

THE ROLE OF SEMANTIC TRANSPARENCY AND METAPHORICAL
ELABORATION THROUGH PICTURES FOR LEARNING IDIOMS IN A SECOND
LANGUAGE

by

KRIS RAMONDA

A thesis submitted to the University of Birmingham for the degree of DOCTOR OF
PHILOSOPHY

Department of English Language and Applied Linguistics
School of English, Drama, and American & Canadian Studies
University of Birmingham
February 2016

UNIVERSITY OF
BIRMINGHAM

University of Birmingham Research Archive

e-theses repository

This unpublished thesis/dissertation is copyright of the author and/or third parties. The intellectual property rights of the author or third parties in respect of this work are as defined by The Copyright Designs and Patents Act 1988 or as modified by any successor legislation.

Any use made of information contained in this thesis/dissertation must be in accordance with that legislation and must be properly acknowledged. Further distribution or reproduction in any format is prohibited without the permission of the copyright holder.

ABSTRACT

Idioms, as multi-word units that contain literal and figurative meanings, are inherently complex and thus unsurprisingly difficult to acquire for second language learners. Though experimental studies on idioms have been carried out with pedagogically minded foci, none have examined the differential effects picture type has on correct interpretation of meaning or meaning recall. Because idioms have both literal and figurative senses, they can be pictorially expressed via either or both of their dual meanings. However, no one has yet tested whether figurative elements in pictures will aid or confuse second language learners when presented alongside idioms.

Thus, the primary aim of this thesis is to experimentally test how different kinds of pictures affect the way in which second language learners interpret and recall the figurative meaning of metaphorical idioms. Furthermore, the role of semantic transparency and how it impacts the effectiveness of the picture type is examined. The overarching finding suggests that metaphorically imbued pictures overall facilitate the learning of idioms. However, highly contextualized pictures have the potential to mislead learners in specific and often unpredictable ways. In addition to the pedagogical implications uncovered, this thesis also addresses the nature of semantic transparency and teacher attitudes on idioms.

ACKNOWLEDGEMENTS

I am indebted to a number of people who have supported me during my time as a PhD student. First and foremost, my sincerest thanks are owed to my supervisor, Professor Jeannette Littlemore, for her tireless efforts and relentless dedication in support of this thesis from start to finish. Jeannette's knowledgeable advice and reliable guidance have been immensely helpful at all of the stages involved in carrying out this research, and for that I am grateful.

I am also thankful to those who have provided their time, observations, and feedback for some of the more challenging aspects involved in Study 3. In particular, I would like to thank Jon Watkins and Andrew Nowlan for giving their time and providing feedback on important considerations for the picture conditions. On the topic of the pictures themselves, it would be a disservice to fail to mention Nerijus Civilis, my illustrator, who so brilliantly brought the pictures to life with his creativity, talent, and professionalism. Finally, my friend and colleague, Scott Aubrey, was always available to offer concrete suggestions about some of the less obvious, yet pertinent issues involved in doing a PhD.

I would also like to extend my thanks to three other people who deserve mention. Miho Ozaki, my bilingual translator, exhibited incredible endurance and dedication in her efforts to translate thousands of paraphrases from Japanese into English. Furthermore, my father also deserves my gratitude for the insights that were borne out of our enjoyable and fruitful discussions about idioms. Finally, no list of acknowledgements would be complete without mention of my mother, who has always expressed her support in whatever I endeavor to do, including these last few years while working on my PhD.

TABLE OF CONTENTS

Abstract.....	i
Acknowledgements.....	ii
Table of Contents	iii
List of Tables	viii
List of Figures	x
List of Appendices	xi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Research aim	1
1.2 Personal motivation for research on idioms.....	1
1.3 Overview of theories, studies, and research design.....	3
1.4 Limitations of the research.....	6
1.5 Thesis outline.....	6
CHAPTER TWO: LITERATURE REVIEW.....	7
2.1 The importance of idioms	7
2.1.1 Social functions.....	8
2.1.1.1 <i>Evaluative function of idioms</i>	8
2.1.1.2 <i>Summarizing function of idioms</i>	9
2.1.1.3 <i>Shared knowledge and interpersonal relationships</i>	9
2.1.2 Frequency.....	11
2.1.2.1 <i>Findings from corpus-driven research</i>	12
2.1.2.2 <i>Issues related to word frequency</i>	12
2.1.2.3 <i>Word frequency and the L2 learner</i>	16
2.1.2.4 <i>Cognitive processing and learning efficiency</i>	16
2.1.3 Challenges facing L2 learners	17
2.1.3.1 <i>Non-literality</i>	18
2.1.3.2 <i>Exposure to idioms</i>	18
2.1.3.3 <i>Appropriate use</i>	19

2.2 Defining idioms	20
2.2.1 Characteristics	20
2.2.1.1 <i>Non-compositionality</i>	21
2.2.1.2 <i>Institutionalization</i>	21
2.2.1.3 <i>Frozenness</i>	21
2.2.2 Issues in classification	22
2.2.3 Metaphorical idioms	24
2.3 Why examine metaphorical idioms?	25
2.3.1 Metaphorical knowledge, idioms, and the L2 learner	25
2.3.2 Semantic transparency	27
2.3.2.1 <i>Conceptual Metaphor Theory and semantic transparency</i>	27
2.3.2.2 <i>Encyclopedic knowledge and semantic transparency</i>	30
2.3.2.3 <i>Controversy surrounding semantic transparency intuitions</i>	33
2.4 Cognitive linguistic theories	36
2.4.1 Levels of Processing Theory	36
2.4.2 Dual Coding Theory	37
2.5 Vocabulary instruction and learning	40
2.5.1 Types of lexical knowledge	41
2.5.2 Retention of meaning and L2 vocabulary	44
2.5.3 Meaning recall and L2 vocabulary	45
2.6 Metaphorical idioms and L2 pedagogy	46
2.6.1 Overview of idiom instruction and pedagogical practices	47
2.6.2 Research on idioms and learner generated imagery	49
2.6.2.1 <i>Idioms and metaphorical themes</i>	49
2.6.2.2 <i>Idioms and etymological elaboration</i>	50
2.6.3 Pictures and second language learning	52
2.6.3.1 <i>Research on idioms and pictures</i>	55
2.6.4 Rationale for <i>metaphorical elaboration</i>	58
2.7 Summary and research questions	60
CHAPTER THREE: SEMANTIC TRANSPARENCY AND METAPHORICAL IDIOMS	63
3.1 Introduction	63
3.2 Study 1	64
3.2.1 Participants	64
3.2.2 Materials	64

3.2.3 Design and method.....	65
3.2.3.1 Literature background and rating instructions.....	66
3.2.3.2 Qualitative rating of idioms	67
3.2.3.3 Quantitative rating of idioms	67
3.2.3.4 Pilot-informed changes to transparency questionnaire.....	68
3.2.3.5 Methodological issues with semantic transparency ratings.....	69
3.2.4 Results and discussion.....	71
3.2.4.1 Rater consistency for individual idioms.....	71
3.2.4.2 Accounting for disagreement in ratings	73
3.2.4.3 Accounting for agreement in ratings.....	77
3.2.4.4 Conclusion	78
3.3 Study 2.....	79
3.3.1 Participants	79
3.3.2 Materials	79
3.3.3 Design and method.....	80
3.3.4 Results and discussion.....	82
3.3.4.1 General observations.....	83
3.3.4.2 Observations of quantitative data	85
3.3.4.3 Discussion of qualitative data	87
3.3.4.4 Conclusion.....	91
CHAPTER FOUR: METAPHORICAL ELABORATION THROUGH PICTURES AND L2 MEANING RECALL OF IDIOMS	92
4.1 Introduction	92
4.2 Study 3.....	92
4.2.1 Participants	93
4.2.2 Materials	93
4.2.3 Design and method.....	94
4.2.3.1 Semantic transparency levels.....	95
4.2.3.2 Idiom selection criteria	96
4.2.3.2.1 Imageability.....	97
4.2.3.2.2 L1-L2 exact equivalents.....	98
4.2.3.2.3 Word frequency and L1 glosses	99
4.2.3.3 Picture creation process	100
4.2.3.4 Picture rating process	100
4.2.3.4.1 Picture rating norming session	104
4.2.3.5 Treatment	107
4.2.3.5.1 Biographical information and vocabulary pre-tests.....	108
4.2.3.5.2 Overall design of the PowerPoint	109
4.2.3.5.3 Phase 1.....	110

4.2.3.5.4 Phase 2.....	112
4.2.3.5.5 Phase 3.....	112
4.2.3.5.6 Phase 4.....	114
4.2.3.5.7 Immediate and delayed posttests.....	115
4.2.3.6 Paraphrase translation and categorization.....	116
4.2.4 Results and discussion.....	118
4.2.4.1 Approaches for analysis.....	118
4.2.4.2 Between-idiom recall rates.....	120
4.2.4.3 Recall between any picture and no picture.....	122
4.2.4.4 Recall between literal only and literal + figurative picture groups.....	124
4.2.4.5 Descriptive statistics for high transparency idiom recall.....	130
4.2.4.6 Ceiling effects and L1 transfer.....	131
4.2.4.7 Between-idiom recall disparities by picture condition.....	132
4.2.4.8 Pictorial factors influencing recall.....	135
4.2.4.9 Conclusion.....	142
CHAPTER FIVE: METAPHORICAL ELABORATION THROUGH PICTURES AND L2 INTERPRETATION OF IDIOMS.....	143
5.1 Introduction.....	143
5.2 Study 4.....	143
5.2.1 Participants.....	144
5.2.2 Materials.....	145
5.2.3 Design and method.....	145
5.2.4 Results and discussion.....	148
5.2.4.1 Unpacking of metonymic and metaphorical associations.....	151
5.2.4.2 Additional data from remaining idioms.....	158
5.2.4.3 Conclusion.....	162
CHAPTER SIX: TEACHER PERCEPTIONS ON THE IMPORTANCE OF IDIOMS.....	164
6.1 Introduction.....	164
6.2 Study 5.....	164
6.2.1 Participants.....	165
6.2.2 Materials.....	165
6.2.3 Design and method.....	165
6.2.4 Results and discussion.....	166
6.2.4.1 Perceptions on idioms for L2 language use and comprehension.....	167
6.2.4.1.1 The importance of idioms in general.....	168

6.2.4.1.2 <i>The importance of idioms in academia</i>	171
6.2.4.1.3 <i>The importance of idioms in colloquial discourse</i>	172
6.2.4.2 <i>Perceptions on idioms and socio-cultural factors</i>	173
6.2.4.2.1 <i>Idiom use and the native speaker</i>	174
6.2.4.2.2 <i>Idiom use and social distance</i>	174
6.2.4.2.3 <i>Idioms and cultural understanding</i>	175
6.2.4.3 <i>Conclusion</i>	176
CHAPTER SEVEN: CONCLUSION	179
7.1 Summary of findings	179
7.1.1 Study 1 findings	180
7.1.2 Study 2 findings	181
7.1.3 Study 3 findings	182
7.1.4 Study 4 findings	183
7.1.5 Study 5 findings	183
7.2 Theoretical implications	184
7.2.1 Implications related to Dual Coding Theory	184
7.2.2 Implications related to Levels of Processing Theory	185
7.2.3 Implications related to semantic transparency	186
7.3 Pedagogical implications	187
7.3.1 Pictures, idioms, and pedagogy	187
7.3.2 Transparency, idioms, and pedagogy	189
7.4 Methodological implications	190
7.5 Limitations and suggestions for future research	191
7.6 Final comment	192
REFERENCES	194
APPENDICES	210

LIST OF TABLES

Table 1: Overview of studies	5
Table 2: Summary of semantic classification of idioms.....	23
Table 3: CMT & encyclopedic knowledge accounts of metaphor in idioms	32
Table 4: Nation's (2001) what is involved in knowing a word.....	42
Table 5: Degrees of vocabulary knowledge	44
Table 6: Four degrees of strength of knowledge.....	45
Table 7: Overview of rater questionnaire	65
Table 8: Semantic transparency rating scale	66
Table 9: Upper 10% of idiom rating consistency	72
Table 10: Bottom 10% of idiom rating consistency	72
Table 11: Average standard deviations by transparency level.....	73
Table 12: Qualitative responses for <i>an Achilles heel</i>	74
Table 13: Qualitative responses for <i>play devil's advocate</i>	75
Table 14: Qualitative responses for <i>to ruffle feathers</i>	76
Table 15: Qualitative responses for <i>a piece of cake</i>	77
Table 16: Information on idiom dictionaries surveyed.....	80
Table 17: Top 10% of highest perceived transparency idioms	82
Table 18: Bottom 10% of lowest perceived transparency idioms.....	83
Table 19: Descriptive statistics for semantic transparency ratings	84
Table 20: Semantic transparency rating scale	84
Table 21: Ratings for <i>be skating on thin ice</i> and <i>go cold turkey</i>	85
Table 22: Etymological data for <i>be skating on thin ice</i> and <i>go cold turkey</i>	88
Table 23: Study 3 materials overview	94
Table 24: Scale for literal-visual representation	102
Table 25: Scale for figurative-visual connectedness.....	103
Table 26: Scale for bizarreness	103
Table 27: Cronbach's Alpha inter-rater reliability for picture ratings	106
Table 28: Overview of treatment procedures	107
Table 29: Paraphrase categorization scheme.....	116
Table 30: Treatment research design	120
Table 31: Descriptive statistics for between-idiom recall	121

Table 32: ANOVA tests of between-subjects effects	126
Table 33: Tukey HSD post hoc test of recall rates by picture condition	127
Table 34: Cohen's d effect size calculations for delayed posttest recall	129
Table 35: Recall rates for high transparency individual idioms	130
Table 36: Attributing agency due to over-specification for <i>pull the plug</i>	134
Table 37: Mid & low transparency idioms with sizable between picture recall	135
Table 38: Think-aloud protocol presentation sequence	147
Table 39: Study 4 categories & related occurrences	149
Table 40: Category 1; correct interpretations in <i>only</i> the <i>L+F</i> picture condition	150
Table 41: Category 2; correct interpretations in multiple conditions	159
Table 42: Study 5 rating scale & statements.....	166
Table 43: Descriptive statistics for teacher beliefs	167

LIST OF FIGURES

Figure 1: Dual Coding model of bilingual memory	38
Figure 2: Comparison of picture conditions for <i>tie the knot</i>	59
Figure 3: <i>Literal + figurative</i> picture for <i>a piece of cake</i>	98
Figure 4: Example picture for <i>be over the hill</i> in picture rater norming.....	105
Figure 5: Phase 1 example slides	111
Figure 6: Phase 2 example slides	112
Figure 7: Phase 3 example slides	113
Figure 8: Phase 4 example slides	114
Figure 9: Recall rates for low transparency grouping.....	124
Figure 10: Recall rates for mid transparency grouping	125
Figure 11: Recall rates for high transparency grouping	125
Figure 12: Picture conditions for <i>turn heads</i>	132
Figure 13: Picture conditions for for pull the plug.....	133
Figure 14: Picture conditions for <i>go bananas</i>	136
Figure 15: Picture conditions for <i>bury the hatchet</i>	138
Figure 16: Picture conditions for <i>have your back to the wall</i>	140
Figure 17: Picture conditions for <i>have a lot on your plate</i>	141
Figure 18: Picture conditions for <i>a heart of gold</i>	152
Figure 19: Picture conditions for <i>bury the hatchet</i>	154
Figure 20: Picture conditions for <i>red tape</i>	155
Figure 21: Picture conditions for <i>spill the beans</i>	155
Figure 22: Picture conditions for <i>the birds and the bees</i>	155
Figure 23: Picture conditions for <i>go through hell</i>	160
Figure 24: Picture conditions for <i>be in the hot seat</i>	162

LIST OF APPENDICES

APPENDIX A ETHICS FORMS

A.1 Consent form for Study 3.....	210
A.2 Consent form for Study 4.....	214
A.3. Consent form for pilot study for Study 3	216

APPENDIX B TRANSPARENCY RATER INSTRUMENTS

B.1 Rater questionnaire	218
-------------------------------	-----

APPENDIX C TRANSPARENCY RATER DATA

C.1 Transparency rater quantitative data.....	230
C.2 Transparency rater qualitative data	236

APPENDIX D PICTURE COLLABORATION NOTES

D.1 Sample of notes.....	241
--------------------------	-----

APPENDIX E TREATMENT PICTURES

E.1 Comparison of <i>literal + figurative</i> and <i>literal only</i> picture conditions	244
--	-----

APPENDIX F PICTURE RATER INSTRUMENTS

F.1 Picture rating scales.....	253
--------------------------------	-----

APPENDIX G PICTURE RATER DATA

G.1 Picture rating data	254
G.2 Justification for ratings and post discussion data for literal elements.....	257
G.3 Justification for ratings and post discussion data for figurative elements.....	259

APPENDIX H TREATMENT MATERIALS

H.1 Treatment phases.....	264
H.2 Idiom paraphrase and translations	266
H.3 Glossed words, key words, and translations	267
H.4 Treatment idiom example sentences.....	268
H.5 Counterbalancing and sequencing scheme	269
H.6 Participant worksheets	273

APPENDIX I SAMPLE PARTICIPANT DATA

I.1 Screenshot of meaning recall posttest responses	286
I.2 Screenshot of translated student paraphrases in spreadsheet.....	287

APPENDIX J PARAPHRASE JUDGMENT RESOLUTIONS

J.1 Summary of paraphrase disagreements and resolutions	288
---	-----

APPENDIX K THINK-ALLOUD DATA

K.1 Transcription of participant data296

APPENDIX L ETYMOLOGICAL DATA

L.1 Etymologies of high transparency idioms from idiom dictionaries..... 303

L.2 Etymologies of low transparency idioms from idiom dictionaries308

APPENDIX M TEACHER PERCEPTION DATA

M.1 Study 5 quantitative and qualitative data of teacher perceptions315

CHAPTER ONE: INTRODUCTION

1.1 Research aim

A working knowledge of idioms is an important aspect of ultimate attainment for many second language learners of English for reasons related to both socio-cultural factors and linguistic competence. Yet, due to the unique features of idioms as a class of lexica, they are often regarded as a special challenge for L2 learners to acquire. The initial impetus and motivation for this thesis was borne out of a keen interest in exploring ways, informed by Cognitive Linguistics, to aid second language learners in overcoming this challenge.

