

Decoding Cultural Connotations: An Investigation of the Use of Machine and Dictionary Translation for the Understanding of Idioms

Fouad BOULKROUN

Abdelhafidh Boussouf University Centre of Mila, Algeria

f.boulkroun@centre-univ-mila.dz

Received: 09/07/2024, Accepted: 08/12/2025, Published: 27/12/2025

ABSTRACT: *Idiomatic expressions are a defining characteristic of languages and cultures. As such, one way of understanding idioms is by digging into their cultural background; conversely, much cultural knowledge can be derived from the learning and understanding of idiomatic expressions. When it comes to the translation or use of idioms, difficulty may arise for they are not identical across cultures. The aim of this paper is to investigate whether such difficulty, or understanding, is significantly related to the instrument used for translation (dictionary vs. machine). Besides, a parallel aim is to determine whether idioms are more difficult in productive or receptive skills. Four research questions were raised along with four hypotheses. A pencil-and-paper questionnaire was administered to 44 Master 1 English language learners at the University Centre of Mila. The collected data were coded and submitted to a Chi-square test using IBM SPSS 28. The analysis yielded a mixture of results in terms of significance. Implications and recommendations are thereby discussed.*

KEYWORDS: culture, dictionary/machine translation, idioms, productive/receptive skills.

1. Introduction

One rich and potential source for developing cultural knowledge in a given foreign language is learning its idiomatic expressions or developing idiomatic literacy. Be that as it may, difficulties may loom on the horizon due to potential differences across languages and cultures. Pushing further, unlike 'normal' language, what adds to the cultural difficulties is the fact that idioms have more often than not figurative meaning. As a matter of fact, figurative connotations of idiomatic

expressions are not evidenced by the meaning of the constituents and, as such, in all likelihood they are not easily interpretable. One wonders if the meaning of idioms will not be lost in translation when attempting to render them interpretable.

All throughout, the meaning of idioms will be accounted for, along with their defining characteristics and types. Then, a discussion on how they relate to culture is advanced, before moving to outlining a number of difficulties that may be encountered by learners and translators alike. An attempt to cover the bearings of machine/dictionary translation and the receptive/productive language skills on idiom use brings the review of the literature to a close.

Last, the paper moves to the second part, namely the field work, the aim of which being mainly to investigate whether difficulty in understanding idioms, or the lack thereof, is significantly related to the instrument used for translation. A parallel aim is to investigate the said difficulty in relation to productive and receptive language skills. Mainly, the research questions raised all along relate to whether the translation challenge can be alleviated via machine or dictionary translation to ease both learners and translators. Equally intriguing is whether idiomatic expressions are more difficult in productive or receptive skills and if skill difficulty relates in some way to the instrument used in translation. A set of working hypotheses is advanced to answer the research questions. Mainly, it is hypothesised that there would be a statistically significant association between the used instrument and understanding idiom-based cultural connotations, and that skill difficulty and the instrument in question would be significantly related. To put this to the test, a questionnaire was administered to 44 English language learners at the University Centre of Mila. The collected data were then submitted to a *Chi-square test* using the *SPSS 28*.

2. Literature Review

2.1. What Are Idioms?

Idioms are a fixed group of words whose meaning has nothing to do with the meanings of their constituent words (Fraser, 1970). They are said to be “frozen patterns of language which allow little or no variation in form and they often carry meaning which cannot be deduced from their

individual components” (Baker 1992, 63). In light of these definitions, it is clear that one cannot replace, delete, reorder, or extend words in idioms.

Idioms have different degrees of idiomaticity; this makes them either easily understandable or entirely opaque. They are said to be of four main types (Moon, 1998). First, *transparent idioms* yield meaning that can be deduced from the constituent elements, so their meaning is close to the literal. This makes both their comprehension and translation easy to obtain (e.g., *Dwell on the past*).

Second, *semi-transparent idioms* yield meaning that has little to do with that of the constituent elements, and that is because they are metaphorical in the making. Take the example of *To play with fire*, *To shed crocodile tears*.

