit of analysis being a single word include phrasal verbs, compounds, and some proper names (Steen et al. 2010: 27–32).

selected a sample of 100 sports reports for potential metaphor examination (Charteris-Black 2004: 116–117). Similarly, in the analysis of the Old Testament, consisting of around 43 thousand words, a sample of 100 verses from Psalms was chosen for potential metaphor examination (Charteris-Black 2004: 178). It becomes evident that the author opts for 100 instances of texts as a sample in corpus analysis, irrespective of the corpus size, introducing a level of ambiguity to this part of the procedure.

These potential metaphors are then assessed based on the criteria set for defining metaphorical expressions. A metaphor occurs when a word or phrase is used in a context or domain different from its expected usage, creating semantic tension and introducing incongruity at linguistic, pragmatic, or cognitive levels (Charteris-Black 2004: 21, 35). Excluding words that do not meet this criterion, while categorizing those commonly used with a metaphorical sense as metaphor keywords, allows for a quantitative assessment of their presence in the corpus. The subsequent phase involves a qualitative analysis, where corpus contexts are inspected to ascertain whether each instance of a keyword is employed in a metaphorical or literal sense (Charteris-Black 2004: 35).

While CMA offers a compelling approach by combining metaphor identification with critical discourse analysis, its identification procedures lack the precision of methods like MIV, MIP, and MIPVU. CMA focuses on how metaphors shape and are shaped by social and political contexts. This method is best suited for researchers interested in the ideological functions of metaphor, rather than those seeking a purely systematic approach to metaphor identification.

2.7.2 MPA

Stefanowitsch (2006a: 2–3) outlines the three primary strategies for extracting metaphors from corpora. Firstly, manual metaphor searching involves reading through the corpus and manually extracting metaphorical expressions, limiting corpus size, and requiring time-consuming manual annotation. Secondly, searching for source domain vocabulary entails selecting a potential source domain, using concordancing techniques to identify relevant lexical items, and examining their occurrence in target domains to reveal metaphorical mappings. Lastly, searching for target domain vocabulary involves selecting and searching for lexical items related to target-domain concepts, identifying cases where these words are embedded in metaphorical expressions, and revealing metaphorical mappings within the target domain. Searching for target domain vocabulary proves advantageous, addressing the limitations of the other two strategies: manual searching, which imposes constraints on corpus size, and searching for source domain vocabulary, which demands prior knowledge of source domains (Stefanowitsch 2006a: 3).

Consequently, Stefanowitsch (2006b: 65–66) introduces a method known as Metaphor Pattern Analysis (MPA), where the researcher conducts a keyword search to identify lexical items linked to a specific target domain. Following this, metaphorical uses are manually distinguished from literal uses, allowing for an exploration of metaphorical patterns. A metaphorical pattern refers to a multi-word expression that incorporates a specific lexical item from a designated target domain into a given source domain (Stefanowitsch 2006b: 66). Through MPA, researchers can retrieve an extensive array of metaphorical patterns by searching for the target domain in a corpus and examining the associated metaphors within these patterns.

Therefore, MPA offers a distinct approach to metaphor identification within corpora. It centers on identifying metaphorical patterns associated with specific target domains, revealing

how these concepts are systematically structured through metaphorical language. This contrasts with methods like MIV, MIP, and MIPVU, which prioritize the identification of individual metaphorical words or phrases. MPA's approach makes it a valuable tool for researchers interested in exploring the realization of specific metaphor domains within a corpus and analyzing their variations across different text registers, e.g., scientific discourse vs. news reporting.

2.7.3 *Combination of MPA and MIPVU*

Muelas-Gil (2018), in her study on economic metaphors in Spanish and English digital newspapers, emphasizes the value of combining MPA and MIPVU. The study primarily employed MPA because the focus was on examining common economic targets within news articles rather than conducting an exhaustive analysis of all metaphors within the corpus (Muelas-Gil 2018: 125). MPA is well-suited for this targeted approach, allowing for efficient identification of metaphorical patterns associated with specific economic terms. Drawing from previous research on economic discourse, the study focused on the thirteen most common target domains, including terms like *finance*, *company*, *bank*, and *money* (Muelas-Gil 2018: 149–150). To illustrate MPA's working principles, the author highlights an example where the target domain *bank* appears close to the source domain term “to attack” (belonging to the WAR or FIGHT conceptual domain) (Muelas-Gil 2018: 157–158). This close proximity suggests a metaphorical meaning for “attack”, implying a non-literal attack on the bank.