Thus, in this thesis, I addressed one of the initially learned and central areas of lexical knowledge—the form-meaning link. In two separate studies, I examined the relative effectiveness of three different picture conditions (*no picture*, *literal only picture*, and *literal + figurative picture*) on the students' ability to correctly interpret and recall the figurative meaning of metaphorical idioms. Specifically, I examined how pictures imbued with metaphorical and metonymical elements, through a process I called *metaphorical elaboration*, could impact comprehension and strengthen meaning recall of metaphorical idioms. The power of pictures to both aid and mislead L2 learners in unpredictable ways, irrespective of picture condition was also uncovered and addressed.

The semantic transparency of idioms also played a crucial role as a factor in the analysis, and as such, native speaker semantic transparency intuitions were collected and used as a variable in the experiments on comprehension and meaning recall. I also looked at the potential influence conceptual metaphor, conventional metaphor, and encyclopedic world knowledge had on semantic transparency intuitions. Lastly, I investigated EFL teacher perceptions on the pedagogical value of idioms for L2 learners.

1.2 Personal motivation for research on idioms

As both a second language learner and as an EFL instructor, I have experienced, on both fronts, many of the challenges associated with acquiring a second language. Among these challenges, perhaps the one I always found the most daunting was the acquisition of the many thousands of words necessary to become highly functional in a second language. A few years ago, I came across a quote that captured this necessity of vocabulary aptly:

“While without grammar very little can be conveyed, without vocabulary *nothing* can be conveyed” (Wilkins, 1972, pp. 111).

This pithy yet powerful notion very much resonated with me, and over the course of a relatively short period of time, I began to be drawn to the area of vocabulary acquisition in SLA. Around the same time, I was taking a course entitled “The Mental Lexicon” as part of my coursework in the MA program I was enrolled in. It was in this course that I was first introduced, in depth, to many of the theoretical frameworks in Cognitive Linguistics that were applicable to SLA. From this experience, I started to recognize the great potential of Cognitive Linguistics to inform pedagogy in the L2 classroom, particularly with respect to the teaching and learning of L2 vocabulary. In the spring of 2010, well before embarking upon the PhD, my growing interest in vocabulary from a Cognitive Linguistics perspective paved the way for my first experimental study involving L2 lexica, in which I, along with two other collaborators, examined methods to enhance the recall of abstract vocabulary words using pictures.

Regarding the acquisition of abstract and concrete lexica, many studies have uncovered what is known as *the concreteness effect* (Altarriba & Bauer, 2004; de Groot, 1992; de Groot et al., 1994; Duthie et al., 2008; Schwanenflugel et al., 1992; ter Doest & Semin, 2005), which posits that concrete words tend to be more easily learned compared to abstract words. One proposed accounting for this phenomenon is that the mental lexicon contains visual referents for concrete, but not abstract words, and these referents allow for an alternate pathway to memory (Paivio, 1986), which ultimately aid in lexical retrieval. In our study (Farley et al., 2012), we wanted to examine the extent to which we could “make up” for the disadvantage learners faced when learning abstract words by presenting these words alongside metaphorical pictures that were intended to act as an abstract visual referent. We found that pairing abstract words with related metaphorical pictures significantly enhanced meaning recall among L2 learners of Spanish, while recall of concrete words with corresponding pictures had no such additive effect. Furthermore, evidence from some of the qualitative data in the study suggested that more than a few learners had relied on their memory of the picture to aid them in recalling the meaning two weeks after the treatment on the delayed posttest.

Encouraged as I was with these findings, I wanted to further explore ways in which metaphorical pictures could be applied to aid learners with difficult lexica. Metaphorical idioms seemed to be the perfect candidate for this for a number of reasons. First, idioms have been shown to be notoriously difficult to learn in a second language (Cooper, 1998; Irujo, 1986a). Second, idioms are important in specific areas of discourse (Koester, 2000; McCarthy, 1998) and as a sign of native-like competence (Kjellmer, 1991; Yorio, 1989), and thus many adult language learners want to learn them (Liontas, 2002). Finally, idioms can be understood along both literal and figurative lines. In terms of research design, this was important because I could not only compare recall of idioms between picture and non-picture conditions, but I also could compare the relative effects of *literal only* pictures and *literal + figurative* pictures. By doing this, I could better measure any contributive effect the metaphorically imbued *literal + figurative* pictures had on learning idioms. This could also shed light on how, more generally, learners interacted and interpreted visual information with metaphorical elements for learning L2 lexica.

Thus my original conception for this thesis had been hatched. It has since grown to include a number of research questions relating to theoretical and pedagogical issues surrounding the learning of idioms and what Cognitive Linguistics can offer in the way of sound pedagogical application. In the next section, I will provide a brief introduction of the underlying theories that these research questions touch on, as well as provide an overview of the five studies in this thesis. For a more in depth discussion of the theories involved and how they underpin the studies here, refer to section 2.4. Much greater detail about the methods and design associated with each study can be found in the opening sections for the study in question.

1.3 Overview of theories, studies, and research design

The theoretical rationale for employing metaphorical pictures to promote understanding and recall of idioms is based on Dual Coding Theory (DCT) (Paivio, 1986) and Levels of Processing Theory (Cermak & Craik, 1979). DCT is a model of the bilingual mental lexicon that proposes the existence of a visual imagery system. This imagery system is assumed to contain images for concrete words and can be drawn upon and strengthen access to concrete lexica upon retrieval. Abstract words, on the other hand, are presumed to be largely absent from the imagery system, which is how DCT accounts for the observed *concreteness effect*

(Altarriba & Bauer, 2004; de Groot, 1992; de Groot et al., 1994; ter Doest & Semin, 2005) in which concrete words tend to be learned more easily than abstract words. The assumption in this thesis is that metaphorical idioms are also 'imageless' in the bilingual mental lexicon, and therefore stand to benefit from metaphorically imbued pictorial representation. In other words, if learners can successfully interpret and store metaphorical elements expressed through the pictures paired with newly met idioms, that pictorial information could provide an additional pathway to memory and support durable learning of that lexica. See section 2.4.2 for more on DCT.

The second major theory supporting the rationale for this thesis is Levels of Processing Theory (Cermak & Craik, 1979). This theory maintains that the level of semantic engagement with information and input is a critical factor in determining how well that information is managed and retained. Stated differently, information that is processed more deeply tends to be remembered better. It is admittedly somewhat difficult to clearly define what, operationally, makes processing "deep" in a highly objective way (Laufer & Hulstijn, 2001). However, it is not unreasonable to think that the presence of metaphorical elements in pictures presented alongside the verbal forms of the idioms would encourage deeper processing as learners attempt to make sense of the relationship between the visual and verbal input. For the reader's reference, Levels of Processing Theory is addressed comprehensively in section 2.4.1.

Finally, I would like to briefly introduce, define, and delineate the concept of semantic transparency, as it plays an important role as a variable in this thesis. Semantic transparency, stated simply, refers to how clear the meaning of a word or expression is from the sum of its constituent parts. Here, as it relates to metaphorical idioms, I define semantic transparency as the degree to which the literal constituent parts contribute to understanding the overall figurative meaning of an idiom from a native speaker perception. The method of eliciting semantic transparency ratings can vary, as some studies have relied on L2 learners (Steinel et al., 2007), while others utilized native speakers (Irujo, 1993). It is necessary to stress that here and throughout the studies in this thesis, when I refer to semantic transparency, I am indicating *perceived* semantic transparency as determined by native speaker raters. For a much deeper discussion of the nature of and controversy surrounding semantic transparency, refer to sections 2.3.2 and 2.3.2.3.

Now that I have summarized the major theories and concepts that will be resurfacing throughout this thesis, please refer to Table 1 below for a reference outline to the five studies and their corresponding research questions and designs:

Table 1: Overview of studies

<i>Chapter/Study</i>	<i>Main research question</i>	<i>Participants</i>	<i>Design</i>
Chapter 3 Study 1	To what extent do raters agree in their semantic transparency ratings?	15 native speaker teacher participants	Semantic transparency rating of 222 metaphorical idioms with qualitative support for selected idioms
Chapter 3 Study 2	What characteristics of idioms lead raters to rate them as being of higher and lower transparency?	N/A	Comparative analysis of etymologies among multiple English idiom dictionaries
Chapter 4 Study 3	How do the levels of perceived semantic transparency interact with the different picture conditions in terms of their effect on meaning recall?	65 student participants	Quasi-experimental 3X3 Latin square design involving 27 idioms in treatment and meaning recall posttests
Chapter 5 Study 4	Does the use of literal + figurative pictures have a positive effect on learners' ability to interpret the meaning of newly met idioms?	3 student participants	Think-aloud protocol in which participants attempt to interpret the meaning of newly met idioms
Chapter 6 Study 5	To what extent do the views of EFL teachers converge with respect to their attitude towards the pedagogical value of teaching idioms?	15 native speaker teacher participants	Survey eliciting teacher perceptions on the importance of idioms for L2 learners

Table 1 is intended as both a preview of what is to come and as a quick reference to basic information about each study. A much more thorough explanation of and justification for each study will conclude the next chapter in section 2.7.

1.4 Limitations of the research

Learning vocabulary entails much more than simply mapping the form of the word to its meaning. The process of deepening word knowledge is incremental, dynamic, and multi-faceted, involving areas of word knowledge such as register, connotation, pronunciation, and collocations to name a few (for a review of areas of lexical knowledge, see section 2.5.1). Establishing the form-meaning connection of a lexical item is the first (Schmitt, 2008) and most central aspect (Laufer & Goldstein, 2004) of learning a word, and that is what Study 3, the main study in this thesis, aims to measure. Other important dimensions of word knowledge, particularly for idioms, such as constraints on usage and syntax go beyond the scope of this thesis and are therefore not addressed here. For this reason, it is important to clarify that the pedagogical proposals based on the findings in this thesis only claim to aid learners in interpreting and retaining the meaning of idioms.

1.5 Thesis outline

In this introductory chapter I have detailed the motivation for this thesis and very broadly outlined what is under investigation and how this investigation is organized. Beginning in Chapter 2, I aim to 1) make a case for why research concerning the teaching and learning of idioms is important and 2) provide the relevant background of the theories, issues, and previous research that underpin the studies in this thesis. Chapters 3 through 6 lay out the methodologies for and present the results of the five studies in this thesis. In Chapter 3, I first address the research questions related to semantic transparency, as it is an important variable for the studies in later chapters. Chapter 4 and Chapter 5 focus on answering the research questions related to the relative effectiveness of the different picture conditions (*literal + figurative*, *literal only*, and *no picture*), which I consider to be the principal investigation this thesis undertakes. The penultimate chapter, Chapter 6, is distinct in that here I examine teacher attitudes regarding the importance of idioms for L2 learners. In the conclusion, Chapter 7, I summarize the findings and expound on their theoretical and pedagogical implications for the fields of Cognitive Linguistics and SLA.

CHAPTER TWO: LITERATURE REVIEW

This chapter begins the literature review by demonstrating that idioms are important to know yet difficult to learn, which is vital to establish in order to justify undertaking the studies in this thesis. Following this, section 2.2 discusses key features of idioms and deliberates some of the problems associated with their categorization. The word *idiom* is often used as an umbrella term that can at times be unhelpful and it is important to delineate specifically the particular category of idiom that is under inquiry here, namely metaphorical idioms. After defining metaphorical idioms, section 2.3 explains at length the reasoning for choosing metaphorical idioms and relates this to important concepts connected to metaphorical understanding.

In the latter half of the literature review, sections 2.4 and 2.5 delve into the theoretical rationalizations and operational considerations for researching metaphorical idioms specifically, and vocabulary more generally, in order to justify the research design and data collection methods for Study 3. Furthermore, in section 2.6, a comprehensive review of previous idiom-related research, including studies that have employed pictures as part of their design are surveyed and critiqued. It is also here that I introduce and define the term *metaphorical elaboration*, which was inspired in part by the notion of *etymological elaboration* (Boers et al., 2004), a key concept in this thesis. The final section, 2.7, ties everything together so that the purpose and aim of each of the five studies and associated research questions are lucid and meaningful.

2.1 The importance of idioms

In the sections that follow, I will make the argument that idioms are worthy of explicit instruction for a variety of reasons. That is not to say that all L2 learners should be explicitly taught idioms—almost certainly extrinsically motivated and very low proficiency EFL learners would benefit less than intrinsically motivated advanced level learners in an ESL context. And the relevance of context is key because the utility of idioms stretches beyond linguistic competence to include important aspects of social relations and cultural solidarity. Yet in the literature, much of the debate about whether or not idioms should be taught appears to center solely around word frequency. As I will show, not only can word frequency be problematic as a means to determine utility, but also there are other important factors that should be taken into consideration when making curricular choices about idioms in the classroom.

2.1.1 Social functions

Although it may be tempting for many to conceive of metaphorical use in language to be confined to literary devices found in works of poetry and other forms of literature, research in the social sciences has shown this is simply not the case. Given the pervasiveness of metaphor in thought and language, it is perhaps not so surprising that metaphor, and by extension, idioms take on many function-specific roles to facilitate successful communication. Corpus-driven discourse analysis has revealed that despite not being particularly frequent, idioms tend to occur in predictable clusters in specific social discourse functions. Specifically, idioms have been found to occur frequently in negotiation and convergence, evaluation, summarizing, and commentary (McCarthy, 1998), as well as complaining (Drew & Holt, 1988), topic transitions (Drew & Holt, 1998), finding solutions, and making decisions (Koester, 2000). Over the next two sections, I will focus on two of these important functions: evaluation and summarizing.

2.1.1.1 Evaluative function of idioms

The evaluative function of idioms refers to the notion that idioms do not just describe something about the world, but they also comment on it (McCarthy, 1998). Koester (2000) found that idioms played a crucial evaluative role, particularly for negative evaluation or commentary in the workplace. Koester (ibid) attributes the high frequency of negative evaluation idioms to face saving mechanisms through which speakers can minimize interpersonal risk when placing blame or assigning responsibility. This face saving aspect of idioms has been described by Moon (1992) as sheltering behind shared values. Moon explains that idioms represent shared cultural values and accepted truths that are a source of mutual understanding among target culture discourse communities. By invoking an idiom in place of a literal equivalent, the speaker can reduce risk through the 'shared values' that the idiom connotes. In other words, the idiom conveys a certain accepted cultural legitimacy to the negative evaluation, which softens the tone through a more generalizable and taken-for-granted truth.

The evaluative function of idioms is not necessarily negative and serves purposes other than saving face. McCarthy (1998) observes that idioms occur with relative frequency as an important evaluative function in the narration of stories and anecdotes. He goes on to explain that it is the evaluation aspect of storytelling that

effectively separates it from a report, in which the neutral language of reporting is interspersed with evaluative commentary, often in the form of figurative language, on the story's general worth or purpose. This again reinforces the notion that idioms are more than descriptive—they are conduits of the opinions and beliefs of the speaker, through which these otherwise purely descriptive reports can transform into interactive stories.

The interactive nature of idiom-embedded narration is yet another noteworthy feature of idioms in discourse. It has been shown that both the speaker and the listener co-construct evaluative commentary through idiom usage during the narration, in particular near the closing of the topic (McCarthy, *ibid*). In terms of pragmatic competence, this places a significant burden on the listener as he or she might be expected to contribute to the narrative and therefore has relevance to the L2 learner.

2.1.1.2 Summarizing function of idioms

Idioms have been found to frequently occur in discourse as a means to end one topic and move to another by summarizing and thus signaling the close of the topic (Drew & Holt, 1998). Idioms serving this function appear to be especially frequent in certain genres of discourse. For instance, idioms in stories and anecdotes tend to cluster near the end of narrations. Many of these idioms act as narrative codas by the listeners, as a way for the listener to summarize what the speaker had just said, before moving on to a new topic (McCarthy, 1998). Koester (2000) similarly uncovered a summarizing function of idioms that occurred predominantly “in procedural discourse and information provision” in the workplace (p. 182). Taken together, these studies seem to suggest that the summarizing function of idioms is not limited to one particular genre or domain. Although more studies like these are needed to determine just how universal the summarizing function of idioms is across genres, it is possible that this function extends well beyond the genres examined above.

2.1.1.3 Shared knowledge and interpersonal relationships

Research in the social sciences has shown that mutual knowledge between interlocutors is an important aspect in governing and maintaining conversation (Clark, 1985), as well as developing relationships (Planalp & Benson, 1992). As metaphoric and idiomatic knowledge can encode cultural-specific properties and insights

(Wolf & Polzenhagen, 2007), it seems intuitive that these culture-rich lexica play an important role in the mutual knowledge of interlocutors. It is therefore reasonable to expect that the use of metaphor and idioms will be more prevalent among members in these discourse communities.

Novel and creative use of figurative language has also been found to be important for fostering interpersonal relationships between people. Some studies (Bell & Healey, 1992; Bell et al., 1987; Bruess & Pearson, 1997) reported that the use of personal and novel idioms, as a form of ritualistic colloquial discourse, promoted relational satisfaction among adult friends and couples. The prevailing finding among these studies is that the more intimate the relationship between members, be it dyadic or group, the greater the use of these novel metaphoric and idiomatic expressions.

Furthermore, native speakers in general often utilize figurative language creatively (Herrera & White, 2010; Langlotz, 2006), using word play or puns for humorous or playful purposes (McCarthy, 1998). McCarthy (ibid.) observes that native speakers 'unpack' idioms, by manipulating and exploiting the literal parts of an idiom to achieve humorous effects. It is the shared knowledge of the metaphorical substance of the idiom's individual literal parts that allows other native speaker interlocutors to readily understand the meaning. Such exploitation of idioms is not limited to humor as they can also serve as a signal of proficiency (Kjellmer, 1991; Yorio, 1989) and function as a way to cultivate complicity between the speaker and the hearer. Herrera and White (2010) capture the latter notion well, saying:

Speakers are mustering some degree of linguistic engineering and ingenuity and that this is matched by the hearer who shows equal skill in being able to capture the speaker's intention. This, we claim, is a net contributor to communication, fostering complicity between both participants in the language exchange (p. 171).

Not only are the authors (ibid.) commenting on the linguistic competence and knowledge required on part of both interlocutors, but also emphasizing the social role these kinds of exchanges play. This has important implications for L2 learners. Assuming that L2 learners have a desire to assimilate into the L2 target culture and gain membership status among discourse groups and communities, acquiring idioms and learning how to unpack them for creative purposes could provide a powerful segue into forming relationships and building solidarity among native speaker peers

and acquaintances. This would be particularly beneficial to those L2 learners who are living abroad, given the many potential opportunities for social interactions with native speakers.

In addition to the social benefits described above, it must also be said that the creative use of idioms do not necessarily require discourse between interlocutors. That is, such use can be found in speeches and monologues as well. Consider the words of the US president's message to congress and the nation: "I believe a thriving private sector is the lifeblood of our economy. I think there are outdated regulations that need to be changed; there is *red tape that needs to be cut.*" (US President Barack Obama during his final State of the Union speech on January 12, 2016.) This instantiation of red tape used by the US president in one of his final speeches of consequence should signal the value of idioms as an important rhetorical device in even highly formal and consequential discourse registers.