Insofar as *semi-opaque idioms* are concerned, they have partly a literal meaning and a figurative one in part. The latter meaning, clearly, has nothing to do with the meaning of the constituents. A good case in point is *Don't judge a book by the cover*.

The last type is concerned with *opaque idioms*. Given their name, there is absolutely no resemblance, whatsoever, between their meaning and that of the constituents. Of note, this type is the most difficult to deal with for both readers and translators, and they are only accountable on cultural bases. For instance, take *To break the bank*.

2.2. Idiom-based Cultural Connotations

Undeniably, idioms are culture-specific, making cultural knowledge quintessential in understanding idioms (Kecskes & Papp, 2000). Put otherwise, understanding idiomatic expressions is subject to knowing their cultural background. By the same token, it holds that cultural knowledge can obtain when a thorough study of idioms is made. It follows then that idiomatic expressions and cultural knowledge are intertwined.

In light of the foregoing sketch of cultural differences, idiomatic expressions are likely to prove difficult in handling and to resist translation, even via a machine or a dictionary. In effect, difficulty

increases exponentially as the cultural gap widens (Yowelly & Lataiwish, 2000).

2.3. Difficulties of Idiom Translation

As afore-mentioned, idioms with different degrees of idiomaticity tend to pose different degrees of difficulty making them either easily *recognisable* but hard to understand, or easily *interpretable* like transparent idiomatic expressions. Here, mention is made of two main difficulties: idiom *recognition* and their appropriate *interpretation* (Baker, 1992). From a different perspective, Baker (1992) further discusses four major difficulties with respect to idioms: (1) having no equivalent in the target language, (2) having an equivalent but being used in different contexts, (3) being used in both literal and idiomatic meanings in the source as well as the target language (i.e. the scarcity of finding form-meaning correspondence), and (4) having different conventions, contexts and frequency of use. These, it must be underscored, hold true whether one uses machine or dictionary translation.

2.4. Dictionary vs. Machine Translation

Translation instruments, namely dictionaries and machine translation, are useful in foreign/second language (L2, henceforth) learning as they help for better understanding. Their importance notwithstanding, both have merits and limitations.

Dictionary translation refers to the use of a reference book that provides definitions and/or translations of words, phrases, and idioms in a particular language. It is an excellent resource for language learners to use for better understanding, particularly for beginners. However, using a dictionary can be time-consuming, not to mention that it does not always provide context, which can induce misunderstanding. As such, it may be inadequate for promoting learners' lexical knowledge (Chen, Huang, Chang, & Liou, 2015).

Nowadays, there is a growing tendency to use digital technology, both in language learning and in translation. Machine translation (MT) is a rapidly advancing field that uses computer algorithms to automatically translate text from one language to another. It is better than using a dictionary when it comes to translating technical language, collocations, or the like (Bahri and Mahadi, 2016). Its main advantage is speed and efficiency, especially with big or massive data (Alzeebaree, 2021). Lee (2019) investigated the role of MT in L2 writing, revealing that it helped to decrease lexico-grammatical errors and improve student revisions. As such, MT has the potential to foster in learners self-directed and autonomous learning skills (Bernardini, 2016).

However, Alzeebaree (2021) notes that translation that is assisted by the machine, such as Google translation, is not always accurate and often fails to convey the cultural context and figurative meaning of culturally loaded passages or phrases like idioms and collocations, leading to misunderstanding. Much the same is true when using the machine for the translation of literature (Omar & Gomaa, 2020), which is a good place to seek idiomatic expressions. Alzeebaree (2021) argues that MT is mostly literal and recommends, on the basis of his study, that specialised dictionaries for idioms be used.

To cut it short, both dictionary translation and MT have their merits and shortcomings, and the choice of instrument may well depend on the needs and purposes of users. The former may be ideal for in-depth language learning and understanding, whereas the latter is more suitable for quickly translating large amounts of text. Of note, Zong (2018) recommends using MT as a supplement to other translation options, namely the human factor, to secure meaningfulness and thus understanding.