MPA offers time-efficiency but its reliance on researcher intuition introduces potential bias. To counteract this, the study employed MIPVU as a complementary method, since it uses dictionaries to verify the meanings of potentially metaphorical words, ensuring more reliable identification (Muelas-Gil 2018: 163). This kind of verification is particularly valuable when analyzing a non-native language, as it minimizes the risk of misinterpretations stemming from the researcher's linguistic assumptions (Muelas-Gil 2018: 163). The study demonstrates that MPA is a reliable method for initial metaphor identification, as most of its identified metaphors were subsequently confirmed by MIPVU (Muelas-Gil 2018: 163). The enhanced accuracy of MIPVU makes it a useful verification step for MPA's findings. Rather than being in competition, the study proposes that these methods work best in combination, offering robust corpus-based analysis of specific metaphorical targets (Muelas-Gil 2018: 264).

2.7.4 *PIMS*

Falck & Okonski (2023: 1–2) acknowledge that identifying metaphor-related prepositions is challenging due to their short length and ambiguous basic meanings. They note that traditional methods, including MIV, MIP, and MIPVU, may lack sensitivity when analyzing prepositional metaphors (Falck & Okonski 2023: 4–6). To address this, they developed the Procedure for Identifying Metaphorical Scenes (PIMS), which focuses on the scenes evoked by prepositional constructions in discourse (Falck & Okonski: 2023: 4). PIMS starts by defining the relevant scene scope based on the study's goals. For instance, Falck & Okonski (2023: 5–6) analyzed metaphorical relationships expressed by the preposition “into”, focusing specifically on the motion concept conveyed by “into relations”. PIMS then assesses whether the scene can be directly understood through our bodily experiences (non-metaphorical) or requires comprehension through another type of experience (metaphorical) (Falck & Okonski: 2023: 6). Real-world scenes (e.g., “*ladle soup into bowls*”) are typically directly understood, while abstract

scenes (e.g., “*my identity was cracking into pieces*”) often require indirect understanding (Falck & Okonski: 2023: 6–8). Finally, if the scene’s meaning relies on a different experience than the literal one it depicts, the analyst identifies it as metaphorical (Falck & Okonski: 2023: 7). Overall, PIMS offers a reliable and potentially more sensitive method for analyzing prepositional metaphors. This makes it particularly useful for researchers whose studies focus on prepositions, whether used as a standalone procedure or in combination with MIP/MIPVU (Falck & Okonski: 2023: 19).

3 Linguistic metaphor identification in learner English

The identification of metaphors in learner English is crucial for researching metaphorical language production, analyzing metaphoric errors in L2, and finding the influence of L1 on these errors. As Broughton et al. (2003: 116) point out, learners of English as a foreign language often encounter the following key difficulties in writing: mechanical problems with the script of English, issues with grammatical and lexical accuracy, challenges in adapting writing style to specific contexts, and struggles in fluently expressing thoughts. Consequently, these errors present greater challenges for identifying metaphors in learner English compared to native English texts.

Ideally, learner English texts should undergo proofreading and correction by a native English speaker analyst before conducting the metaphor identification procedure. When proofreading learner texts, researchers have flexibility in how they handle erroneous lexical units. Options include analyzing the intended word (if inferable), analyzing the incorrect word as written, or excluding them from the analysis (Nacey 2013: 119). Also, researchers can choose between a strict approach, where any non-native-like phraseology is labelled as an error, or a lenient one, where non-native expressions are accepted (Littlemore et al. 2014: 124). This choice should carefully align with the specific research aims. A strict approach risks overlooking subtle metaphors hidden within non-standard phrasing, while a lenient approach allows for investigating creative language use but potentially comes at the cost of misinterpreting non-native-like phraseology. Importantly, researchers should clearly explain and justify their chosen approach for transparency and to facilitate comparison between studies.