In sum, idioms can perform important functions in a variety of discourse registers and facilitate inter-personal relations within discourse communities. In addition, L2 learners who are familiar with idioms will have greater access to understanding and perhaps even participating in some of the more creative uses of the language often employed between native speakers. Of course, these advantages would be of limited use to those L2 learners who permanently remain in their home country and have little to no contact with or access to native speakers, which is why at the opening of section 2.1 I emphasized the relevance of idiomatic knowledge to those in an ESL rather than EFL context. Yet the cultural insights and values that idioms can potentially transmit (Wolf & Polzenhagen, 2007) could make them an attractive object of study for any intrinsically motivated L2 learner with an interest in the target culture(s) of the language studied.

2.1.2 Frequency

Frequency of words is undeniably important as a criterion for curricular selection in L2 teaching contexts. I would, though, invite the reader to consider the following before proceeding to review previous studies on idioms and frequency:

- 1) Does corpus-driven research always yield informative and reliable data concerning word frequency?
- 2) Is there reason to believe that most corpora's range of registers include those in which metaphorical idioms are most likely to occur?
- 3) Is higher frequency always preferable to lower frequency?

Though I suspect that the reader has likely intuited what my response will be to these three considerations, I would like to first summarize, in the following section, some of the notable findings with regards to idioms and frequency before offering any commentary on the above.

2.1.2.1 Findings from corpus-driven research

Word frequency for idioms is in one sense paradoxical. On the one hand, idioms as a class of words appear to occur with higher than expected frequency in some registers, such as academic speech (Simpson & Mendis, 2003) and some fiction novels (Boers & Lindstromberg, 2009). On the other hand, however, word frequency of individual idioms tends to be low (Grant, 2005; Grant, 2007; Liu, 2003). In fact, Grant (2005) was unable to identify a single 'core idiom' that fell within the 5,000 most frequently used words in English. Due to the apparent low frequencies found for individual idioms in these studies, Grant (ibid.) remained skeptical about the pedagogical value of idioms, but suggested that some of the most frequent ones might be suitable for explicit instruction. Liu (2003), on the other hand, advocated the teaching of low frequency idioms if they were particularly useful to students in a classroom setting. Some researchers (Boers & Lindstromberg, 2008; Cornell, 1999), however, advise language educators to avoid overly relying on frequency from corpora to make curricular decisions. Some of the reasons for this will be discussed in the following sections.

2.1.2.2 Issues related to word frequency

I earlier alluded to issues concerning the reliability of frequency in corpus searches. Owing to modern technology, researchers are able to carry out large-scale searches from corpora databases that have hundreds of millions of words to draw from (e.g. *The Corpus of Contemporary American English*). Though this has empowered researchers in terms of the volume and range of their searches to determine word frequency, there are also disadvantages that go hand in hand with such searches. As Boers and Lindstromberg (2008) caution:

Frequency is doubtless the most straightforward of all the criteria; however, it is well-known that frequency rankings conducted purely and crudely on the basis of form are bound to be uninformative, or even misleading, about the frequency of a given form with a particular meaning (p. 10).

One pertinent issue is that corpus searches based solely on form will naturally only produce in the results tokens of the form specified. Yet meaning in language is not easily reducible to form, as many idioms are expressed as variants, and a substantial amount of non-idiomatic language is polysemous. I will address the implications of each of these, in turn, below.

In section 2.1.1.3, it was pointed out that native speakers often unpack idioms to achieve a humorous effect or display creative wordplay. The result of this unpacking is a variant of the canonical form of the idiom. These variants abound in some registers (Herrera & White, 2010), but for the sake of clarity, take the example Herrera and White (ibid.) used to illustrate the communicative value of knowing *spill the beans* has in *she has never spilt a bean in her life*. Knowledge of the canonical form of the idiom allows the hearer to interpret this to mean *she has never revealed a secret*. In my own personal experience, I have noticed many of the colorful instantiations of idiom variants appearing in the media. To give a sense of how often they can occur, consider a small sample of the idiom variants I have incidentally heard and taken note of that relate to a single individual, Donald Trump, in the lead up to the United States general election from mid 2015 to early 2016:

- 1) God's gift to comedy (CNN headline in reference to Donald Trump; variant of *God's gift to women*; 07/15/2015)
- 2) The elephant not in the room (Republican primary debate moderator, Megyn Kelly, said of Donald Trump; variant of *the elephant in the room*; 01/28/2016)
- 3) The lesser of two assholes (Host of HBO's Real Time, Bill Maher said of Ted Cruz and Donald Trump; variant of *the lesser of two evils*; 02/05/2016)

These rather unflattering examples are testament to the variety of ways native speakers are able to exploit idioms, and I take for granted that one must know the canonical form of an idiom in order to understand them expressed as variants. However, given the limitations of the way in which token counts based solely on form are collected in corpora searches, it is expected that many, if not most idiom variants will *slip through the corpora cracks*. Therefore, there is good reason to believe that the frequencies reported for many individual idioms, if their variants are to be included, are underrepresented in corpora searches (Langlotz, 2006).

Idiom variation also likely contributes to the underrepresentation of idioms in corpora searches. Idiom variations differ from idiom variants in that variations are not

the result of the *ad hoc* exploitation of the idiom's parts by individual speakers, but rather an institutionalized variation of an idiom's form through substitution, truncation, or transformation. Moon (1997, p. 53) provides the following examples of such idiom variation:

British-American variations:

not touch someone with a bargepole (British)

not touch someone with a ten foot pole (American)

varying lexical component:

burn your boats/bridges

throw in the towel/sponge

unstable verbs:

show/declare/reveal your true colors

cost/pay/spend/charge an arm and a leg

truncation:

silver lining/every cloud has a silver lining

last straw/it's the last straw that breaks the camel's back

transformation:

break the ice/ice-breaker/ice-breaking

blaze a trail/trail-blazer/trail-blazing

It is not difficult to see how these types of variations could also be overlooked in corpus searches based on form alone. To reiterate, I argue that both idiom variants and idiom variations should be considered part of any investigation on the frequencies of idioms, as they comprise instantiations of the same basic meaning of the idiom in its canonical form. Such an approach would be methodologically consistent with frequency estimates for single word lexemes (word families) as determined by the aggregate of their lemmas. If this approach is similarly adopted to include idiom variants and variations, then it is conceivable that more idioms will begin to approach high and mid bands of frequency.

Aside from the underrepresentation of idiom frequency in corpora searches, a second concern is the overrepresentation of the frequency of polysemous lexica. As a polysemous word has multiple senses, each sense, I would argue, should be assigned its own frequency, since it is effectively a different, albeit sometimes similar meaning. Furthermore, these senses, or meaning extensions as they are sometimes referred to, are often sufficiently different so as to cause comprehension problems for L2 learners (MacArthur & Littlemore, 2008). Yet, as mentioned, corpus searches are carried out based on the form of the word, and barring the painstaking and

laborious task of teasing out the sense of each token, there is little recourse to differentiate between these differing senses. Ultimately, this causes the token count to be artificially inflated for these polysemous words, as all the tokens from the different senses are pooled together cumulatively and assigned a frequency.

Idioms, of course, can be polysemous as well (e.g. *pull the plug* can refer to putting an end to a project or suspending life support for a hospitalized individual), but there is no particular reason to think that polysemy in idioms is nearly as common as it has been shown to be among many basic, high frequency words. In fact, though scholars have noted that polysemous words are often highly frequent (Crossley et al., 2010), this is something of a circular proposition because multiple polysemous senses of course contribute to their high frequency status in corpus searches. This raises the classic chicken or the egg type question of to what extent polysemous words' frequency status is *caused by* or *results in* their polysemy. In any case, what this means in practice, however, is that many language researchers and educators might mistakenly assume one sense of a "high frequency" polysemous word is more frequent than other "low frequency" non-polysemous words, including idioms. Naturally, if any idiom turns out to be highly frequent, then it should be included accordingly alongside single word lexica in vocabulary lists (Nation & Waring, 1997)

Further complicating this issue is that the frequency of idioms is strongly tied to register and source domains (Biber & Conrad, 2001; Boers, 2013; Boers & Lindstromberg, 2008; Cornell 1999), which suggests that the relative importance of idioms for an L2 learner is highly dependent on that learner's particular needs. For instance, Herrera and White (2010) hand counted variants of idioms and found them to have an "outstanding presence" (p. 169) in news headlines. They suggested that for L2 learners with an interest in business English, the study of idioms could be highly beneficial.

Taken together, a case can be made that idioms are underrepresented and a substantial amount of non-idiomatic language is overrepresented in reported corpora studies. The variation across registers and source domains should also signal the need to exercise caution when selecting (or discarding) idioms for classroom instruction. For some of these reasons, Boers and Lindstromberg (2008) have cautioned against using word frequency as the sole measure for the selection of vocabulary.

2.1.2.3 Word frequency and the L2 learner

From the outset of section 2.1.2, I posed the question about whether or not higher frequency words were in all cases preferable to lower frequency words. The proposition that the highest frequency words should take priority for explicit instruction has been widely called for and seems highly intuitive. However, there have been well-reasoned arguments that advocate the explicit teaching of low and mid frequency vocabulary as well.

Laufer (2005) has maintained that the teaching of low frequency vocabulary is justified when a high level of proficiency is desirable because low frequency words will not be met enough in the input to be learned incidentally. In a similar vein, Boers and Lindstromberg (2009) go even further and suggest that in some cases, the explicit teaching of mid-frequency vocabulary might be of more utility to L2 learners than are some high frequency words. Their reasoning is that by virtue of being high frequency, learners will inevitably meet those words many times, which increases the chance for them to be learned incidentally. On the other hand they contend that 'medium-frequency' (ibid. p. 61) vocabulary will be met less frequently and therefore should not be discounted as possible candidates in curricular decisions. I would also echo my agreement with this notion. With the increasing popularity of graded readers as part of L2 English curricula, learners have many opportunities to meet high frequency lexis, and it is feasible that a substantial amount of said lexis is acquired by the L2 learner as a result of the sustained reading of simplified input rather than by direct intervention. Naturally, these justifications for teaching mid and low frequency lexis apply to formulaic language, including idioms, as well.

2.1.2.4 Cognitive processing and learning efficiency

Another factor that merits attention in a deliberation on word frequency derives from what is known about idiom comprehension and processing at the cognitive level. In the literature on idiom word frequency, the discussion is thoroughly focused on frequency as it concerns the figurative meaning of the idiom as a whole. Yet we know from psycholinguistics that at least one model of idiom comprehension (for a comprehensive review of idiom comprehension models, see Skoufaki, 2006) posits the online comprehension of both the literal parts and the figurative meaning simultaneously. If learners are also decoding the meaning of the literal constituents, then should not the frequencies of those individual literal parts also be considered as

part of the selection criteria? Would not simultaneous online processing of both meanings suggest a kind of “kill two birds with one stone” benefit? If such a model of idiom comprehension is true, then in the above example idiom, the learner might be, at no additional cost in terms of time on task, strengthening lexical access to both the figurative meaning of the idiom as well as the related content words including *kill*, *bird*, and *stone*.

The caveat, naturally, is that no single model of idiom comprehension enjoys uncontested support, and an in depth discussion on the nature of the online processing of idioms goes beyond the scope of this thesis. It is worth briefly mentioning, however, that some findings from empirical studies with native speakers suggest that both literal and figurative meanings are activated simultaneously (see Gibbs, 1994, for a review), while other findings suggest the contrary (Tabossi et al., 2009). Though inconclusive, the notion of literal-figurative simultaneous online processing of idioms, in theory, would appear to predict the kind of cognitive advantage illustrated above, and therefore should at least enter the discussion on idioms and frequency considerations. For a recent overview of methods in the online processing of idioms, see Carrol and Conklin (2014a).

To conclude, in spite of the prevalence of idioms as a class, frequency appears to be relatively low at the individual item level. However, there is reason to suspect that idiom frequency might be underrepresented in corpora, and even if that is not true, there are reasons to justify and even in some cases prefer mid or low frequency lexica for explicit instruction. Finally, an argument could be made that the literal parts of idioms should not be ignored outright or discounted as irrelevant in terms of their potential to offer L2 learners the opportunity to deepen their knowledge and promote their retention of them.

2.1.3 Challenges facing L2 learners

We now turn our attention to the question of what makes learning idioms difficult. L2 learners face many challenges when learning idioms for a number of reasons. Unlike other vocabulary, it is more difficult for learners to acquire the meaning of idioms because their figurative meanings do not follow from the sum of their literal constituent parts. This makes it difficult to correctly interpret the meaning of the target idiom in cases of incidental exposures. Also, native speakers tend to avoid using idioms with second language learners (Arthur et al., 1980), which results in

fewer opportunities for exposures to such figurative language. Second language textbooks further aggravate this problem by treating idioms superficially or ignoring them altogether (Danesi, 1995). Even in cases in which second language learners are able to successfully learn the meaning of an idiom, accuracy in production is far from guaranteed. As idioms as a class exhibit a high degree of syntactic frozenness, it can be difficult for learners to use idioms in a way that is grammatically and syntactically appropriate. For these reasons, mastery of receptive and productive knowledge of idioms is likely an obstacle that many students have difficulty overcoming.

2.1.3.1 Non-literality

Non-literality is inherently tied to the non-compositionality of idioms (discussed in detail in section 2.2.1.1). That is, the figurative meaning of the idiom cannot be directly 'composed' or understood by analyzing the sum of its literal words. When new idioms are met in the input, a non-literal interpretation can prove difficult for learners to discern, in particular for semantically opaque idioms. For even the more semantically transparent idioms (see section 2.3.2 for further discussion on semantic transparency), non-literality can pose problems for learners, because they lack the necessary metaphorical awareness to work out the meaning on their own.

Some empirical research has found support to indicate comprehension difficulties as a result of non-literal language. For example, in one study (Littlemore et al., 2011) it was found that international students frequently misunderstood their lectures due to a high incidence of figurative and metaphorical language in the L2. The kind of lexical environment L2 learners are exposed to while living in the target culture appear, therefore, to be very much at odds with the metaphorically impoverished learning environment characterizing typical second language textbooks and curriculum. For this reason, it is unsurprising that non-literal language is a cause of confusion for learners. For a more in depth discussion on the role of conceptual and metaphorical knowledge in L2 language learning, see section 2.3.1.

2.1.3.2 Exposure to idioms

A second obstacle that learners face is the overly literal and modified input they are exposed to in communication with native speakers. Studies have reported (Arthur et al., 1980; Irujo 1986a) that native speakers tend to adjust their language such that

they omit idioms and abstract lexica when conversing with non-native speakers. While modified speech might be an effective means of facilitating communication and negotiating meaning, a consequence of this kind of communication strategy is metaphorically impoverished input in discourse between native and non-native speakers. Even though other media, such as television or movies provide metaphorically enriched dialog (Cooper, 1998; Irujo, 1986a), there is no manner to negotiate meaning, which means these idioms would likely go unnoticed.

Another issue related to exposure lies with the state of the L2 classroom itself. It has been noted that textbooks and other such teaching materials that address idioms do so in a way that is highly contrived and not representative of authentic use (McCarthy, 1998). Other teaching materials do not even address idioms at all, or do so very superficially (Danesi, 1995; Irujo, 1986a), which is in some sense unsurprising given that entire series of commercial textbooks often fall short of even addressing the first 2,000 most frequent English word sufficiently (see O'Loughlin, 2012). In light of this, it could be that it is challenging for textbook writers to integrate idioms into the curriculum in a way that is systematic and pedagogically sound, especially given some of the unique features of idioms as a class of words. Alternatively, and perhaps a bit cynically, this could be indicative of a dismissive or passive attitude stemming from the idea that idioms are an unessential part of the language learning process. In either case, the lack of adequate and pedagogically sound exposure to idioms in curriculum is another major stumbling block for L2 learners.

2.1.3.3 *Appropriate use*

One last consideration is related to the register and frozenness of idioms. Successfully producing idioms in an appropriate context and in correct form is another source of hardship for learners, compounded by the greatly varying registers and grammatical constraints of many idioms (Cornell, 1999; Irujo, 1986a). Many of these grammatical constraints are connected to the syntactical fixedness of many idioms. Gibbs and colleagues (1989) noted this in examples such as *kick the bucket*, which means *to die*. However, if changed into passive voice, such as *the bucket was kicked*, the meaning can only be interpreted literally. Such constraints could thwart learners' attempts at production of idioms, since they tend to be less syntactically flexible than their non-idiomatic lexical counterparts.

In this section, I have briefly outlined several of the major factors that make the learning of idioms difficult for L2 learners. Some of these factors are external, including idiom avoidance in native speaker and non-native speaker interactions and inadequate exposure in the L2 classroom, while other issues relate to idiom inherent features, such as non-compositionality and syntactic restrictions on use. In the next section, I will expand upon some of these idiom inherent features by examining the key characteristics of idioms and how these impact their classification. This will pave the way for identifying and delineating the type of idiom I investigate in this thesis.

2.2 Defining idioms

A consistent and unified definition and delimitation of what constitutes an idiom has proven to be a remarkably challenging undertaking (see Grant & Bauer, 2004). Liu (2008) has noted that scholars often define idioms differently, with some offering a broader, more inclusive denotation, while others delineate the meaning in a much narrower manner. Moon (1998) captures this problem succinctly saying, “Idiom is an ambiguous term, used in conflicting ways” (p. 3). Given the ambiguity and many uses of the term *idiom*, it is important to clarify how this term has been used in the literature and then specify how it is defined here for the purposes of this thesis. Here, I will attempt to demystify some of the ambiguity surrounding the classification of idioms by first, in section 2.2.1 describing the largely accepted major features and characteristics of idioms. Following this, in section 2.2.2, I will introduce some means of classifying idioms as well as discuss issues with their classification. Finally, in section 2.2.3, I will outline how I use the term idiom and what it specifically entails for the studies appearing in the later chapters.

2.2.1 Characteristics

In spite of the aforementioned disagreements about defining idioms, a review of the literature suggests that there is a degree of consensus regarding some of the basic properties of idioms. These are that idioms are non-compositional, institutionalized, and syntactically frozen (to varying degrees). In what follows, I will briefly outline each of these concepts.

2.2.1.1 Non-compositionality

The concept of non-compositionality, since it relates to meaning, might possibly be the most salient characteristic of idioms that distinguishes it from non-formulaic vocabulary. As mentioned in section 2.1.3.1, the non-compositionality of idioms refers to the inability to extract the figurative meaning of an idiom from the sum of its literal constituents. In other words, the literal words that make up the idiom do not cumulatively contribute, in any literal sense, to what the idiom signifies in its figurative sense. In essence, this affords idioms the unusual status as a class of words that have dual meanings: both literal and figurative.