2.5. Productive vs. Receptive Skills Difficulty

Receptive and productive language skills are both important aspects of language learning. Insofar as receptive skills are concerned, they reflect

one's listening and reading ability to understand a language, while productive skills refer to the ability to produce speech or text. Albright and Langan (2023) argue that developing language skills is essential for learners, as they complement each other and improve overall language proficiency.

Insofar as receptive skills are concerned, the ability to understand a new language is obviously crucial for effective communication. However, developing such skills can be challenging at times. Watkins (2017) suggests using a dictionary or mental translation to focus learners' attention on vocabulary, grammar, and text structure. Additionally, learners can focus on formulaic chunks by comparing the native language and the L2 by way of translation. Of course, this is not exclusive of using MT.

As regards productive skills, the main benefit of developing them is the ability to produce in the target language and communicate ideas effectively. However, it can be challenging for beginners or those with limited L2 exposure. Some studies (Mondria & Wiersma, 2004; Waring, 1997) compared the receptive and productive learning of word pairs, using translation tests to measure gains in knowledge. Some subjects were subjected to receptive tests, some to productive ones. In all of the studies, participants who were subjected to receptive learning scored significantly higher on receptive tests; conversely, those learning productively performed rather better on productive tests.

In light of the foregoing, students should be trained in both receptive and productive skills for they are both essential for effective language learning and understanding, and translation can help in making comprehension happen. The development of both skills should be a priority for language learners, as they complement each other and help to improve overall language proficiency.

3. Methodology

3.1. Context

Idiomatic expressions are a defining characteristic of languages and cultures and the reverse situation is also true. This way, it stands to reason that one way of understanding idiomatic expressions is by digging into their cultural background, and that much cultural knowledge can be derived from learning idioms. When it comes to the interpretation of idioms, difficulty may arise for they are not identical across cultures and they are, thus, subject to misinterpretation by translators and readers with a different cultural background. The aim of the present paper is mainly to investigate whether such difficulty, or the lack thereof, is significantly related to the instrument used, namely dictionary or machine translation. Also, a parallel aim is to relate the difficulty to productive and receptive skills. All along, four research questions are raised:

1. *Do English language learners use dictionary or machine translation to understand idiomatic expressions?*
2. *Is there a significant association between the instrument utilised in translation and understanding idiom-based cultural connotations?*
3. *Are idioms more difficult in productive or receptive skills?*
4. *Is there a significant relation between skill difficulty and the instrument utilised in translation?*

These research questions translate into the following working hypotheses:

H₁ = *The counts of learners who use dictionary translation and of those who use machine translation to understand idiomatic expressions would differ significantly.*

H₀ = *The two proportions of learners are equal.*

H₂ = *There would be a statistically significant association between the instrument utilised in translation and understanding idiom-based cultural connotations.*

H_0 = There is no association between the two instances.

H_3 = *There would be a proportional difference between the difficulty experienced in productive and receptive skills.*

H_0 = The proportional experienced difficulty is the same.

H_4 = *Skill difficulty and the instrument utilised in translation would be significantly related.*

H_0 = Difficulty and the utilised instrument are independent phenomena.

3.2. Procedure

At this stage, a word about the utilised instrument, the participants, the data coding procedure, and the analysis is very much in order. A pen-and-paper questionnaire was administered to 44 Master 1 English language learners (36 females and 8 males) at the University Centre of Mila. The questionnaire items are structured and the collected data are categorical (see Appendix). It might be informative to note that this is an extension to an initial study; that is, a questionnaire initially consisting of ten items of information was administered, serving two different studies. As such, only items which are pertinent to the aim of the present work are included – with the exception of demographic information which might serve the curious reader.

Given the nature of the variables under investigation (i.e., being categorical), questionnaire items were dichotomously responded to; this way, they were coded on a 0 to 1 point scale in SPSS. The collected data were then submitted to a *Chi-square Goodness of Fit test* and a *Chi-square of Independence test* using the IBM SPSS 28. The type of Chi-square test used will depend on the hypothesis under investigation, i.e. comparing the counts of cases to reveal the difference between the categories in question, or determine the relationship between the two categorical variables.