3.1 A case study based on the Georgian EFL essay corpus

This section introduces a case study where both the MIV and MIPVU methodologies are applied to a corpus of Georgian EFL essays. Through this case study, a comprehensive comparison of the two methodologies was conducted, offering valuable insights into their effectiveness and the results they can yield. It is noteworthy that this case study is part of broader research examining the production of metaphorical language in learner English. The Georgian EFL argumentative essay corpus was compiled specifically for the larger-scale research and includes essays written by Georgian learners with varying proficiency levels in English. For the present case study, a subset of essays at the B2 level was selected, as two inter-raters were involved in analyzing the essays at this level.

In further detail, the Georgian EFL argumentative essay corpus consists of 16 essays authored by Georgian learners of English, all of whom achieved B2 level of English proficiency based on *The Oxford Placement Test* results. Among the participants, there were seven males and nine females, all 18 years of age and in their final year of high school. The essays, varying

in length from 115 to 270 words, collectively amounted to 2787 words, and were selected for their variety of argumentative topics. The essays were composed in a classroom setting under teacher supervision, with participants instructed to handwrite their responses. Following the completion of the writing task, the essays underwent meticulous transcription into MS Word format, preserving original errors and preventing the introduction of new ones. This approach guarantees the authenticity of the original essays and facilitates an accurate examination of the linguistic features present in the corpus. Subsequently, an automated part-of-speech tagging procedure was utilized to tag lexical units within the text, which were then organized into electronic spreadsheets with each unit assigned its corresponding part-of-speech tag.

3.2 Application of MIV

The application of the MIV methodology involved two key steps. Initially, each essay in the Georgian EFL corpus was thoroughly examined to identify potential Vehicle terms, i.e. words or phrases within the discourse that deviate noticeably from the surrounding language, indicating metaphorical usage. The second step was to determine whether there is a transfer of meaning from the Vehicle term to the Topic domain. For example, while reading sentence (1), the verb *spend* caught attention due to its deviation from the surrounding context, leading to the identification of *spend some time* as a metaphor. Here, *time* operates as the topic domain, while *spend* is the Vehicle term. The transfer of meaning is demonstrated through the portrayal of time as a valuable resource that can be utilized, similar to the expenditure of money.

(1) I wasn't able to see my classmates and spend some time together.

The results obtained by MIV can be utilized to provide a quantitative overview of linguistic metaphors in discourse, including measures such as metaphor density, i.e. frequency, the reuse rate of metaphors, and the distribution of metaphors by different linguistic forms and word classes (Cameron 2003: 86–87). Following Cameron's (2003: 86) instructions, the metaphor density of the Georgian EFL corpus was calculated by dividing the total number of identified Vehicle terms, 151, by the total number of words in the corpus, 2787, and then multiplying the amount by 100, resulting in a density of 5.4 Vehicle terms per 100 words. Metaphor density is particularly noteworthy when compared across different types of discourse, such as varying levels of language proficiency, native vs. non-native writing, and spoken vs. written corpora.

To further investigate patterns of metaphor usage in the corpus, the reuse rate of metaphors was calculated. This metric, indicating how frequently existing Vehicle terms are repeated or re-employed within texts, was determined following Cameron's (2003: 87) approach. Initially, the type-token ratio was calculated by dividing the total number of unique Topic-Vehicle combinations, 139, by the total number of Vehicle term instances, 151, yielding a ratio of approximately 0.92. This ratio was then inverted to obtain the reuse rate (1 divided by 0.92), resulting in approximately 1.09. This suggests that, on average, each Vehicle term appears once in the Georgian EFL corpus, indicating a lack of tendency to reuse metaphors. Direct comparisons to metaphor reuse rates in learner corpora are currently unavailable due to the lack of research. Cameron's (2003: 87) analysis of native English-speaking primary school student discourse offers a contrasting perspective, revealing a metaphor reuse figure of 2 and suggesting a tendency to repeat metaphorical expressions. Further research is needed to explore whether the metaphor reuse rate varies across different linguistic contexts.

The subsequent step was to demonstrate a distinct pattern of metaphor production across diverse linguistic forms and word classes. As shown in Table 2, metaphors featuring single verbs as Vehicle terms are the most prevalent, followed closely by those involving prepositional phrases and verb phrases.