Non-compositionality as a feature of idioms, however, is not without its own set of issues. As Moon (1998) rightly points out, idioms are only non-compositional in the strictest literal sense, yet this does not account for the ability to decompose and metaphorically analyze the literal parts, which could lead to correctly interpreting the figurative meaning of semantically transparent idioms. Nunberg and colleagues (1994) echo their agreement by suggesting that non-compositionality is misapplied to many idioms because they can often be decomposed and understood after the fact. Though decomposition is more related to the concept of semantic transparency (discussed later in section 2.3.2), suffice it to say that idioms, as a collective class of words, are only wholly non-compositional insofar as a direct literal analysis would allow.

2.2.1.2 Institutionalization

A second feature that characterizes idioms is their institutionalized nature. Lipka (2002) defines institutionalization as “the integration of a lexical item, with a particular form and meaning, into the existing stock of words as a generally acceptable and current lexeme” (p. 112). Many idioms are highly institutionalized, which means they are familiar to and recognized by a far ranging and diverse group of native speaker discourse communities (Fernando & Flavell, 1981; Moon, 1998).

2.2.1.3 Frozenness

A third defining characteristic of idioms is frozenness, which refers to the relative syntactic constraints that vary from idiom to idiom. While many idioms are largely frozen, however, corpus research has found that nearly half of the idioms examined have been found to allow for a fair degree of syntactic flexibility (Moon, 1998).

Interestingly, Gibbs and Nayak (1989) have found support for syntactic flexibility being a positive function of an idiom's decomposability. This means that the more opaque an idiom is, the more syntactically frozen it is likely to be. Scholars, however, have had difficulty providing a uniform and accurate set of criteria in regards to classifying the degree of frozenness (Grant & Bauer, 2004). Furthermore, this problem of classification extends beyond syntax to include other types organization. These issues will be dealt with in the next section, with an emphasis on the means of classification most pertinent to this thesis—semantics.

2.2.2 Issues in classification

Scholars have struggled to reach a consensus on a unified and accepted means of classifying idioms (Cornell, 1998; Grant & Bauer, 2004; Liu, 2008; Moon, 1998). This difficulty could be attributed, in part, to the differing aspects of word knowledge, leading them to classify idioms according to semantic (Bolinger, 1975; Cowie et al., 1993; Fernando & Flavell, 1981; Moon, 1998; Yorio, 1980), syntactic (Fernando, 1996; Moon, 1998; Yorio, 1980), and functional (Cowie et al., 1993; Strassler, 1982; Moon, 1998) means of organization. For the purposes of the studies in this thesis, a semantic classification of idioms is the most helpful because my investigations are primarily concerned with the figurative meaning of idioms. Please refer to Table 2 (reprinted from Grant & Bauer, 2004) on page 23 for a summary of the semantic classifications of idioms.

Upon reflecting on Table 2, there are two differences that readily become apparent: nomenclature and number of categories. As regards the number of categories, the table shows that they vary slightly, with most scholars designating four, but some having three distinct semantic categories. A difference in the number of categories signals that there might be, however slight, some degree of semantic overlap or even mismatch between the different respective categories of these scholars. Moreover, the differences in nomenclature among these scholars highlight a particular focus on the type of idiom included, with some of the broader classifications including collocations, while the narrower classifications appear more restricted. For my purposes, I will refer to Moon's (1998) semantic categorization scheme as it best matches the terminology and type of idiom my research questions address.

Table 2: Summary of semantic classification of idioms

Yorio (1980)	Cowie, Mackin & McCaig (1983/93)	Alexander (1987)	Cacciari and Glucksberg (1991)	Howarth (1998)	Moon (1998a)	Fernando and Flavell (1981)	Fernando (1996)
Transparent (not idioms): <i>your face looks familiar</i>	Open collocation: <i>fill the sink, a broken window, in the row</i>	Literal phrase: <i>hit the ball</i>	Analysable transparent: <i>break the ice, spill the beans</i>	Free combination: <i>under the table</i>	Transparent metaphor: <i>alarm bells ring, behind someone's back</i>	Literal and/or transparent: <i>cut wood, break eggs, rely on, add fuel to the fire</i>	Literal idiom [sic]: <i>tall, dark and handsome, on foot, for example</i>
Semi-transparent (expressions or idioms): <i>shake hands, bumper to bumper, skyscraper</i>	Restricted collocation/ Semi-idiom: <i>jog one's memory, a blind alley, catch someone red-handed</i>	Semi-idiom: <i>hit a six</i>	Non-analysable: <i>by and large</i>	Restricted collocation: <i>under attack</i>	Semi-transparent metaphor: <i>on an even keel, grasp the nettle, the pecking order</i>	Metaphor/Semi-transparent: <i>skate on thin ice, kill two birds with one stone, the boot/shoe is on the other foot</i>	Semi-literal idiom: <i>kith and kin, drop names</i> Semi-idiom: <i>catch your breath, foot the bill</i>
Figurative idiom: <i>catch fire, close ranks, beat one's breast, bleed someone white</i>	Metaphorical idiom: <i>hit the jackpot</i> Figurative idiom: <i>hit list</i>	Quasi-metaphorical: <i>giving up the ship, count your chickens before they're hatched, carry coals to Newcastle</i>	Figurative idiom: <i>under the microscope</i>		Metaphor/Semi-opaque: <i>burn one's boats, tarred with the same brush, off the top of one's head</i>		
Opaque/True idioms: <i>by and large, take a leak, knock on wood, be on the wagon</i>	Pure idiom: <i>blow the gaff, kick the bucket, in a nutshell</i>	Opaque/Pure idiom: <i>hit the sack</i>	Analysable-opaque: <i>kick the bucket</i>	Pure idiom: <i>under the weather</i>	Opaque metaphor/Pure idiom: <i>bite the bullet, over the moon, red herring, kick the bucket</i>	Full idiom/ Opaque: <i>pull someone's leg, pass the buck, trip the light fantastic</i>	Pure idiom: <i>spill the beans, chin wag, red herring, take 40 winks, have cold feet</i>

Reprinted from Grant, L. E. & Bauer, L. (2004). Criteria for re-defining idioms: Are we barking up the wrong tree? *Applied Linguistics*, 25, 38-61.

2.2.3 Metaphorical idioms

In this section I will clearly define and delineate my usage of idiom as it pertains to this thesis. As I mentioned in the previous section, Moon's (1998) terminology in her semantic classification of idioms was particularly useful due to her consistency in employing the term *metaphor* in all four of her categories, from transparent to opaque. I am adopting a similar usage to describe the idioms that appear in my investigations. That is, as the focus of this thesis is on metaphors and metonymies as they appear in idioms, my delineation of idioms excludes those that are largely compositional, such as *open collocation* (Cowie et al., 1993), *restricted collocation* (Howarth, 1998), and *literal idiom* (Fernando, 1996).

Also excluded are some subcategories of phrases sometimes subsumed under the category of idioms (see Makkai, 1972 for details), such as institutionalized politeness and greetings (*How do you do?*), familiar quotations and proverbs (*Don't count your chickens before they hatch*), and understatement (*I wasn't too crazy about it*). Naturally, as I focus on semantic categories, I do not restrict any idioms based on syntactic criteria, so that verb + noun (*bury the hatchet*), preposition + noun (*under the weather*), and adjective + noun (*red tape*) expressions are all subsumed in my definition of metaphorical idioms.

Lastly, it is necessary to qualify one minor but relevant distinction between the ways in which Moon (1998) and I approach semantic categorization. As Moon (ibid.) notes:

Subclassification of metaphors reflects degrees of transparency, and it will be clear that such classification is subjective and represents a continuum rather than discrete categories (p. 22).

In order to more objectively determine a degree of transparency, I rely on native speaker raters to collectively assign a semantic transparency rating for the later studies in this thesis. As there will be a numeric value that scales across this semantic transparency continuum, the terminology is reflective of this. That is, I denominate *low*, *mid*, and *high* transparency levels as opposed to Moon's (ibid.) categorizations of *opaque*, *semi-transparent*, and *transparent*. For details on semantic transparency, see section 2.3.2.

2.3 Why examine metaphorical idioms?

In the opening section of this literature review, I made the case that knowledge of idioms can offer L2 learners a number of benefits, both social and linguistic. Now that I have defined my usage of the term *metaphorical idiom*, I would like to extend this discussion on utility to make the claim for additional benefits specifically related to the learning of this particular kind of idiom. In the sections that follow, I will introduce the concepts of conceptual fluency (Danesi, 1995) and metaphorical awareness, explain why these concepts are important for second language learners, and suggest how metaphorical idioms can aid in their development. Furthermore, I clarify key points on the nature of semantic transparency and how it is connected to Conceptual Metaphor Theory (Lakoff & Johnson 1980) and encyclopedic world knowledge.

2.3.1 Metaphorical knowledge, idioms, and the L2 learner

Since the publication of Lakoff and Johnson's (1980) seminal work on the pervasiveness of metaphor in everyday life, there has been resurgence in Cognitive Linguistics inspired research on metaphor and the role it plays at the level of thought and how it manifests in linguistic expressions. As it relates to second language pedagogy, a number of scholars have called for developing L2 learners' metaphorical and conceptual knowledge so that they are able to better understand and use metaphorical language in the L2 (Danesi, 1995; Deignan et al., 1997; Hoang, 2014; Lazar, 1996; Littlemore and Low, 2006; Low, 1988; MacLellan, 1994). The specific terms that have been used vary, but what unifies the notions of *conceptual fluency*, *conceptual knowledge*, *metaphorical awareness*, and *metaphorical competence*, is the underlying assumption that a fundamental understanding of metaphoric and metonymic concepts in the L2 will lead to a better understanding of native speaker discourse and more natural, native-like discourse in oral and written production.

Encouragingly, L2 learners seem to take note of and analyze metaphorical expressions in the target language more so than do native speakers (Kecskes, 2006; Picken, 2007). Littlemore (2009) points out that this increased salience of metaphor in the L2 can be acted on to the benefit of the learner. To maximize such benefits, however, it is important to address the need for raising metaphorical awareness in the classroom. As L2 learners tend to notice metaphor in the L2, a sufficient amount of metaphorical competence will empower them to better understand and

decompose the novel expressions they meet. Indeed, empirical evidence from studies has shown that learners benefit from instruction informed by metaphorical awareness raising strategies (Boers, 2000; Gao & Meng, 2010; Guo, 2007; MacArthur, 2010). Boers (2000) found that drawing attention to metaphorical concepts enhanced recall of vocabulary, while Gao and Meng (2010) reported increased comprehension of idioms. Such teaching strategies could also have a positive impact on *correct* use of metaphor in production as well, since L2 learners appear to spontaneously use metaphor in written output even when unprompted to do so (MacArthur, 2010).

The results from the above studies are promising and show that the development of metaphorical competence is an important aspect of L2 language mastery. Yet despite the need to promote metaphorical competence, there has not been wide spread adoption of metaphorical awareness raising in the L2 classroom, which is reflected in overly 'literal' commercial courses and textbooks (Danesi, 1995; Littlemore & Low, 2006). Further compounding this problem is the fact that classroom English is also highly literal and devoid of the type of idiom rich discourse typical of native speakers (Henzl, 1979), a fact that contributes to L2 learners' underdeveloped levels of metaphorical competence. Although it has been shown that metaphorical competence is important, L2 learners notice it, and awareness raising strategies work, the typical classroom environment does not provide learners with the input they require to further develop and acquire metaphorical language and reasoning in the L2. Metaphorical idioms, however, could be part of a solution to this problem by providing instantiations of metaphor, which is discussed more fully below.

I have described in this section how it is important for second language learners to develop their metaphorical competence in the target language, which in turn, it appears, might also help learners comprehend metaphorical idioms. Moreover, I suspect that the relationship between metaphorical competence and idiomatic exposure is bidirectional and mutually reinforcing. In other words, not only does greater metaphorical competence seem to have a positive effect on comprehending idioms, but it is also plausible that idioms can contribute, in an incremental fashion, to a learners' growing sense of metaphorical competence. In much the same way as L2 input flood leads to incidental learning of vocabulary and grammatical structures, would not the same general cognitive processes also apply to the many instantiations of metaphor that idioms provide, leading to a greater implicit understanding of metaphor in the L2?

2.3.2 Semantic transparency

For cognitive linguists, an idiom “is transparent to the degree that a link can be found between its form and meaning” (Skoufaki, 2009 p. 20). In this sense, semantic transparency is similar to Gibbs and Nayak’s (1989) theory of decomposability, which refers to how the literal parts of idioms “can be assigned meanings, each contributing to the expression’s figurative interpretation“ (p. 104). Under this theory, Gibbs and Nayak (ibid.) propose three levels of decomposability: *Normally decomposable*, *abnormally decomposable*, and *nondecomposable*, which would seem to conceptually correspond to Moon’s (1998) notion of *transparent*, *semi-transparent*, and *opaque* idioms discussed in section 2.2.3. That is, *decomposable* or *abnormally decomposable* idioms are those for which their literal parts contribute to the overall figurative meaning in a way that is *transparent* or *semi-transparent*, while *nondecomposable* idioms are those that are *opaque* or unanalyzable. For the sake of consistency, I will from this point on simply refer to these largely interchangeable terms as varying degrees of semantic transparency (*high*, *mid*, and *low*), as I believe this term better captures semantic transparency’s scalable nature.

As we shall see in the following sections, however, semantic transparency, as it relates to idioms, has proven to be the source of some controversy, which has direct implications for the studies in this thesis. For this reason it is crucial to explain, from a theoretical standpoint, the relationship between semantic transparency intuitions (i.e. how transparent native speakers perceive the figurative meaning of an idiom to be) and the possible sources of these intuitions. In order to do this, I will first introduce one of the most widely cited and important theories in metaphor, Conceptual Metaphor Theory (Lakoff & Johnson, 1980), in section 2.3.2.1, and explain its role in semantic transparency intuitions. Following this, in section 2.3.2.2, I will explore a far less examined source of semantic transparency, encyclopedic knowledge, and show how it is linked to how semantic transparency is perceived for idioms. Finally, in section 2.3.2.3, I weigh in on the current debate surrounding the nature of semantic transparency intuitions and summarize how my investigations on metaphorical idioms contribute to informing this discussion in the literature.

2.3.2.1 Conceptual Metaphor Theory and semantic transparency

It is difficult to overstate the impact Conceptual Metaphor Theory (Lakoff & Johnson, 1980) has had on research in metaphor. Since CMT has been proposed, hundreds of

not thousands of studies have examined, in some fashion, the underlying assumptions of CMT. To give the reader some sense of the importance of CMT, at the time of writing this, a search on Google Scholar revealed that the seminal work in which CMT was first explored in depth, *Metaphors we Live by* (Lakoff & Johnson, *ibid.*), had been cited over 37,000 times. It is here in this section that I intend to convey what CMT posits about metaphor in the mind, and how it is connected to semantic transparency, and as a result, the understanding and learning of metaphorical idioms.

A major tenet of CMT is that metaphor is ingrained in our minds at the level of thought. Lakoff and Johnson (*ibid.*) contend that this is because of the universal way in which people perceive, understand, and experience the world. Human beings as a singular species share a common set of physical and perceptual attributes and this results in a similar kind of *embodied experience*. It is this embodied experience that underlies the notion of conceptual metaphors. That is, these metaphors are conceptual in that they are assumed to exist at the level of the mind, and come about as a result of embodied experience.

In order to illustrate how embodied experience and conceptual metaphors can be related, I will draw from one of the many examples Lakoff and Johnson (*ibid.* p. 15) provide:

HEALTH AND LIFE ARE UP; SICKNESS AND DEATH ARE DOWN

He's at the *peak* of health. Lazarus *rose* from the dead. He's in *top* shape. As to his health, he's way *up* there. He *fell* ill. He's *sinking* fast. He came *down* with the flu. His health is *declining*. He *dropped* dead.

Physical basis: Serious illness forces us to lie down physically. When you're dead, you are physically down.

In the above example, HEALTH AND LIFE ARE UP; SICKNESS AND DEATH ARE DOWN are two conceptual metaphors that are assumed to be rooted in a physical basis (i.e. embodied experience) described. The actual linguistic metaphors that arise as a result of this are *peak*, *rose*, *top*, and *up* for the former, and *sinking*, *down*, *declining* and *dropped* for the latter of these two conceptual metaphors. This is an important distinction that illustrates the assumption that conceptual metaphors exist at the level of the mind, but manifest through various linguistic metaphors at the level of language.

CMT has also been demonstrated to underlie metaphorical idioms as evidenced by the many figurative expressions that have been linked to conceptual metaphors. The conceptual metaphor ANGER IS HEATED FLUID IN A CONTAINER, for example, has received much attention (Boers, 2000; Gibbs et al., 1997; Lakoff & Kovecses, 1987) as it is particularly productive in the linguistic metaphors, in the form of metaphorical idioms, which arise from it. Consider some of the following English idioms relating to anger:

- 1) John blew his stack.
- 2) Mary flipped her lid.
- 3) John's blood was boiling.

These instantiations draw attention to the physical changes in the body that accompany the onset of anger, such as a rise in temperature and a sensation of heat. Thus, as a result of this embodied experience, human beings can conceptualize anger in a similar way, which gives rise to linguistic metaphors such as the three mentioned above.

Conceptual metaphors, being based on embodied experience, are assumed to be largely universal, and this has direct implications for semantic transparency. If the assumption is made that linguistic metaphors come about from universally shared embodied experiences, then it could be argued that those linguistic metaphors are interpreted via an understanding, at the level of thought, of the conceptual metaphors that underlie them. That is, they may be perceived to be more semantically transparent than linguistic metaphors unrelated to conceptual metaphors because they are *motivated* by these embodied experiences.

In sum, CMT provides a model of metaphorical understanding that can help account for some of the ways in which people perceive and interpret metaphorical expressions in a similar way. It is therefore an important consideration in relation to the variable of semantic transparency examined in this thesis. Moreover, an increase in transparency due to underlying conceptual metaphorical knowledge has significant pedagogical implications, which are discussed further in section 2.3.2.3. Yet there are other, albeit less studied, accounts for interpreting metaphor based on encyclopedic knowledge and the possible role of conventional metaphors, which need to be discussed first in the section that follows.