4. Results and Discussion

For reminder purposes, 44 Master 1 students of English answered a pen-and-paper questionnaire. A *Chi-square Goodness of Fit test* was run in SPSS to test hypothesis one, i.e., the match of the proportional counts of dictionary/machine translation or the mismatch thereof (see Figure 1 below). The results showed statistical significance, $\chi^2 (1, n = 44) = 4.455$, $p < .05$ (see Table 1 below). As such, there is evidence for the set hypothesis and a counter evidence for the null.

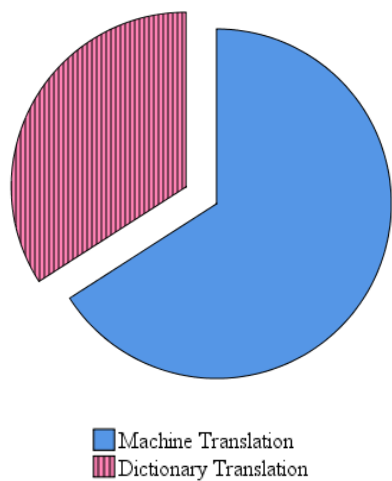


Figure 1. Pie Chart – Dictionary vs. Machine Translation

	Dictionary vs. machine translation
Chi-Square	4.455
Df	1
Asymp. Sig.	.035

Table 1. Chi-Square Test

To test the second hypothesis and answer the concomitant research question, namely whether there is a significant association between the instrument utilised in translation and understanding idiom-based cultural connotations, a *Chi-square test for Independence* (with Yates’ Continuity Correction; see Field, 2013) was computed. Clearly, no significant relationship between the variables in question was found, $\chi^2(1, n = 44) = .088, p > .05$ (see Table 2 below; see also Figure 2 for the respective proportions).

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.088	1	.767		
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.086	1	.770		
Fisher's Exact Test				1.000	.563
Linear-by-Linear Association	.086	1	.770		
N of Valid Cases	44				

Table 2. Chi-Square Tests

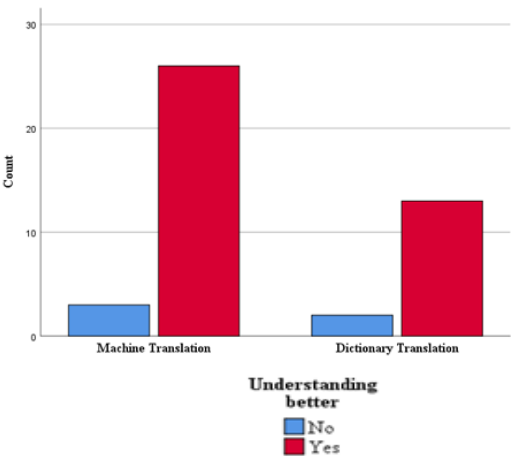


Figure 2. Bar Chart – Dictionary/Machine Translation vs. Understanding Better

When performing a *Chi-square Goodness of Fit test* to test hypothesis three – namely, whether or not there is a proportional difference between the difficulty experienced in productive and receptive

skills – the results were not statistically significant, $\chi^2 (1, n = 44) = 2.273, p > .05$ (see Table 3 below; see also Figure 3 for the respective proportions), so no evidence was obtained in favour of the set hypothesis.

	Difficulty in productive vs. receptive skills
Chi-Square	2.273
Df	1
Asymp. Sig.	.132

Table 3. Chi-Square Test

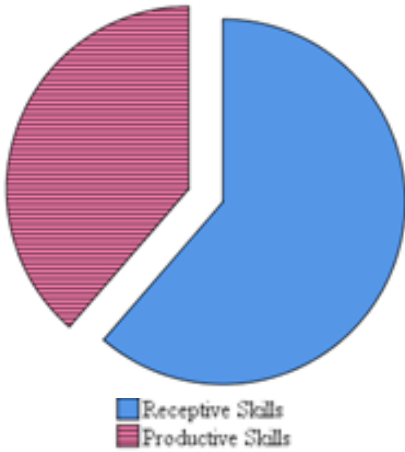


Figure 3. Pie Chart – Difficulty in Productive vs. Receptive Skills

So as to put the fourth hypothesis to the test and answer the corresponding research question, a *Chi-square test for Independence* (with Yates' Continuity Correction), was run in *R* to determine whether skill difficulty and the instrument utilised in translation are related. The test showed no significant relation between the two variables under investigation, $\chi^2 (1, n = 44) = .018, p > .05$ (see Table 4 below; see also Figure 4 for the underlying proportions).