Linguistic form of Vehicle term	Number of metaphors using this form	% of total metaphors
single verb	40	26.5
prepositional phrase	29	19.2
verb phrase	24	15.9
single noun	15	9.9
single adjective	15	9.9
preposition	15	9.9
phrasal verb	8	5.3
noun phrase	4	2.6
single adverb	1	0.7
Total	151	

Table 2. Metaphor distribution across various linguistic forms

The predominance of verbs and prepositions as metaphors becomes even more apparent when the results are presented by the word class of Vehicle terms, as depicted in Table 3. It underscores that verb metaphors make up nearly half of the total identified metaphors, accounting for 47.7%, with prepositional metaphors following at 29.1%.

Word class of Vehicle term	Number of metaphors	% of total metaphors
verb metaphors	72	47.7
prepositional metaphors	44	29.1
nominal metaphors	19	12.6
adjectival metaphors	15	9.9
adverb metaphors	1	0.7
Total	151	

Table 3. Metaphor distribution by word class of Vehicle terms

The categorization of metaphors into other subtypes that are proposed by Cameron (2003: 75), may not always be feasible or optimal, depending on the type of discourse and the research objectives. This highlights the need for researchers to tailor categorization methods to the specific discourse type, acknowledging that certain metaphor types might be less prevalent in learner corpora. In the context of this study, identifying strong metaphors, technical metaphors, animating metaphors, or comparison metaphors was not the most suitable approach. The identification of strong metaphors was not possible, as it requires the involvement of more than two inter-raters in the analysis. Technical metaphors were also absent from the current corpus.

since the essays were not focused on subject-specific technical matters, but rather on general social topics. The remaining sub-categories of animating metaphors (e.g. *the opportunity knocks*; *Teams just crashed*) and comparison metaphors (e.g. *a guest should be treated like somebody sent from the God*) were infrequent, with eight and one instances, respectively. In contrast, the majority of the metaphors identified in the current corpus were related to discourse organization (e.g. *In a nutshell*; *In my point of view*), evaluative function (e.g. *precious time*; *pure luck*), and dramatic effect (e.g. *the pandemic will be defeated*; *the kids often fall into hysterics*).

Drawing broad comparisons regarding metaphor types in learner corpora can be challenging due to the inconsistency in how metaphor subtypes are defined and categorized across studies. Nevertheless, the prevalence of discourse organizing and evaluative metaphors in the Georgian B2 learner essays aligns with the findings of Littlemore et al. (2014). Their study examined the functions performed by metaphors in essays written by Greek and German learners of English across proficiency levels from A2 to C2 and found that learners at the B2 level begin to use metaphors with an evaluative function more frequently, often combining them with metaphors that serve discourse organizing or positioning functions (Littlemore et al. 2014: 132–133).

3.3 Application of MIPVU

According to the MIPVU methodology, the procedure began with a thorough examination of the entire text to gain a comprehensive understanding of the essays. The next phase required identifying lexical units in the text with the help of an automated procedure for part-of-speech tagging. The most important step was to establish the fundamental and contextual senses of individual lexical units through dictionary definitions. If the contextual meaning differed from the basic one, the lexical unit was identified as an indirect MRW, as illustrated in (2).

(2) *Spend*

Contextual meaning: MD⁷ 2 ‘to stay somewhere or do something for a period of time’.

Basic meaning: MD 1 ‘to use money to pay for things’.

Does the contextual sense contrast with the basic sense and can it be understood by comparison with it? Yes

Decision: Indirect MRW

The analysis utilized both the printed and online editions of the *Macmillan English Dictionary for Advanced Learners*, along with the online *Longman Dictionary of Contemporary English*. Additionally, the VUAMC served as a reference for further validation of the MRWs.

As is common in learner writing, the Georgian EFL essays contained a number of linguistic errors. To guarantee the validity of the error identification, a native English speaker with proofreading expertise carefully reviewed the essays. For error identification, a lenient approach was adopted; therefore, non-native-like expressions were not labelled as errors. In line with MIPVU guidelines, erroneous lexical units that were incomplete or lacked enough context for a clear interpretation were labelled as DFMA (Discarded For Metaphor Analysis).