2.3.2.2 *Encyclopedic knowledge and semantic transparency*

The previous section introduced the groundbreaking idea of conceptual metaphors, which exist at the level of thought and are a result of embodied experience. However, research since the inception of CMT as a workable theory has shown that embodied experience is only one side of the CMT coin. Notably, a number of scholars have rejected or remained skeptical of this strong version of CMT based on methodological or theoretical grounds (Howe, 2008; McGlone, 2007; Murphy, 1997; Rakova, 2002; Steen, 2011). Furthermore, the notion of *discourse* metaphors, or those that are used deliberately for effect, reflects the fact that not all metaphors are necessarily conceptual (Steen, 2008; see also Steen 2014). Thus, the emerging weaker version of CMT has recognized that although embodied experience plays a vital role in accounting for how humans metaphorically and metonymically reason in a kind of basic and unconscious universal sense, there are other factors at work that govern how metaphors are instantiated and understood in language and thought.

In particular, it has been shown how both culture (Kovecses, 2005) and context (Kovecses, 2015) can be responsible for many of the *non-universal* instantiations of metaphor in language. With this in mind, I contend that a theoretical approach that incorporates and accommodates culture, context, and the knowledge thereof is important for elucidating how idioms can be understood via figurative reasoning. Owing to the institutionalized nature of idioms (as opposed to the often novel use of metaphors), many of the so-called *dead metaphors* inherent in idioms often harken to historically, culturally, or contextually bound information or events. Such events are not necessarily tied to embodied experience, and it might be more helpful to consider how world knowledge can potentially contribute to the way in which idioms' literal parts are metaphorically interpreted via the corresponding figurative meanings. In doing this, the relevance world knowledge has for informing what is known about semantic transparency will be shown, which is important for the studies later introduced in this thesis.

In order to more fully appreciate the way in which world knowledge can impact how literal and figurative meaning is interpreted in idioms, it is necessary to describe the cognitivist concepts of abstraction, schema (Langacker 1987; 2008), and frames (Fillmore, 1982), later refined to be called *idealized cognitive models* (Lakoff, 1987). These concepts constitute some of the generally accepted operations that are

relevant for metaphorical reasoning and posited to exist in the conceptual system of the human brain. Stated simply, the conceptual system is a dynamic entity that comprises the sum of concepts, or schema, stored in the brain. These schemas are abstract templates that are continually developed, reinforced, and fine-tuned through abstraction, which refers to the way in which patterns and commonalities are extracted from exposure to language use and contribute to forming said schema. Schema itself is neither wholly discrete nor continuous, but make up fairly blurry networks of knowledge that can often overlap with analogous or other similar types of knowledge. That is, schemas are motivated by recurring similarities, yet the boundaries separating schemas are not clear-cut and often in flux.

From the perspective of language *use*, these built up schema networks mutually interact and create frames of semantic knowledge that can be drawn upon to convey meaning and comprehend input through language. These frames, or ICMs as Lakoff (1987) calls them, contain both core and peripheral information about the domains of knowledge they correspond to and overlap with. In this sense, frames could be thought of as comprising the denotative *as well as* the connotative meaning of words. As an illustration, consider the oft-cited classic example used by Fillmore (1982) for the word *bachelor*. Fillmore (ibid.) points out that although a *bachelor* simply denotes an unmarried adult man, our encyclopedic knowledge stemming from the world act to constrain who is the best example, or prototype, of a *bachelor* (see Lakoff, 1987 for details on prototypes). The connotative meaning suggests someone who is unmarried but is a good candidate for marriage, possibly in the near future. The notion of bachelor would therefore not likely conjure up certain religious figures, such as the Pope, or those of an age too young or too old to consider marriage because they are not prototypical of what a bachelor implies. In sum, it is this accumulated encyclopedic and linguistic knowledge that acts to elaborate, in a nuanced and connotative fashion, what certain domains of knowledge imply, and this in turn informs how metaphors, and specifically idioms, can be potentially interpreted.

The necessary cognitive preamble outlined above introduces a number of similar, and often interchangeable terms that in essence describe in what Kovecses and Szabo (1996) refer to more simply as 'general conventional knowledge' (p. 338). A perhaps even more accurate term, insofar as this thesis is concerned, is *encyclopedic world knowledge*, which has been used in the literature to account for

precisely how idioms can be figuratively understood via knowledge about their literal constituents. Vega Moreno (2005, p. 394) calls attention to this by stating:

A feature of idioms, even the most opaque ones, is that, unlike lexical items, they are generally composed of words which are familiar to the hearer. The degree of transparency of an idiom would be determined by the extent to which some of the encyclopedic information made accessible by these words can actually help the hearer to derive an appropriate overall interpretation.

This encyclopedic knowledge, I contend, is disconnected from the kind of metaphorical understanding proposed under the strong version of CMT. As mentioned in section 2.3.2.1, the strong version of CMT assumes that metaphor exists at the level of thought and is a result of embodied experience. This means that we understand metaphor as a result of the way in which we experience and perceive our surroundings. Encyclopedic knowledge, as defined for the purposes in this thesis, more simply refers to our real world, accumulated knowledge. In order to illustrate this difference, consider the following two idioms in Table 3 below.

Table 3: CMT and encyclopedic knowledge accounts of metaphor in idioms

Idiom	Under the weather	Give someone the green light
Figurative meaning	To be sick	To give someone permission
Potential CMT account	BAD IS DOWN <i>Under</i> in <i>under the weather</i> could hint at the undesirable or ‘bad’ condition of being sick.	PROGRESS IS FORWARD MOTION Proceeding forward when a light turns green could relate to progress achieved when given permission to do something.
Potential encyclopedic knowledge account	Certain kinds of weather are associated with catching a cold, or becoming ill.	Traffic signals that are green indicate <i>go</i> , which is a kind of permission to proceed.

Table 3, though anecdotal, draws attention to two important observations, which are that 1) encyclopedic knowledge is distinct from the strong version of CMT and 2) encyclopedic knowledge could function alongside CMT (though not necessarily so) as a means to derive meaning from figurative expressions. In the case of *give someone the green light*, the green light might be decomposed to metaphorically stand for permission to do something, stemming from common knowledge of international standards in traffic and transportation (i.e. red means *stop*, yellow means *slow down*, green means *go*). Though this in and of itself might be sufficiently apparent to elucidate the literal-figurative semantic relationship for this particular idiom, there could also arguably be conceptual metaphorical knowledge

reinforcing such a relationship, as was shown with the somewhat indirect, yet related PROGRESS IS FORWARD MOTION conceptual metaphor. In essence, I propose that both conceptual metaphors based on embodied experience and conventional metaphors derived from encyclopedic knowledge can function independently, but can also potentially work in concert.

In spite of the potential relevance encyclopedic knowledge has for shedding light on how metaphor is interpreted and understood in idioms, there is a noticeable lack of experimental research investigating this. It is not inconceivable that conventional metaphors understood via encyclopedic knowledge plays a key role, perhaps even more so than do conceptual metaphors, in contributing to elucidating the figurative meaning of idioms, both before and after the fact. Stated differently, the semantic transparency could be connected to the degree to which encyclopedic knowledge of the literal constituent parts informs the overall interpretation of an idiom's figurative meaning. As the reader will discover, this question on the utility of encyclopedic knowledge and its relationship to semantic transparency inspired the basis for Study 2 (and to a lesser degree Study 1) in this thesis, which will be introduced at the end of the literature review. Before leaving the issue of semantic transparency, however, some mention of the controversy surrounding semantic transparency is warranted, which is discussed in the next section.

2.3.2.3 Controversy surrounding semantic transparency intuitions

In the previous two sections, I demonstrated how CMT and encyclopedic knowledge could influence semantic transparency intuitions. However, the notion of semantic transparency intuitions has also drawn criticisms from scholars who contend that such intuitions are much of the time arbitrary and subject to a kind of retroactive interpretation based on the stipulated meaning of expressions as opposed to the conceptual metaphors that might underlie them (Keysar & Bly, 1995; Keysar & Bly, 1999). In this section, I present this controversy because it concerns the variable of semantic transparency in my research design, and it also prompted my first research question, which Study 1 addresses. Specifically, if semantic transparency is not reliably motivated in a systematic way, then its validity as a means to organize and analyze idioms (as I did in Studies 1-4) could be called into question.

The principal argument is that native speakers sometimes decompose figurative expressions based on what they believe an expression to mean. Keysar

and Bly (1995) showed this by carrying out a study on native speakers' perceptions of semantic transparency. In this study, the researchers selected a number of idioms that were no longer used in modern English to ensure no prior knowledge, and taught either the actual figurative meaning, or its conceptual opposite to the native speakers. Following this, the native speakers tried to make sense of the relationship between the literal parts and the figurative meaning they received. The results showed that the native speakers tended to ascribe a meaning that made sense to them based on which type of figurative meaning they were given (actual or conceptual opposite). In other words, irrespective of whether they were exposed to the true figurative meaning, or its conceptual opposite, they tended to derive their own interpretation that led them to perceive the expression as being more semantically transparent.

The authors (*ibid.*) argue that these findings suggest that even for very semantically transparent idioms, individuals unaware of the true stipulated meaning could produce a range of interpretations, suggesting an arbitrariness that CMT does not address. While the authors did not discount the claims of CMT, they emphasized the need to consider the fact that prior knowledge of the stipulated meaning of idioms could influence the perceived semantic transparency, and it should therefore be part of any discussion relating to semantic transparency intuitions.

These findings do, in fact, suggest that knowing the stipulated meaning of idioms a priori can influence how they are decomposed and analyzed in terms of semantic transparency. Yet, there are some caveats about the design and claims that need to be pointed out so that the overall gravity of these findings can be weighed and assessed. The authors caution that even "the most transparent idioms" (p. 103) are susceptible to the effect of prior knowledge. However, given that, at least by my estimation, the 12 idioms used in this study seemed noticeably opaque (e.g. *the goose hangs high* [fig. things are looking good], *to lay out in lavender* [fig. to chastise harshly and in no uncertain terms]...), it does not necessarily follow that the same would be true of idioms that have been considered to be transparent in the literature, such as *skating on thin ice* (Moon, 1998) and *add fuel to the fire* (Fernando & Flavell, 1981). In light of this, and given the finding that opaque idioms tend to be rare (Vega Moreno, 2005), it is unclear whether prior knowledge of the stipulated meaning of idioms impacts the perceived semantic transparency for all or even most metaphorical idioms. As aforementioned, however, notions of semantic transparency

are subjective (Moon, 1998), and it can therefore be difficult to measure. This is perhaps one of the reasons why this issue over the nature of semantic transparency remains unsettled.

In addition to the caveats mentioned above, evidence has been reported that shows that the figurative meaning of unknown, semantically transparent idioms can be correctly predicted (Boers & Demecheleer, 2001; Bortfeld, 2002; Irujo, 1993; Kovecses & Szabo, 1996). This further implies that the degree of arbitrariness Keysar and Bly (1995) found for semantic transparency intuitions might be limited to very opaque idioms. Better understanding of the extent to which Keysar and Bly's (ibid.) findings apply to idioms of greater and lesser degrees of semantic transparency, however, will not only inform the theoretical debate on CMT, but also have important pedagogical implications.

Skoufaki (2006), for example, in her dissertation, pointed out the pedagogical impact the nature of semantic transparency intuitions had on guessing the meaning of idioms upon initial exposure in an L2 learning setting. She argued that if we take for granted that conceptual metaphors (and I would include encyclopedic knowledge as well) aid learners in understanding the majority of transparent and semi-transparent idioms, then guessing the meaning of idioms could be a pedagogically sound practice when introducing new idioms in the classroom. This is because conceptual metaphors and encyclopedic knowledge can help to elucidate how the literal constituents relate to the overall figurative meaning, thereby leading to greater accuracy in the guessing process, and possibly promoting deeper processing through such a cognitively effortful task. If it is assumed that Keysar and Bly (1995) are correct in claiming that semantic transparency is highly idiosyncratic and arbitrary, then the pedagogical value of guessing would likely be greatly diminished, as L2 learner interpretation would, as a result, be very often inaccurate.

In this section, I have foregrounded the debate about the nature of semantic transparency as it concerns metaphorical idioms. From a theoretical perspective, I return to this issue in Study 1, which aims to determine how consistently and reliably native speakers rate the semantic transparency of idioms. As concerns pedagogy, this is also very much relevant to Study 4, in which semantic transparency and picture conditions are the variables examined for participants interpreting the meaning of idioms met for the first time. In the next section, however, I will cover the theoretical underpinnings for the variable that is of most interest in this thesis: the picture conditions.

2.4 Cognitive linguistic theories

In the opening of Chapter 1, I attributed much of my personal motivation for carrying out this research to my realization of the potential of Cognitive Linguistics (CL) to foster more efficient teaching practices in the L2 classroom (for a more general overview for CL informed pedagogical implications, see Boers, 2013). In this section, I will describe two CL based theoretical frameworks that underpin the rationale of the studies in this thesis and justify having two picture conditions (*literal only* and *literal + figurative*). Levels of Processing Theory will be addressed first in section 2.4.1, and then Dual Coding Theory in section 2.4.2. For a more concise overview of these theories, refer back to section 1.3.

2.4.1 Levels of Processing Theory

Levels of Processing Theory (Cermak & Craik 1979; see also Craik & Lockhart 1972; Craik & Tulving 1975) is a model of memory based in human cognition. Its conception in the early 1970s grew out of a rejection of the multistores account of memory in the mind, under which the human mind was assumed to contain separate levels of memory storage, including short-term memory, long-term memory, and sensory stores. Craik and Lockhart (1972) proposed that instead of modeling human memory on what they considered the oversimplified localization and separation of different memory types, it was more helpful to think of the strength of memory as a function of its depth of processing, where depth is defined as semantic involvement. Specifically, they proposed that deeper processing of information, especially perceptual information (such as sounds, sights, and smells) led to stronger, longer lasting memory traces. In other words, the deeper information is processed, the better it is remembered, and this is in part a result of 'elaboration coding' (Tulving & Madigan, 1970). This coding refers to how information triggers, based on someone's previous experiences, other associations, anecdotes, or images, which in effect deepen semantic involvement and produces the aforementioned stronger memory traces. It is important to emphasize that this information can be verbal or perceptual (Craik and Lockhart, 1972), which means that visual information can also trigger elaboration coding.

The role of visual information in promoting deeper processing is a key assumption I make to support my research design with two distinct picture types (*literal only* and *literal + figurative*). Moreover, I hypothesize that the nature of the

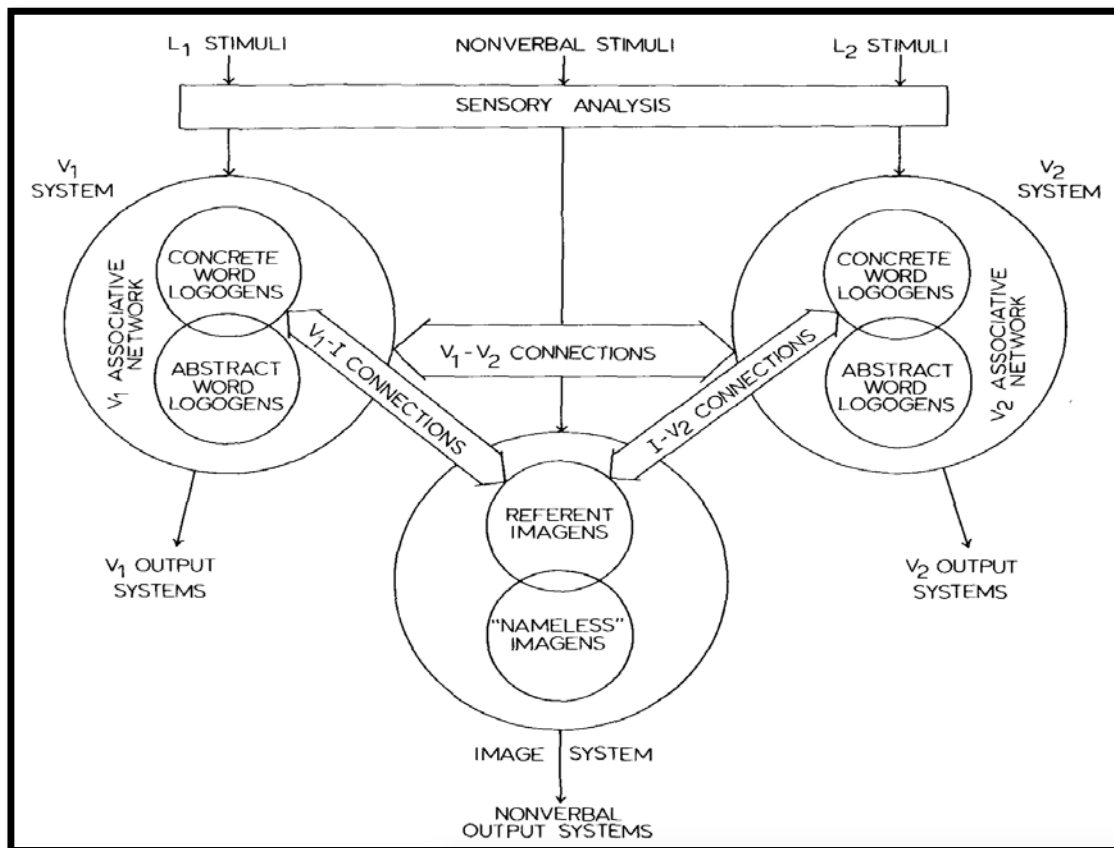
distinction between the picture types will have differential effects on the depth of processing for each, respectively. That is to say that *literal + figurative* pictures with embedded metaphorical and metonymical pictorial elements can potentially encourage deeper processing, as participants must expend more meaning-focused cognitive resources to unravel the relationship between those metaphorical pictorial elements and the figurative meaning. In essence such processing, I would argue, would entail a greater semantic involvement than would that of the *literal only* pictures. In CL and SLA, Levels of Processing Theory and pictorial input has played a prominent role in a number of studies (Boers et al., 2008; 2009; Farley et al., 2012; 2014), and these are later addressed 1.12.1 and 1.12.2. For now, we turn our attention to the other, equally important theoretical notion of dual coding in the bilingual mental lexicon.

2.4.2 Dual Coding Theory

Dual Coding Theory (Paivio, 1986; see also Paivio & Desrochers, 1980; Paivio & Lambert, 1981) is a model of bilingual memory in the mental lexicon, and it makes a number of assumptions about how visual and verbal information is organized in the mind. One of these assumptions is that L1 and L2 verbal information about lexica is separately subsumed into different, but interconnected verbal systems, V1 and V2, respectively. These verbal systems are responsible for processing verbal input and generating verbal output, as well as storing all the relevant verbal information involved in doing so. Though the V1 and V2 are independent, these verbal systems have connections between them that allow for each to activate the other. What this means at the level of usage is that while the V1 and V2 can function independently, they can also mutually interact, for example when translating between two languages.