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.018	1	.894		
Continuity Correction ^b	.000	1	1.000		
Likelihood Ratio	.018	1	.894		
Fisher's Exact Test				1.000	.573
Linear-by-Linear Association	.017	1	.895		
N of Valid Cases	44				

Table 4. Chi-Square Tests

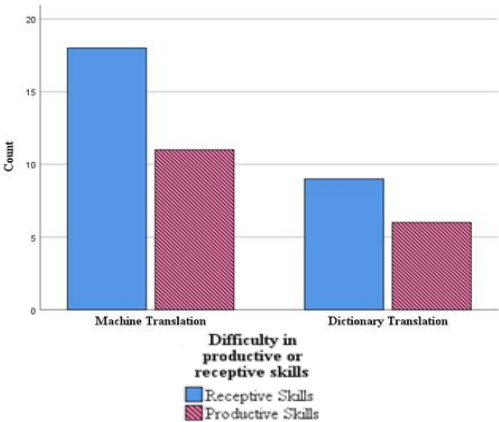


Figure 4. Bar Chart – Machine/Dictionary Translation vs. Difficulty in Productive/Receptive Skills

In summary, in performing a *Chi-square Goodness of Fit* test using the *R Programming Language* to test hypotheses 1 and 3, the results turned out to be statistically significant for the former ($p < .05$) but not so for the latter ($p > .05$). When running a *Group-Independence Chi-square* test to test hypotheses 2 and 4, the analysis yielded no statistically significant relation between the variables under investigation ($p > .05$), so we reject the hypotheses that the variables are associated in favour of the null that they are rather independent of one another.

By now, some *implications* and *recommendations* are very much in order. Of note, the sample of the present study is somewhat small for conducting a Chi-square test; add to this the fact that the author was

inclined to exclude cases with missing values that made the sample even smaller. Undoubtedly, this will have its bearing on the effect size. The way out is either to include more participants, or to use Fisher's exact test (Field, 2013) that is exactly pursued in each respective test.

Having said this, there seems to be no association of some significance between the variables under study. As already explained, this may well have to do with the sample size, a size that the researcher failed to maximise during the data collection phase. Instructive as the results might seem, this should not deter future research from digging further by maximising the sample size, an action that might well alter the results for its promising potential.

As hypothesised, however, the counts of learners using dictionary translation and of those opting for machine translation to understand idiomatic expressions do differ among the participants. It should be informative to note that the mismatch is in favour of the use of machine translation, which is not surprising given the wake of the digital. The present generation of learners and translators alike happen to be surrounded by digital technology, and it is understandable that they go digital in the pursuit of their educational objectives. Perhaps, research should, thus, be directed to exploring this emerging territory with all the software it offers for translation and educational purposes.

It remains a fact, given the results, that the instrument used has nothing to do with a better understanding of idiomatic expressions. Put otherwise, no matter what tool is used for translation, the missing piece of the puzzle in an attempt to handle idioms seems to be having literacy in both the target language and culture. Hence, the findings hint to the reiteration of the claim that culture plays a noticeable role in the learning of languages, as much as in the comprehension/translation of idioms.

Pedagogically speaking, teachers should take a cultural stance in their classes especially when it comes to the use of idioms, and make room for the use of the digital software, which has become a necessity now more than ever before. Researchers, too, should explore the areas of

cultural literacy, digital literacy, and the comprehension/translation of idioms.

5. Conclusion

This paper set out advancing the fact that one way of understanding idioms, especially in literary texts, is by digging into their cultural background, and that the reverse also holds. Because of cultural differences across languages, however, difficulties are potentially there causing misinterpretation by users with a different cultural background. As such, it was thought that there is perhaps a relation between using machine as opposed to dictionary translation and understanding idiomatic expressions (or the lack thereof) in that they are likely to ease the handling of idioms. It was equally conjectured that idioms are of a differential difficulty in productive as opposed to receptive skills and that this is somehow related to the instrument used for translation. All these, of course, were put to the (*Chi-square*) test using *IBM SPSS 28*.