A thorough examination of 2787 lexical units revealed 304 instances of indirect MRWs, only two instances of direct MRWs, and no occurrences of implicit MRWs. This finding suggests that Georgian learners of English predominantly employ indirect metaphors. While MIPVU

⁷ *Macmillan English Dictionary for Advanced Learners*.

offers the advantage of identifying additional metaphor types, a comparative analysis of all three types might require a significantly larger corpus. This is due to the potential scarcity of direct and implicit MRWs in learner texts.

The metaphor density was calculated by dividing the number of indirect MRWs, 304, by the total number of lexical units in the corpus, 2787, and then multiplying the result by 100. This yielded a density of 10.9 metaphors per 100 lexical units. The metaphor density of 10.9% in the Georgian B2 learner essays is consistent with Littlemore et al.'s (2014) findings, who also used a MIPVU-based analysis. Their study revealed metaphor densities of 9.9% in essays written by Greek B2 learners of English and a slightly higher density of 11.6% for German learners of English at the same proficiency level (Littlemore et al. 2014: 125–127).

Notably, the density of metaphors identified through MIPVU is nearly twice as high as that observed using MIV. This difference suggests that MIPVU uncovers a wider range of metaphorical language, potentially including more subtle or less conventional metaphors. For example, MIV often overlooked metaphorical uses of prepositions (e.g. *in*; *on*; *about*; *from*), delexicalized verbs (e.g. *have*; *take*; *give*; *make*), and demonstratives (e.g., *this*; *that*; *these*; *those*), while MIPVU successfully detected them.

To calculate the metaphor reuse rate, the type-token ratio was first determined by dividing the number of unique MRWs, 132, by the total number of indirect MRWs, 304. This yielded a ratio of approximately 0.43. Inverting this ratio (1 divided by 0.43) resulted in an approximate reuse rate of 2.3. This suggests that, on average, each metaphorical expression appears more than twice, demonstrating a tendency towards metaphor reuse within the corpus. Among the reused MRWs, prepositions and delexicalized verbs dominate. The most frequently reused include the preposition *in* (e.g. *in the morning*; *in the future*), followed by the preposition *on* (e.g. *go on vacation*; *based on his or her personality*), and the delexicalized verb *have* (e.g. *have a chance*; *have fun*).

Again, a notable contrast arises when comparing metaphor reuse rates calculated using MIPVU-based and MIV-based methods for the Georgian EFL corpus. The MIPVU approach reveals an inclination toward repetition, whereas the MIV-based calculation implies a scarcity of metaphor reuse. This discrepancy can be explained by the core differences between MIV and MIPVU. MIV's focus on Vehicle terms, which can span multiple words, likely results in a smaller set of metaphorical units. Conversely, MIPVU's focus on single-word MRWs leads to the identification of more, potentially smaller metaphorical units. This difference in the size and scope of identified metaphors directly impacts the calculated density and reuse rates.

To gain even deeper insights, it is worthwhile to closely examine the specific types of metaphors being reused. This analysis was only feasible for indirect MRWs identified by MIPVU, as MIV-identified Vehicle terms did not reveal distinctive patterns in metaphor reuse. Table 4 illustrates the distribution of reused MRWs across word classes, with prepositions emerging as the clear majority (55.1%) of reused MRWs. This indicates a strong reliance on preposition-based metaphorical expressions among Georgian learners of English, with other word classes playing a lesser role in the reuse rate.

Word class	Number of reused MRWs	% of reused MRWs
Prepositions	113	55.1
Verbs	51	24.9
Nouns	13	6.3
Determiners	12	5.9
Adjectives	11	5.4
Adverbs	5	2.4
Total	205	

Table 4. Reused MRWs across word classes

Furthermore, analysing the word class distribution of metaphors across a corpus can offer additional insights into patterns of metaphorical language use. This analysis is compatible with Steen et al.'s (2010: 201–202) approach to metaphor categorization into word classes. They organize metaphors into seven major word classes, along with an additional Remainder category for lexical units that do not fit standard classifications, such as articles, numbers, and existential *there*. Table 5 illustrates the word class classification of indirect MRWs identified in the Georgian EFL corpus.