A second assumption of DCT is that there is also an imagery system that is essentially the visual equivalent of the V1 and V2 mentioned above. In other words, the imagery system is responsible for processing, storing, and generating visual information in the mental lexicon. In addition to V1-V2 connections, the imagery system is also assumed to interact with each verbal system, via V1-I, and V2-I connections. In order to better visualize this relationship, refer to Figure 1 on the following page. Here, we can see that the imagery system and verbal systems all have corresponding bidirectional connections, which underlie the overarching organization of bilingual memory in the DCT model.

Figure 1: Dual Coding model of bilingual memory



Reprinted from Paivio, A. & Desrochers, A. (1980). A dual-coding approach to bilingual memory. *Journal of Verbal Behavior and Verbal Learning*, 34, 388-99.

Figure 1 also illustrates how verbal and nonverbal stimuli interact with the verbal and imagery systems. At one level, there is *representational* processing, which means the mode (visual or verbal) of stimuli activates the corresponding mode (verbal system or imagery system) in the mental lexicon. For example, looking at a photo would activate imaginal representations, while reading words would trigger verbal representations. A second level of processing, however, is referential, and it concerns the cross modality interaction between stimuli and verbal and imagery systems. In referential processing, the verbal systems respond to visual stimuli and the imagery system responds to verbal stimuli. Paivio and Desrochers (1980) suggest this occurs, for example, when prompted to name a picture (visual stimuli → verbal system), or summoning up a mental image upon hearing someone's name (verbal stimuli → imagery system).

Referential processing is a key component of this model, and it is related to the last major assumption of DCT relevant to this thesis. This assumption is that the

verbal systems hold verbal entries and related associative verbal information for all lexica, both concrete and abstract, but the V1-I and V2-I connections are only posited to interact with concrete referents in the imagery system. The reason for this is that abstract lexica, by virtue of being abstract, lack any well-defined, concrete image to act as a visual referent in the imagery system. One implication that can be drawn from this is that incoming verbal stimuli in the form of abstract lexica will only activate the verbal systems, as V-I connections under DCT do not allow for referential processing for abstract words. It also suggests that any cognitive linguistic advantages obtained through the bidirectional relationship of the V1-I and V2-I connections only apply to concrete lexica, not abstract.

This lack of access to any abstract images in the mental lexicon under the DCT model has been used to account for the concreteness effect (Altarriba & Bauer, 2004; de Groot, 1992; de Groot et al., 1994; ter Doest & Semin, 2005). This well documented effect has shown that concrete words tend to be learned more easily than abstract words (Altarriba & Bauer, 2004; de Groot, 1992; de Groot et al., 1994; Duthie et al., 2008; Schwanenflugel et al., 1992). For SLA, this is especially relevant, as these findings suggest an additional burden for L2 learners as regards the learning of abstract words.

There is evidence, however, that presenting abstract words and expressions in conjunction with metaphorical and emotive pictures intended to elucidate their meaning can mitigate the relative difficulty of learning them (Farley et al., 2012; 2014). Farley, Ramonda, and Liu (2012) suggested that this was due to the additive contribution the pictures provided in terms of strengthening recall, which, interestingly was not found in the concrete words included in the study. For a comprehensive review on how DCT accounts for various findings in L2 vocabulary learning involving pictures and imagery, see Sadoski (2005).

This thesis builds upon this previous research in order to further explore the ways in which metaphorical pictures can facilitate the learning of difficult lexica. While metaphorical idioms are not precisely the same as abstract single word lexica, they are non-compositional, and this suggests that idioms likewise do not have corresponding referential representation in the imagery system. For this reason, metaphorical idioms might also be amenable to the metaphorical-pictorial elucidation that promoted recall in the study above (Farley et al., 2012).

Specifically as it relates to the theories introduced in section 2.4, I hypothesize that the process of figuring out the relationship between the metaphorical pictures and the figurative meaning will enhance recall through deep processing and dual coding. Deep processing via visual input with a high degree of semantic involvement (e.g. figuration in pictures) should strengthen lexical access, and the potential to dual code (verbally and visually) can allow for an alternative (visual) pathway to memory. Together, in this way, Levels of Processing Theory (Cermak & Craik, 1979) and Dual Coding Theory are complementary and could both account for enhanced recall of metaphorical idioms. This process, which I am calling *metaphorical elaboration*, is outlined further in section 2.6.4. In the next section, I will review the different areas of word knowledge so as to pinpoint the type of word learning this thesis addresses, and also examine the ways in which the literature offers to elicit this learning.

2.5 Vocabulary instruction and learning

At the heart of this thesis is how to help learners acquire vocabulary more efficiently. In the first half of the literature review, I have specified the type of vocabulary under investigation (metaphorical idioms), put forth a case for why learners need to learn them, and explained the major theories associated with the nature of the investigation. In this second half of Chapter 2, I focus on literature that has informed the operational side of presenting idioms to learners in a pedagogically sound manner. This will entail looking at how learning has been measured for acquiring new vocabulary, including idioms, and what considerations are pertinent for the context of this thesis. Such a deliberation must first be preceded, however, by a discussion on the nature of vocabulary, which includes the area of word knowledge I intend to measure.

Second language learners need to learn many thousands of the most frequent words if they are to understand and participate in spoken discourse and comprehend authentic texts in the L2 (Nation, 2001; 2006). Furthermore, Laufer (2005) argues that even low frequency lexica (including a great deal of formulaic language) merit explicit instruction for L2 learners who desire an advanced level of proficiency. Yet most L2 learners fall far short of the lexical thresholds necessary to function effectively in the target language (Schmitt, 2008). Though vocabulary was once a

neglected area of study (Meara, 1980), in recent years, perhaps in response to the growing recognition of the functional value of and difficulty associated with learning many words, the area of vocabulary acquisition has at last begun to receive the attention it deserves as an important (if not the most important) dimension of language mastery. This increased attention has taken the form of an invigorated interest among a number of SLA researchers who have produced a wealth of studies examining different areas of L2 vocabulary depth and breadth learning. For an in-depth review of these see Schmitt (2008) for general vocabulary and Boers (2013) for formulaic vocabulary.

Among the many areas of lexical knowledge, I am concerned primarily with the long-term learning of vocabulary. In order to have an informed discussion on vocabulary retention, it is first necessary to describe, briefly, the various aspects of lexical knowledge so as to highlight the complexity of learning vocabulary in section 2.5.1. That is, there is much involved in knowing a word aside from its meaning, and it is helpful to draw attention to this before delving in to the more fine grained lexical area of inquiry in my investigations. After introducing these fundamental features of word knowledge, section 2.5.2 proceeds to outline the differing categories of vocabulary retention as described by Laufer and Goldstein (2004). Finally, section 2.5.3 reviews and rationalizes the particular type of recall I employ to measure vocabulary learning.

2.5.1 Types of lexical knowledge

Nation's (2001) oft-cited *Learning Vocabulary in Another Language* constitutes possibly the most comprehensive source of L2 vocabulary learning to date. It is here that Nation simply, yet elegantly illustrates the multifaceted nature of word knowledge. The three main categories of word knowledge, *form*, *meaning*, and *use* comprise a number of subcategories, which are then further divided along the lines of receptive and productive knowledge. In Table 4 on the following page, I have adapted and reproduced Nation's (ibid.) means of organizing and categorizing word knowledge for the reader's reference. I have also highlighted the specific area of word knowledge relevant to the concentration of this thesis.

Table 4: Nation's (2001) what is involved in knowing a word

Form	Spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express the meaning?
Meaning	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use	Grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use (register, frequency...)	R	Where, when, and how often would we expect to meet this word?
		P	Where, when, and how often can we use this word?

R = receptive knowledge, P = productive knowledge

Reprinted from Nation I.S.P. (2001). *Learning Vocabulary in Another Language*. Cambridge, UK: Cambridge University Press.

Upon reflecting on the eighteen different aspects of word knowledge, it is not difficult to see why so many L2 learners fail to acquire an adequate number of words. Given the complexity of word knowledge, it is perhaps unsurprising that vocabulary learning is incremental (Tseng & Schmitt, 2008; Qian, 2002; Schmitt, 2008;) and to a degree ordered (Schmitt, 1998). On this point, Schmitt (2008) recommends a concentration on the meaning of new words, as this tends to be the first and most central aspect of word knowledge (Laufer & Goldstein, 2004) that L2 learners acquire. Furthermore, many of the other areas of word knowledge, such as spelling, collocations, grammatical roles, and so on can be strengthened through extensive reading (Waring & Takaki, 2003) and modified teacher talk (Meara et al., 1997). This is because repeated exposure to this kind of high frequency lexica provides the many instantiations of its usage necessary for incidental learning to occur for already partially known vocabulary. What this implies is that once the meaning of a word is known, the stage is set for the gradual and incremental learning of the remaining areas of word knowledge via other input sources (i.e. those that are conducive to incidental learning).

As was pointed out earlier on word frequency (section 2.1.2), however, the frequency of *individual* idioms tends not to be high (though it is important to note their literal constituents could very well be high frequency) in the genres and registers of spoken and written English corpora (Grant, 2005; Grant, 2007; Liu, 2003), and therefore would likely not benefit from a broadening or deepening of word knowledge through the kind of incidental learning described above. I remind the reader of this caveat for two reasons. Firstly, lower frequency vocabulary requires explicit instruction to be learned (Laufer, 2005), and this applies to idioms as well. Secondly, the main study in this thesis does not attempt to measure anything beyond the meaning level of word knowledge, and it is important to clarify that this involves only the initial, yet vital stage of word depth knowledge. I do recognize that word depth knowledge for idioms is indispensable for appropriate usage, yet the nature of my research questions focus on the important first step of establishing the form-meaning connections, whose testing and measuring is addressed in the next section.

2.5.2 Retention of meaning and L2 vocabulary

Laufer and Goldstein (2004) have identified the following four means of eliciting the form-meaning link in L2 vocabulary testing:

- 1) active recall
- 2) passive recall
- 3) active recognition
- 4) passive recognition

Active refers to eliciting from participants the target word when supplied with the meaning, while *passive* indicates the reverse case in which participants provide the meaning when supplied with the target word. With regards to recall and recognition, the former elicits the form of the word or its associated meaning from nothing, while the latter, in some way or another, provides the form (usually amongst distractors) and participants select it. The following table, taken from Laufer and Goldstein (ibid.) help clarify these distinctions:

Table 5: Degrees of vocabulary knowledge

	Recall	Recognition
Active (retrieval of form)	Supply the L2 word	Select the L2 word
Passive (retrieval of meaning)	Supply the L1 word	Select the L1 word

Reprinted from Laufer, B. & Goldstein, (2004). Testing vocabulary knowledge: Size, strength, and computer adaptiveness. *Language Learning*, 54, 399-436.

One key concept that Laufer and Goldstein (ibid.) propose is the *degree of strength of knowledge* for each of these four types of form-meaning link retrieval methods. The authors claim, convincingly so, that there is a hierarchy involved in which active retrieval and recall of words make up a stronger degree of strength of knowledge than do passive retrieval or recognition of them. In essence, my understanding of their position is that active retrieval requires the learner to manipulate the L2 word in some way (either through recall or recognition), and familiarity with the form in the form-meaning link demonstrates a degree of knowledge that passive retrieval lacks. Likewise, recall of the L1 word in the absence of stimuli (e.g. the L1 form) as opposed to selecting the L1 word among other options also shows a stronger degree of word knowledge. In Table 6 on page 45, I have reproduced Laufer and Goldstein's (ibid.) notion of these degrees of knowledge for the reader's reference.

Table 6: Four degrees of strength of knowledge

	Recall	Recognition
Active (retrieval of form)	(1) strongest	(2) or (3)
Passive (retrieval of meaning)	(2) or (3)	(4) weakest

Reprinted from Laufer, B. & Goldstein, (2004). Testing vocabulary knowledge: Size, strength, and computer adaptiveness. *Language Learning*, 54, 399-436.

In Study 3 in this thesis, I examine the passive recall of idioms among L2 learners, which according to Table 6 represents a (2) or (3) in terms of the degree of strength of knowledge. From this point, I refer to passive recall as *meaning recall*, as I believe this term better describes and focuses on what I am eliciting in my investigations. In the next section, I will briefly explain why I decided on meaning recall as a means to measure vocabulary retention of the idioms in Study 3.

2.5.3 Meaning recall and L2 vocabulary

In the previous section, I introduced and briefly described the different means of measuring vocabulary retention. Here, I will show the advantages that meaning recall can offer for research on the L2 learning of idioms. This is important to show as it has informed my methodology for Study 3. For a much more detailed account of some of the considerations for my design, please refer to the methods section of Study 3 (section 4.2.3).

Meaning recall as a way of measuring students' knowledge of the form-meaning link of idioms is an attractive option primarily because some of the other ways of measuring retrieval outlined in section 2.5.2 have methodological disadvantages. Unlike single word lexica, metaphorical idioms are composed of a string of two (*red tape*) or more (*throw the baby out with the bath water*) words. Not only might this feature make active retrieval of idioms more cognitively demanding compared with single word lexica, but it would also introduce a between item difference, given the sizable variability in word string length, that could confound the results. That is, longer word strings might be unfairly more difficult to reproduce the form of when presented with the L1 equivalent on posttests. For these reasons, active retrieval can be methodologically challenging to operationalize, especially for studies, such as Study 3, in which there is a single treatment in a somewhat controlled, quasi-experimental design.

Weighing the potential methodological advantages offered by eliciting recognition or recall of vocabulary, on the other hand, is less certain and more tied to the specific purposes of the study in question. On the one hand, recognition provides a more objective means of assessing the differences among groups, because to the extent that the posttest question items are valid and reliable, correct and incorrect responses can be quantified and compared easily. The disadvantages, however, are that recognition represents a weaker degree of strength of knowledge (Laufer & Goldstein, 2004), and typically do not elicit accompanying qualitative data that can serve to triangulate and inform the quantitative findings. Though it may not be readily clear what such qualitative data might be, the results and discussion sections of Study 3 (section 4.2.4) and Study 4 (section 5.2.4) supply a copious amount of examples in regards to this, and, in light of these considerations, I chose to measure vocabulary retention through meaning recall.

Until now, the primary purpose of this literature review has been to justify and rationalize the need for the studies in this thesis. Early in this chapter, I explained my reasons for pursuing this avenue of research and made the case for explicit instruction of idioms in certain contexts. I also described the basic characteristics of idioms and defined what subclass of idioms I would investigate. Following this, I related how theories in Cognitive Linguistics support, underpin, and can be informed by the study of metaphorical idioms, semantic transparency, and pictorial input. In the next and penultimate section, I bridge idioms, transparency, and pictures with L2 pedagogy by reviewing experimental studies that have been carried out in this area. This will show what has been done until now so that I can highlight what this thesis aims to contribute to the current field of CL and SLA, and pave the way for the research questions and their associated studies in the chapters that follow.

2.6 Metaphorical idioms and L2 pedagogy

Here in Chapter 2 I have 1) presented a case for the teaching of idioms, 2) described the type of idiom I will investigate, 3) explained how learners stand to benefit from learning this type of idiom, and 4) provided the necessary theoretical framework to rationalize my investigations. Yet, the all-important matter of “*what has been done?*” in SLA research concerning the teaching of idioms needs to be chronicled in order to acknowledge how previous studies have informed the current investigations presented here and to have a sense of how these investigations can contribute to

the current state of the fields of CL and SLA. To do this, I first survey some of the general findings of research on idioms and L2 pedagogy in section 2.6.1. Following this, in section 2.6.2, I introduce the concept of *etymological elaboration* (Boers et al., 2004) and related research, which has had a great influence on the conception and implementation of the studies in this thesis. In section, 2.6.3 and 2.6.3.1, I extensively review how pictures have been used in SLA generally and for learning idioms specifically, before finally, in section 2.6.4 defining the concept I refer to as *metaphorical elaboration*, which is essentially a borrowing of Boers' (et al. 2004) coinage, but adapted to suit the nature of my investigations.

2.6.1 Overview of idiom instruction and pedagogical practices

At least as early as the 1940s, researchers began to show an interest in the teaching of idioms (Jones, 1943), and though studies appeared to be sporadic at best, some scholars did attempt to provide a pedagogical rationale for idiom instruction (Adkins, 1968). It wasn't until around the mid 1980s when pedagogical practices for teaching idioms began to generate increased attention among scholars—a progression that was spearheaded in part by Irujo (1986a) with her thoughtful deliberation of idiom selection and presentation. Since then, more studies have looked at different methods and practices for teaching idiom comprehension and production. Since this thesis concerns itself with establishing the form-meaning link of idioms, I outline some of the practical suggestions offered by researchers for aiding learners in comprehending the meaning of idioms.

Scholars have offered a swath of approaches for presenting new idioms to learners, including a focus on L1-L2 equivalents or close equivalents (Cooper, 1998), inferencing from context (Irujo, 1986b), group collaboration (Lennon, 1998), metaphorically themed groupings (Cooper, 1998), and comparing the literal and figurative meanings (Irujo, 1986a; Lennon, 1998). What these approaches have in common, with the exception of inferencing from context, is that they encourage analysis of idiom inherent features (i.e. the literal parts and/or figurative meaning) to elucidate the figurative meaning. As for their potential effectiveness, there are some considerations to address for each.

Cooper's (1998) strategy of first introducing learners to L1-L2 idiom equivalents appears a sound practice, as research has found that L2 idioms with identical L1 equivalents are processed faster (Carrol & Conklin, 2014b) and facilitate

comprehension (Irujo 1986b, 1993). However, the number of *useful* idioms that happen to have a similar form *and* meaning in the learner's target language is likely very small. Moreover, even where exact or comparable L1-L2 idioms can be found, there is no guarantee that their respective constraints on use will be similar (Moon, 1997). Therefore, it is probably most effective as a means to raise awareness of figurative use in the L2 by drawing from learners' L1 background knowledge. Beyond this, such an approach appears rather limited in a classroom context.

As regards guessing the meaning of idioms from context (Irujo, 1986b), the pedagogical value is less clear. L1 idiom acquisition in young learners has revealed that context facilitates comprehension of idioms (Nippold & Martin, 1989). On the other hand, L2 research in recent years on *correctly* inferring the meaning of general lexica from contextual clues has yielded very discouraging results (Nassaji, 2003; Waring & Takaki, 2003). However, when accompanied with guided instruction, with planned and somewhat contrived example sentences, inferencing from context could be effective at elucidating the meaning. Furthermore, aside from guessing at the meaning, contextualizing idioms can provide instantiations of usage that help deepen vocabulary knowledge after learners already know the figurative meaning of idioms.