The findings are partly significant and for the most part not so. While appraising the positive results and notwithstanding the negative ones, it is suggested that the present study be replicated with a larger sample for the results to be more indicative. Besides, for the development of idiomatic literacy, cultural and digital literacy should stand in the fore.

References

- Albright, Z. L., & Langan, J. 2023. *College Writing Skills with Readings* (11th Ed.). New York: McGraw Hill.
- Alzeebaree, Y. 2021. "Machine Translation and Issues of Multiword Units: Idioms and Collocations." *Eastern Journal of Languages, Linguistics and Literatures* 1(2): 1-23.
- Bahri, H., & Mahadi, T. 2016. "Google Translate as a Supplementary Tool for Learning Malay: A Case Study at Universiti Sains Malaysia." *Advances in Language and Literary Studies* 7(3): 161-167.
- Baker, M. 1992. *In Other Words: A Course Book on Translation*. London: Routledge.

-
- Bernardini, S. 2016. "Discovery Learning in the Language for Translation Classroom." *Cadernos de Traducion* 36: 14-35.
 - Chen, M. H., Huang, S. T., Chang, J. S., & Liou, H. C. 2015. "Developing a Corpus-based Paraphrase Tool to Improve EFL Learners' Writing Skills." *Computer Assisted Language Learning* 28(1): 22-40.
 - Field, A. 2013. *Discovering Statistics Using SPSS* (4th ed.). London: SAGE Publications Ltd.
 - Fraser, B. 1970. "Idioms within a Transformational Grammar." *Foundations of Language* 6: 22-42.
 - Kecskes, I., & Papp, T. 2000. *Foreign Language and Mother Tongue*. Lawrence Erlbaum: Mahwah, NJ.
 - Lee, S.-M. 2019. "The Impact of Using Machine Translation on EFL Students' Writing." *Computer Assisted Language Learning*. Taylor & Francis Group. Routledge. 1-19.
 - Mondria, J. & Wiersma, B. 2004. "Receptive, Productive, and Receptive + Productive L2 & Learning: What Difference Does it Make? In *Vocabulary in a Second Language: Selection, Acquisition and Testing*, edited by P. Bogaards & B. Laufer, 79-100. Amsterdam: Benjamins.
 - Moon, R. 1998. *Fixed Expressions and Idioms in English: A Corpus-based Approach*. United Kingdom: Clarendon Press.
 - Omar, A. & Gomaa, Y. A. 2020. "The Machine Translation of Literature: Implications for Translation Pedagogy." *iJET*. 15(11): 228-235.
 - Waring, R. 1997. "A Study of Receptive and Productive Learning from Word Cards." *Studies in Foreign Languages and Literature*. 21: 94-114.
 - Watkins, P. 2017. *Teaching and Developing Reading Skills*. Cambridge University Press.
 - Yowelly. A & Lataiwish, M. S. 2000. *Principles of Translation*. Benghazi: Dar Annahda Alarabia.
 - Zong, Z. 2018. Research on the Relations between Machine Translation and Human Translation. Communication in First International Conference on Advanced Algorithms and Control Engineering. *Journal of Physics: Conference Series*. 1087 062046. IOP Publishing.

Appendix: Questionnaire for Students

You are kindly requested to answer this questionnaire, which explores the use of different tools for the translation of idiomatic expressions. Rest assured that the information you provide will be anonymously used for the purpose of the present research only. Note that you are required to choose one and only one answer to dichotomously asked questions; underline or tick where appropriate.

Your collaboration is greatly appreciated.

1. Are you: Male or Female?
2. In translating idioms, do you use: Dictionary or Machine translation?
3. Does translation lead to better understanding? Yes No
4. Are idioms more difficult in:
Productive or Receptive skills?

Thank you very much for your cooperation.