Word class	Number of MRWs	% of MRWs
Preposition	111	36.5
Verb	75	24.7
Noun	69	22.7
Adjective	22	7.2
Adverb	14	4.6
Determiner	13	4.3
Conjunction	0	0
Remainder	0	0
Total	304	

Table 5. MRWs across word classes

Prepositions exhibit the highest frequency, constituting 36.5% of MRWs, followed by verbs at 24.7%, and nouns at 22.7%. This finding aligns with Nacey's (2013: 146–147) MIPVU-based analysis of the Norwegian component of the International Corpus of Learner English, where prepositions also emerged as the most metaphorically prevalent word class, followed by verbs and nouns. The essays in this corpus were written by Norwegian B2-C1 learners of English. Other studies analysing learner English essays, such as Littlemore et al. (2014) and Iaroslavtseva and Skorczyńska (2017), focus on broader categorization of metaphors into open-class (nouns, verbs, adjectives, adverbs) and closed-class (prepositions, adverbials, determiners) rather than detailed word class analysis. Notably, both studies found a higher proportion of closed-class metaphors, consisting primarily of prepositions, at the B2 level compared to the more

advanced C1 and C2 levels (Littlemore et al. 2014:127–128; Iaroslavtseva and Skorczynska 2017: 55). Therefore, it can be implied that prepositions play a particularly prominent role in metaphorical language production among English language learners, especially at the upper-intermediate level. This prominence suggests that prepositions may be a fruitful area for further research using methods like PIMS to identify specific patterns in learners' metaphorical use of prepositions.

When comparing the word class categories of metaphors identified by MIV (Table 3) and MIPVU (Table 5), they show differing distributions. Nevertheless, prepositions, verbs, and nouns consistently emerge as the top three categories in both methods. While verb metaphors predominate in MIV-identified Vehicle terms (nearly half of the total), a more even distribution emerges with MIPVU. This difference likely stems from the methods' differing approaches. MIV's focus on Vehicle terms might lead to the identification of primarily conventional, easily noticeable metaphors, many of which are verb-based. Conversely, MIPVU's broader criteria and reliance on dictionary definitions might result in capturing a wider range of metaphors, including more implicit prepositional forms. This highlights the impact of methodology on the types of metaphors identified and their subsequent classification.

4 Conclusion

This study compared the theoretical foundations and practical applications of major linguistic metaphor identification methodologies. It further explored the potential for combining or adapting these frameworks to suit specific research designs and objectives within metaphor research. Researchers should carefully weigh the advantages and drawbacks of the aforementioned methodologies, along with their potential outcomes, to select the approach that most effectively analyses the relevant aspects of their dataset.

Through a case study of the Georgian EFL essay corpus, it was possible to illustrate the distinct results obtained by utilizing both the MIV and MIPVU methodologies for a comprehensive analysis of metaphor production in learner English. MIV proved to be a time-efficient approach, particularly successful in identifying conventional, easily noticeable metaphors, whereas MIPVU emerged as a more meticulous approach that identified a wider range of metaphorical language, including more subtle and implicit instances of metaphorical word use. When comparing the metaphor density and reuse rates between MIV and MIPVU results, it becomes evident that MIPVU yields higher density and reuse rates. This difference can be attributed to the differing approaches of MIV and MIPVU in identifying metaphorical units, with MIPVU's focus on single lexical unit MRWs capturing more metaphorical instances and resulting in higher density and reuse rates. In the outcomes obtained from MIV, nearly half of the total identified metaphors were verb-based, followed by prepositional metaphors. Conversely, MIPVU results revealed a heavier reliance on prepositional metaphors, followed by verbs and nouns. Despite these methodological differences, prepositions, verbs, and nouns consistently stood out as the most frequent metaphorical word classes across both methods.

It is important to acknowledge that the relatively small size of the Georgian EFL essay corpus limits the generalizability of findings, particularly regarding the potential for identifying direct and implicit metaphors. Moreover, focusing solely on B2 proficiency offers insights into language use at that level but does not reflect the progression of metaphor production. To

address these limitations, future research could benefit from larger and more varied corpora, and an increased number of analysts.

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Tamari Narimanishvili
 University of Debrecen, Doctoral School of Linguistics
 4032 Debrecen
 Egyetem tér 1.
 tamari.narimanishvili@arts.unideb.hu