The latter two strategies, group collaboration (Lennon, 1998) and comparing the literal and figurative meanings (Irujo, 1986a; Lennon, 1998) both could involve analysis of the literal parts in order to arrive at understanding the figurative meaning. Lennon (1998) recommends encouraging learners to discuss and brainstorm as a means to cognitively engage them when analyzing groups of newly met idioms. The rationalization given was that a degree of semantic opacity would lend itself well to a problem-solving approach in which learners are cognitively driven to analyze and interpret the figurative meaning of the idioms in question. This approach would seem to encourage deeper processing (Cermak & Craik 1979) and thus promote not only comprehension, but also retention. However, time on task is important to consider, as some opaque idioms might not be particularly amenable to correct interpretation in the absence of guided intervention by the instructor, thus drawing out such collaboration to a time inefficient degree.

In sum, the above practices are all rooted in sound pedagogical principles, yet none of them are without potential drawbacks. Having briefly surveyed some of these more general practices, we now turn our attention to examine a different and promising avenue of research strongly based in Cognitive Linguistic principles. In

what follows over the next two sections, I review experiments that align much more closely with the theoretical assumptions and pedagogical approaches of the studies in this thesis. That is, I will examine L2 studies involving L2 idiom learning and the role of visual elaboration and stimuli.

2.6.2 Research on idioms and learner generated imagery

In this section, I concentrate on studies that have involved the prompting of learners to generate mental scenes to help them learn figurative expressions and idioms. Falling under this category of studies are two types of instruction examined: metaphorical thematic presentation and *etymological elaboration*. The related studies for each of these are outlined, in turn, below.

2.6.2.1 Idioms and metaphorical themes

Metaphorical themes that evoke concrete mental scenes can be exploited to heighten learners' metaphorical awareness and lead to better overall retention of idioms and figurative senses of some lexica (Boers, 2000; Kovecses & Szabo, 1996). In one study (Boers 2000), participants in the experimental group received groupings of idioms relating to anger that were organized around various anger related conceptual metaphors (see section 2.3.2.1 for a review of Conceptual Metaphor Theory), such as ANGER IS HOT FLUID IN A CONTAINER and ANGER IS FIRE, while the control group received the same idioms but grouped according to function. After briefly studying the different groupings, both groups completed a gap fill in which a key word from the target idioms was missing. The participants in the experimental group were able to reproduce significantly more of the lexis than was the control group.

In a subsequent experiment in the same study (Boers, *ibid.*), similar findings were found for the productive use of the figurative senses of novel vocabulary. Participants in both groups were given a list of vocabulary that described upward and downward economic trends, such as 'soar', 'plunge', and 'peak'. The treatment in the experimental group supplied the participants with suggested imagery by drawing attention to related source domains, such as rockets, airplanes, diving, and mountain climbing, while the control group received the same vocabulary described according to the function (e.g. fast change, gradual change, reaching a limit). Participants in both groups were given graphs displaying various economic trends and then allowed time

to produce a short essay. Those participants that were encouraged to apply imagery produced more of the target lexis on the short essay than did the control group.

The above experiments show that learners can rely on their knowledge of metaphor to better understand and produce newly met figurative language. However, it is not yet precisely clear how productive conceptual metaphors are in giving rise to metaphorical idioms as an entire class of lexica. ANGER IS HOT FLUID IN A CONTAINER and ANGER IS FIRE are particularly productive in the sense that there is a rich amount of linguistic instantiations in the form of metaphorical idioms or other such figurative language. Yet, there has not been any systematic effort to categorize all English idioms along conceptual metaphorical lines, so it is difficult to ascertain the extent to which metaphorical thematic presentation can benefit the teaching of idioms overall as a class of words.

Perhaps such an undertaking has not been realized because many idioms are based on *conventional* metaphors linked to specific historical or cultural contexts and therefore are not especially amenable to metaphorically themed groupings. Though Boers' (2000) study is important to show that metaphorical themes are effective for teaching a particular subset of metaphorical idioms, other practices need to be developed to deal with teaching idioms based on so called 'dead metaphors'. In the next section we turn to a particular mnemonic technique that has been adopted to address this, which similarly is used to evoke mental scenes to aid in learning idioms.

2.6.2.2 Idioms and etymological elaboration

No review of Cognitive Linguistics informed research on the L2 learning of idioms would be complete without due attention to the notion of *etymological elaboration* (Boers et al., 2004). In fact, *etymological elaboration*, grounded in Levels of Processing Theory (Cermak & Craik, 1979) and Dual Coding Theory (Paivio, 1986), aligns closely to *metaphorical elaboration* (explained in section 2.6.4) in that both attempt to enhance retention of vocabulary through visual channels. *Etymological elaboration* refers to learner created mental scenes based on idiom etymologies in order to aid learners in remembering the figurative meaning of idioms. The idiom *to learn the ropes*, for example, is one of many idioms in English that pertain to the source domain of sailing and seafaring. In the case of this idiom, the etymological origin can be traced to the ropes that inexperienced sailors needed to 'learn' to successfully navigate a wind-powered ship, which led to the idiom's figurative

meaning of *having familiarity or understanding of how something works*. Boers and colleagues (2004; see also Boers, 2001) found that learners who engage in etymological elaboration perform significantly better on posttest measures of meaning recall.

The authors (*ibid.*) account for this mnemonic benefit by positing that the generation of such mental scenes leads to deeper processing as the participants make their own meaningful connections between the etymological source domain and the figurative meaning of target idioms. Once such concrete scenes are stored in the imagery system, under DCT, learners can then draw upon visual as well as verbal information to retrieve the meaning of the idiom. In sum, etymological elaboration is thought to promote deeper processing that results in stronger lexical access and elicits mental concrete scenes that can act as an additional pathway to recall.

In addition to recall, other research has revealed that etymological elaboration and metaphorical awareness can also increase the likelihood of learners comprehending the meaning of idioms. In one experiment (Boers et al., 2007), an online tool designed by the researchers to help learners learn various idioms was used to determine if etymological elaboration could aid learners in understanding the meaning of newly met idioms. The online tool consisted of different types of activities. Two of these activities acted to elucidate the meaning of the idiom through identifying the meaning of the idiom in one type of activity, and identifying the source domain in the second activity. During these activities, participants were presented with an idiom along with several multiple choice options. Importantly, for both of these activities, feedback on the correct answer appeared in cases where the participants selected the incorrect answer choices. For the control group, the order of activities was as described above (identify the meaning followed by identify the origin). For the experimental group, however, the order was reversed so that participants would receive exposure to the etymological origins prior to attempting to identify the meaning. The researchers reasoned that if the etymological origins of the targeted idioms were by and large arbitrary, then there would be no reason to believe that this information would in any way aid the participants in guessing the correct meaning of the idiom in the subsequent activity. If, on the other hand, such information could be drawn upon in a semantically coherent way, then participants might be encouraged to generate a mental concrete scene linking the etymological

origin with the figurative meaning of the idiom. The results on the posttest showed that the experimental group outperformed the control group for identifying the meaning, suggesting that learners were able to extract meaningful and non-arbitrary mappings between the idioms' etymological origins and figurative meaning and exploit this for enhanced comprehension.

2.6.3 Pictures and second language learning

In recent years vocabulary acquisition in SLA has received substantial attention in the form of quasi-experimental studies, many of which were inspired by Cognitive Linguistic principles, such as those described in the previous sections. Some of these studies have employed pictures to measure how they impact the learners' interpretation and retention of L2 vocabulary. But what is the benefit of providing pictures to learners? After all, would not learner-generated imagery engage the learner more deeply thereby leading to better learning outcomes? In this section, we will briefly turn our attention away from idioms with a prelude to discuss some key issues on the nature of pictures and how they have been employed in SLA more generally. This will appropriately set the stage for a more informed review of how pictures have been utilized specifically with idioms in the section that follows.

Pictures have been widely used in numerous studies to investigate their impact on second language learning (Altarriba & Knickerbocker, 2011; Barcroft & Sunderman 2008; Boers et al., 2008, 2009; Chun & Plass, 1996; Farley et al., 2012, 2014; Hagiwara, 2015; Jones, 2004; Jones & Plass, 2002; Plass et al., 2003; Shen, 2010; Szczepaniak & Lew, 2011; Liu, 2004). However, in part due to the ambiguous nature of pictures (Fodor, 1981), it is somewhat expected that not all pictures are equally serviceable for conveying their intended meaning (Hupka, 1989 as cited in Boers et al., 2008). Furthermore the utility of pictures in an instructional setting depends on a number of factors aside from the picture itself, such as when a pedagogical intervention occurs, what aspect of language is being measured, and how the intervention elicits whatever learning takes place. For these reasons, it is necessary to shed light on the mixed findings of picture related research in SLA so that the reader will have a better sense of how to contextualize the studies and findings later reported in this thesis.

The use of pictures for some language learning purposes can cause more harm than good. Some studies, for instance, have found that pictures tend to be less

effective and in some cases even disadvantageous for eliciting the *target form* of novel or newer language items (Boers et al., 2008, 2009; Hagiwara, 2015). Boers and associates reported that for retaining the *form* of *newly met* figurative extensions of concrete words (2008) and figurative idioms (2009), pictures were detrimental and resulted in lower recall rates compared with no picture conditions. In a similar vein, Hagiwara (2015) found that while pictures, as a visual aid, can help participants better attend to and orally reproduce familiar morphemic elements, the effect was substantially smaller for those morphemes participants were less familiar with.

The results from the studies above could indicate that intake (see VanPatten & Cadierno, 1993) of new linguistic information is particularly sensitive to the amount of attention and noticing (see Schmidt, 2001) by the learner, and pictures might substantially detract from that attention. Since novel lexical information presented alongside additional visual input likely imposes a greater cognitive burden, cognitive resources are quickly exhausted and thus the necessary attention needed for intake of the *target form* to occur might be lost (see Barcroft, 2002 for *type of processing resource allocation model*). This suggests that the use of pictures might be pedagogically questionable in cases where different modes of input compete for limited cognitive resources.

It is crucial to emphasize, however, that the findings above (Boers et al., 2008, 2009; Hagiwara 2015) share two similar and pertinent aspects: 1) Novel or less familiar language presented with pictures led to an observable decrease in retention, and 2) the *form* of the target language was elicited. Conversely, in cases where the aim is to learn the *meaning* of new words, pictures fare much better at promoting retention. Findings from a number of studies (including some of the very studies I just described) have shown that pictures are useful for learning the meaning of words and expressions (e.g. Boers et al., 2008; Chun & Plass, 1996; Farley et al., 2012; Jones, 2004; Jones & Plass, 2002; Liu, 2004; Shen, 2010; Szczepaniak & Lew, 2011).

A few of the above studies examined the effect of pictures for incidental vocabulary learning while reading for comprehension (Chun & Plass, 1996) and intentional vocabulary learning while listening (Jones, 2004; Jones & Plass, 2002). Though the exact procedures, group conditions, and results differed slightly, the recurring finding among all three of these studies was that pictures promote the

retention of the meaning of new words. In another study with a different focus, Liu (2004) observed that comic strip illustrations could help scaffold lower proficiency participants' understanding and recollection of challenging passages. The pattern that is emerging from the results in these studies suggests that pictures can, under certain conditions, alleviate, as opposed to compound the cognitive burden of meaning-focused learning.

The fact that pictures aid in retaining meaning but inhibit the learning of form is not so surprising. For many learners, remembering the precise form of a word is perhaps a rather rote process for which time on task is an important factor. For this reason, any attention drawn away from the form could lead to a more fragile recollection of that form. Furthermore, as learners process for meaning before form (VanPatten, 2004), preference in terms of attention might be given to meaning-bearing pictures to the detriment of form. Word meaning, on the other hand, would appear to be an area of word knowledge well suited to the mnemonic benefits provided by pictures as an alternative pathway to memory (see section 2.4.2 for Dual Coding Theory) with more elaborate and varied processing (see section 2.4.1 for Levels of Processing Theory). Stated differently, pictures tend to convey meaning, not orthographic form, and this means that pictures, when used appropriately, should not be viewed as competing with verbal input for attentional resources in the same sense as they would for learning word form. This is because both verbal and visual channels are essentially reinforcing the same area of word knowledge—meaning—and this helps account for the mixed findings in the research presented in this section.

In sum, pictures can act as an additional mode of input that can prove to be useful under the appropriate conditions. As I explained earlier in section 2.5.1, I am concerned with measuring the degree to which learners can demonstrate they have acquired the meaning of idioms when the form is supplied to them. Now that I have shown how pictures can be effective for this purpose, we will turn our attention to the last and arguably most important literature to review: pedagogical interventions specifically targeting the effect of pictures for learning metaphorical idioms. In this way, we can observe what exactly has been done so that the original contributions this thesis later reports on will be clear.

2.6.3.1 Research on idioms and pictures

In the studies in the previous section involving source domains, no pictorial support was supplied to the learners. Rather, in each experiment, the onus was on the L2 learner to evoke concrete mental scenes based on the verbal information given to the learner. On the one hand, this learner created imagery could be very pedagogically efficient for learning idioms, as the cognitively demanding task of generating a mental scene could lead to deeper processing and better retention. On the other hand, supplying pictures could support the learning of idioms, especially for idioms which are opaque in meaning and likely difficult for learners to elaborate, visually or otherwise, on their own. Indeed, Boers and colleagues (2004) cautioned that the effectiveness of etymological elaboration could be linked to semantic transparency, as learners might have more difficulty extracting meaningful semantic mappings between the etymology and figurative meaning of more semantically opaque idioms. Stated differently, idioms whose figurative meaning is connected to somewhat obscure metaphorical and metonymic associations from culturally bound historical anecdotes might not provide the learner with sufficient semantic cues to autonomously generate meaningful concrete scenes. This difficulty associated with learning opaque idioms, however, might possibly be curtailed by supplying pictures that attempt to bridge this literal-figurative gap through explicit visual representation.

Another argument in support of supplying pictures to learners for the purposes of facilitating comprehension and retention is that it can benefit learners of particular cognitive styles. It has been shown that learners who tend not to process information through mental pictures (low imagers) can still benefit from dual coding when pictures are supplied to them (Boers et al., 2008). Pictures that encode both figurative and literal components could act as a mnemonic pathway to engagement. By having the visual-literal components arranged in a way that complements the figurative meaning, the learner, upon reflecting upon the literal words, might be able to summon up the associated image and mentally unpack the figurative meaning as well, thereby increasing the chance that the learner can remember the figurative meaning of the idiom. Such literal and figurative pictures will be discussed further in the next section after first reviewing experimental studies employing pictures and idioms.

In a series of small-scale experiments, Boers and colleagues (2008) examined the effect of pictures on both comprehension and retention of targeted figurative expressions. In one experiment, the choice of lexica included those words

that had both literal and figurative senses in order to see whether or not learners could correctly infer the figurative meaning of a word by contemplating its corresponding literal meaning. Both the experimental and control groups received identical contextualized verbal support in the form of the target word embedded in an example sentence intended to instantiate the figurative sense of the word. For the experimental group, however, pictorial support was presented together with the verbal input, such as with the word *diluted*, in which participants would see a picture of a liquid substance being diluted by water appearing alongside an example sentence (e.g. *The strength of her argument was somewhat diluted by the language that she used*). The control group, on the other hand, received no such visual support, and instead was provided with an L1 definition of the literal sense of the word. Since participants from neither group were supplied with the figurative meaning prior to making inferences about the figurative sense of the words, they presumably engaged in deeper processing, by drawing their own conclusions about the semantic relationship between literal input (be it visual or verbal) and its corresponding figurative meaning. Posttest results, though, showed that the experimental group produced significantly more target words than the control group on an L1 to L2 translation task meant to elicit the figurative senses learned in the treatment, suggesting that the addition of the pictures aided the participants to better comprehend the literal and figurative associations of the target words.

In another experiment reported in the same study (Boers et al., 2008), participants were presented with pictures representing the literal parts of idioms followed by verbal explanations about those idioms' etymological origins. This experiment was in part motivated by the observation that high imagers tend to benefit more from etymological elaboration compared to low imagers. If, however, pictures are supplied to learners, it follows that those who tend not to think in mental pictures will be provided with a means to dual code, which presumably would aid in retention. To test this hypothesis, the researchers compared results from two different cohorts of students. Both cohorts utilized the same online tool used in the study described earlier in section 2.6.2.2 (Boers et al., 2007), in which participants identified and were provided feedback on (when answered erroneously) the source domain origin and meaning of various idioms as a means to stimulate deep processing and dual coding. In this study (Boers et al., 2008), however, for the later

cohort, pictures of the idioms' literal parts were presented to participants after answering and receiving feedback on the etymological origins activity. For example, after learning about the etymological origins of *carrot and stick method*, participants would see a picture of a carrot hanging in front of a donkey with a stick behind it. Analyses of the within group recall rate on the idioms comprehension task revealed that while there was a significant difference in recall rates between high and low imagers (as determined by a cognitive styles questionnaire) for the no picture cohort of participants, this difference had disappeared in the results for the picture cohort. These findings have important pedagogical implications as they suggest that pictures, insofar as they relate to retention of idioms, seem to eliminate or at least mitigate the disadvantage low imagers have when learning idioms.

While these results are encouraging, more research needs to be conducted to determine the relative effectiveness of pairing visual and verbal information specifically for learning metaphorical idioms. Given the complexity of idioms and the ambiguity inherent in pictures (Fodor, 1981), there are a number of variables, both internal (idiom related), and external (picture related), that need to be explored in order to have a more nuanced and fine-grained understanding of the relationship between idioms, pictures, and pedagogical efficiency. It has already been shown, for instance, that pictures can distract learners and have a detrimental effect on the acquisition of the form of idioms (Boers et al., 2008; 2009). With regards to acquisition and retention of meaning, the research seems to indicate a positive effect for presenting pictures alongside idioms in the input, but it is not yet known what *kind* of idioms benefit the most and what *type* of pictures are most effective.

In the next section, I propose a technique for teaching idioms I refer to as *metaphorical elaboration*. It is, in a sense, the conceptual and operational blending of *etymological elaboration* (Boers et al., 2004) and the picture input technique Farley and colleagues (2012) employed for the learning of L2 abstract words (see section 1.2 for an overview of this study). *Metaphorical elaboration* via pictures is the foundation for much of this thesis and the driving force behind two of the research questions I pose in section 2.7. Because of this, it is necessary to define what *metaphorical elaboration* is before proceeding to tie everything together and lay out the research questions and associated studies to finish this chapter.

2.6.4 Rationale for *metaphorical elaboration*

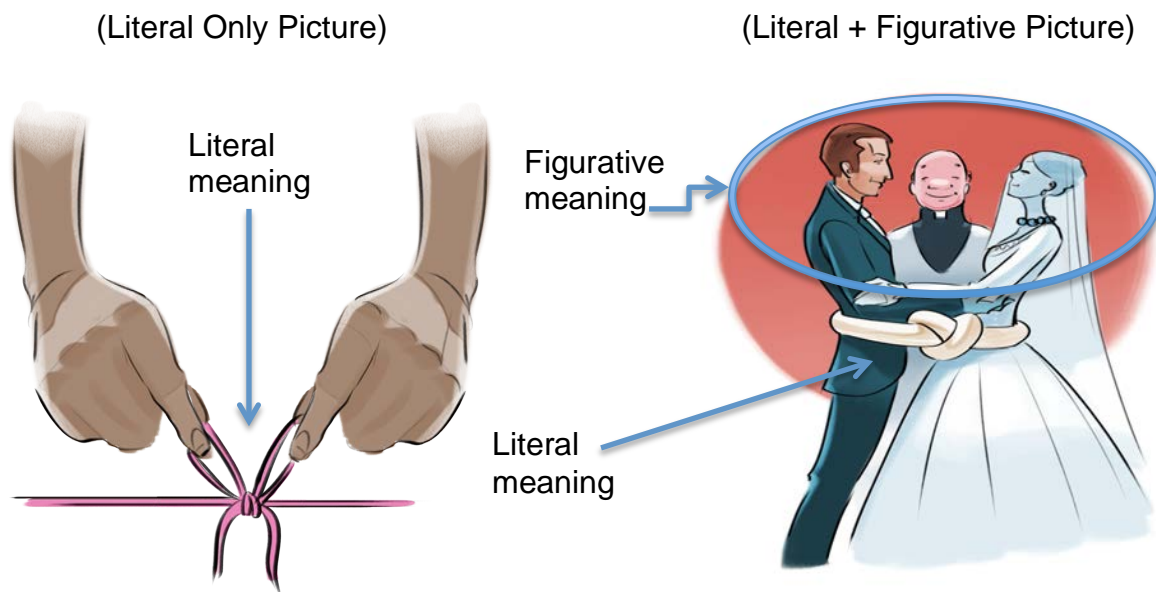
I define *metaphorical elaboration* as the process through which metaphorical or metonymical pictorial input is used as a means to activate deep processing (Cermak & Craik, 1979) and dually code (Paivio, 1986) the form-meaning link of metaphorical idioms for the purposes of elucidating their figurative meaning or enhancing their recall (an example follows at the end of this section). *Metaphorical elaboration* as defined here has two notable differences from *etymological elaboration*. *EE* harkens back to one of the etymological explanations of an idiom in order to relate its original motivation, via the source domain, to its current figurative meaning. *ME* is broader in that any conceivable metaphorical or metonymical pictorial elements that assist the learner in relating the literal constituent parts of an idiom to its corresponding figurative meaning can be used. A second difference is that while *EE* refers to learner generated imagery, *ME* relies on preplanned pictures, drawings, photographs, or otherwise supplied visuals to stimulate *ME*.

To stipulate the use of pictorial input could draw criticism on theoretical grounds, so it is important to explain why I do so. Aside from the finding that pictures can distract learners from the form of the word (Boers et al., 2008; 2009), it could also be argued, for example, that supplying pictures might discourage deep processing because the learners are essentially spoon fed the input without having to put forth more cognitive effort in creating and personalizing their own mental scenes, as is the case in *EE*. I contend, however, that the cognitive activity of extracting and interpreting those metaphorical elements in an effort to relate them to the figurative meaning entails the kind of semantic involvement proposed under Levels of Processing Theory (Cermak & Craik, 1979) for deeper processing to occur.

Furthermore, while *EE* provides an etymological basis for learners to refer to in order to create concrete mental scenes, *ME* offers no such knowledge base per se. Given individual differences, such as high and low imagers and imaginative and unimaginative learners (see Richardson, 1994 for an overview), providing pictures based on careful planning can help address these differences while still providing opportunities for deep processing and dual coding to take place. In sum, *EE* is more suited to learner generated imagery due to the concrete source of mental scenes that etymologies offer, while *ME* lends itself better to pictorial input being provided, and for this reason these two methods should be viewed as complementary.

To have a better grasp of how metaphorical or metonymical elements in a picture could be represented, see Figure 2 below in which I compare a *literal only* and *literal + figurative* picture for the metaphorical idiom *to tie the knot* (*fig. to get married*).

Figure 2: Comparison of picture conditions for *tie the knot*



In the picture on the left, only the literal parts of the idiom, *tie the knot*, are visually represented. However, the picture to the right employs metonymy in order to visually convey the figurative meaning. That is, a wedding, indicated by the presence of a priest, bride, and groom, is metonymically standing for marriage. Furthermore, and importantly, the knot tied around their bodies is metaphorically symbolizing the unity that marriage represents while at the same time providing a visual link to the literal parts related to the idiom (a tied knot). In other words, the visual representation of both literal parts and figurative elements are intended to provide the learner with all the necessary information to dually code the form-meaning link of *tie the knot* in a semantically meaningful manner.

This section's sole purpose was to introduce and rationalize the concept of *metaphorical elaboration*, which will be a recurring term throughout the remainder of this thesis. Now that this has been done, I will summarize the impetus for and rationale of each of the five studies in the thesis along with their related research questions.

2.7 Summary of studies and research questions

Idioms are important for many L2 learners, but they are difficult to learn for a variety of reasons. One of these reasons is related to the notion of non-compositionality, which refers to the fact that the figurative meaning of an idiom is not derived from the sum of its literal constituent parts. However, research has shown that learners can ‘decompose’ the literal parts of idioms, which allow them to understand the figurative meaning via metaphorical reasoning. The extent to which an idiom can be understood in this way is referred to as its semantic transparency, and it is a key variable in this thesis.

Intuitions on semantic transparency, however, vary among individuals, and it is for this reason that idioms are difficult to categorize according to the degree of transparency in any highly objective way (Moon, 1998). Any rigorous study involving semantic transparency as a variable requires a sound method to collect data on transparency ratings, which was the purpose of Study 1. The research question for Study 1 is as follows:

RQ1

To what extent do raters agree in their semantic transparency ratings?

In order to be able to draw conclusions based on my data in the later studies, I needed to find support for the validity and reliability of my semantic transparency groupings that I delineated for the target idioms in this thesis. In the process of doing this, I collected semantic transparency ratings of 222 English idioms from 15 native speakers of English. I also elicited qualitative data in a priming task on a smaller subset of idioms.

The nature of semantic transparency has stirred some controversy in CL, however, as some scholars have suggested that semantic transparency has a high degree of arbitrariness (Keysar & Bly, 1995; 1999) as indicated by the effect knowing the stipulated meaning of idioms has on native speakers’ semantic transparency intuitions. As I use native speakers for my ratings in this thesis, it is necessary to examine what idiom inherent features might contribute to the way in which native speakers assign semantic transparency ratings. This led me to formulate the research question for Study 2, which is:

RQ2

What characteristics of idioms lead raters to rate them as being of higher or lower transparency?

Study 2 is the only study not to involve participants directly. Instead, I compared a set of the highest and lowest transparency idioms according to my results gathered in Study 1. In this comparison, I looked for patterns related to etymologies among a number of idiom dictionaries in an effort to uncover any relationship between semantic transparency, conceptual metaphors, conventional metaphors, and encyclopedic knowledge that might contribute to the ongoing discussion in CL on the nature of semantic transparency.

The next study, Study 3, is the most significant study in this thesis in terms of time, scale, effort, and most importantly, potential to inform L2 idiom pedagogy. Its research question is as follows:

RQ3

How do levels of perceived semantic transparency interact with the different picture conditions in terms of their effect on meaning recall?

Study 3 involved the narrowing and selection of idioms from the initial 222 rated in Study 1 and grouping them into three transparency levels—low, mid, and high. Following this, an illustrator drew two versions of the idioms, so as to have a *literal only* and *literal + figurative* picture for each of the remaining idioms. These idioms and related pictures were then integrated into a highly controlled, 45-minute PowerPoint treatment and presented in one of three picture conditions (*no picture*, *literal only picture*, or *literal + figurative picture*) to student participants in one of three intact classes I taught. On the posttest and delayed posttest, I elicited meaning recall in the L1 and had a bilingual translator translate the thousands of paraphrases the participants produced. Following this, two other raters and I categorized the translated paraphrases into different categories so that they could be analyzed both quantitatively and qualitatively.

While Study 3 concerned itself with vocabulary retention, Study 4 sought to determine the effect the different picture conditions had on aiding learners to correctly interpret the meaning of newly met idioms. This study asked the following:

RQ4

Does the use of literal + figurative pictures have a positive effect on learners' ability to interpret the meaning of newly met idioms?

Study 4 used the same pictures and idioms that were part of Study 3. Instead of having a large number of participants, I focused on collecting much more in depth qualitative data through a think-aloud protocol involving three student participants. This allowed me to observe, through transcriptions of their recorded thoughts, how learners interpreted the meaning of these newly met idioms under each of the picture conditions.

The last study, Study 5, was very different from those described in this section thus far. Here, I was interested in collecting teacher attitudes and perceptions on the importance of idioms for L2 learners. This resulted in formulating the fifth research question:

RQ5

To what extent do the views of EFL teachers converge with respect to their attitudes towards the pedagogical value of teaching idioms?

There is often a gap between research and practice, and anecdotally, I had heard other teachers' widely varying thoughts on the pedagogical value of teaching idioms. Because of this, I wanted to systematically analyze EFL teachers' perceptions on this topic in order to see if their perceptions were informed by what has been found in SLA literature. After all, findings from pedagogical research are only as useful to the extent they are applied in the classroom.

These five research questions were ordered so that the reader can proceed logically from the more theoretically focused research questions that lay a foundation for moving to the subsequent, more pedagogically oriented research questions. By first determining the nature of perceived semantic transparency and taking a grounded approach to identifying any commonalities among idioms of different transparency levels, I can more meaningfully analyze the data for the research questions related to teaching practices. Finally, the last research question will serve to highlight any attitudinal factors among a sample of teachers that could signal challenges for any such teaching practices to be applied in actual classroom instruction.

CHAPTER THREE: SEMANTIC TRANSPARENCY AND METAPHORICAL IDIOMS

Now that the rationale for this thesis has been substantiated through the extensive review of the related literature in the previous chapter, we will turn our attention to the five studies that were carried out in this thesis. Here in Chapter 3, I will examine and answer the first two research questions, which correspond to Study 1 and Study 2. In this chapter semantic transparency takes center stage, and through a combination of participant generated data from Study 1 and lexicographical data in Study 2, I seek to further contribute to the discussion on the nature of semantic transparency. Not only is this important in its own right, but semantic transparency is an important variable in Study 3 and Study 4, so it is important to establish its validity as a meaningful way to organize the many idioms that initially comprised Study 1. Doing so will help lay the groundwork for the later studies in subsequent chapters.

3.1 Introduction

It is important that the research question, **“To what extent do raters agree in their semantic transparency ratings?”** is addressed first in Study 1. This is because much of Study 2-4 depends on the reliability of the semantic transparency ratings. Since discussion in the literature on semantic transparency ratings has been in some cases divisive, it is crucial to examine the ratings critically to determine whether native speakers perceive semantic transparency in a similar way. The answer to this research question should add support to the theoretical discussion about semantic transparency, as it will reveal to what degree perceived transparency is non-arbitrary among native speaker participants. Moreover, answering this will help pave the way for exploring our second research question in this chapter, which is related to the characteristics of different transparency level idioms.

The second research question addressed in Study 2, **“What characteristics of idioms lead raters to rate them as being of higher or lower transparency?”** is important as a kind of grounded approach to see what patterns emerge from the data once idioms are classified according to transparency level. In such a way, shared features and patterns that emerge within different transparency level groupings can help to inform the theoretical discussion on the possible role of

conceptual metaphor in idioms and illuminate how encyclopedic knowledge about the world might influence the perceived semantic transparency among raters. More significantly, whatever patterns emerge could act as a basis for deriving more meaningful conclusions from the analysis in Study 3 and Study 4.

For an in-depth review on semantic transparency and how it fits into the context of these first two research questions, please refer to sections 2.3.2, 2.3.2.1, 2.3.2.2, and 2.3.2.3 in the literature review.

3.2 Study 1

To what extent do raters agree in their semantic transparency ratings?

It was hypothesized that semantic transparency ratings would overall exhibit a high degree of agreement among the native speaker raters, as many idioms were expected to encode readily recognizable and cross-culturally understood metaphorical concepts. Results did indeed indicate a high degree of agreement for the 222 idioms rated overall. However, some types of idioms tended to generate more disagreement among raters.

3.2.1 Participants

15 university level native speaker English teachers participated as raters in the study. Among the 13 male and 2 female raters, there were five Americans, four Canadians, three Brits, two Australians, and one New Zealander. The range of years raters had lived in Japan was from 4-24, with 11.5 years being the median. While the range and depth of foreign language mastery had a fairly large spread, all raters had studied to some degree a foreign language. All of the raters were experienced English teachers who held advanced degrees in applied linguistics or other related fields.

3.2.2 Materials

The rater questionnaire comprised four sections, including participant background, literature background and rating instructions, qualitative rating of idioms, and, importantly, quantitative rating of idioms. Table 7 below presents an overview of these sections along with some basic details on each. See Appendix B: Transparency rater instruments for the complete rater questionnaire.

Table 7: Overview of rater questionnaire

Section	Content	Purpose
Participant background	Basic biographical data on participants	Take note of similarities and differences among raters to inform analysis
Literature background and rating instructions	Semantic transparency explained in simple terms and 6-point Likert scale introduced	Ensure raters understand the task and what to consider while rating
Qualitative rating	30 idioms to be rated and explained	Compare and contrast between rater interpretations and prime raters for subsequent task
Quantitative rating	222 idioms to be rated	Collect transparency ratings so that idioms could be grouped according to semantic transparency

3.2.3 Design and method

The transparency rater questionnaire's primary purpose was to serve as a means to create a semantic transparency scale to which metaphorical idioms in this thesis could correspond. As semantic transparency intuitions may vary from individual to individual, it was important to elicit ratings from a sufficient number of raters for a sizable amount of metaphorical idioms to have a clearer sense of the scale's reliability. This would also allow for more fine-grained gradations of the scale. A highly graded scale with many points of observation would allow me to designate and operationalize separate levels of semantic transparency (low, mid, high) so that these levels could be later manipulated and examined as a variable in this thesis. Furthermore, an initial large number of metaphorical idioms would permit me to draw from those idioms that appeared most amenable to metaphorical elaboration via pictorial representation. This would offer some operational leeway in the process of narrowing down and teasing out the best idiom candidates from each transparency level to appear in the treatment for Study 3 and Study 4. A secondary purpose of the transparency rater questionnaire was to collect quantitative and qualitative data regarding semantic transparency in order to contribute to the ongoing discussion about the nature of semantic transparency intuitions and its implications for L2 pedagogy.

In the sections that follow, I will go through some of the relevant considerations and finer details for the different sections of the transparency rater questionnaire.

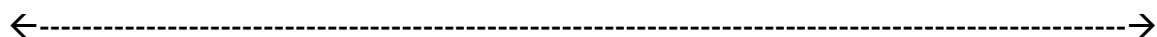
3.2.3.1 Literature background and rating instructions

The transparency rater questionnaire covered relevant background information about semantic transparency and how it related to idioms. Although all of the participants were experienced native English teachers, they might not have been familiar with this area of Cognitive Linguistics. The purpose of the background information section was to ensure that participants understood the basic concept of semantic transparency and provide clear examples of how semantic transparency might be perceived for different idioms. This was done by drawing attention to the relative ease with which one might perceive the literal parts of an idiom to metaphorically or metonymically contribute to the overall figurative meaning of an idiom. In such a way, participants would be better prepared to rate idioms in a systematic and congruent manner. It should be mentioned that at no point were these example or explanations prescriptive about the transparency ratings. Instead, it was merely suggestive of possible interpretations, so as to give raters an idea about the process of rating. This suggestive language was used intentionally so as to convey the idea that there was no right or wrong response when rating the semantic transparency of the idioms.

The semantic transparency ratings were based on a 6-point Likert scale, with 1 being highly opaque and 6 being highly transparent. Descriptors for each number were written in parallel structure across the scale with 3-1 being progressively more opaque and 4-6 being progressively more transparent (see Table 8 below). It should be noted that such a 6-point scale was intentionally chosen as opposed to a 5 or 7-point scale so as to avoid neutral ratings in the middle. Forcing raters to choose a side along the transparency continuum might encourage a more nuanced decision-making process when rating idioms that were neither clearly opaque nor transparent.

Table 8: Semantic transparency rating scale

Highly opaque Highly transparent



1	2	3	4	5	6
The words that make up the idiom have no apparent semantic relationship at all to its figurative meaning	The words that make up the idiom have only a very vague semantic relationship to its figurative meaning	The words that make up the idiom have only a vague semantic relationship to its figurative meaning	The words that make up the idiom have a somewhat clear semantic relationship to its figurative meaning	The words that make up the idiom have a clear semantic relationship to its figurative meaning	The words that make up the idiom have a very clear semantic relationship to its figurative meaning

3.2.3.2 Qualitative rating of idioms

This section of the questionnaire served three purposes: 1) to act as an activation and priming task by having raters explain and justify qualitatively a small subset of idioms before the following quantitative section; 2) to serve as a means of identifying raters who were not following the directions laid out in the instructions (which would also call into question their ratings on the subsequent, more important quantitative section); and 3) to collect qualitative data on a mix of higher and lower transparency idioms from a native speaker's perspective. The instructions explained that raters would rate and explain the transparency of 10 idioms (there was a total of 30 idioms in this section across three different rater questionnaire forms—A, B, and C) by first identifying the idiom, circling the perceived frequency, using the provided scale to rate its semantic transparency, and finally, justifying the rating by qualitatively describing the relationship (or lack thereof) between the literal constituent parts of the idiom and its figurative meaning.

No models were provided to show how the rating of an idiom could be justified as it could have the potential to lead the rater to explain their ratings in an artificial way by following the structure of the model. This was because a model might constrain the potential creativity of a rater's description because he or she might view the example text as "correct" and model his or her own descriptions in a structurally and semantically similar fashion. For the full compilation of the qualitative responses for these idioms, see Appendix C: Transparency Rater Data.

3.2.3.3 Quantitative rating of idioms

In this crucial section of the questionnaire, raters, utilizing the same 6-point Likert scale used in the previous section, rated the complete set of 222 English idioms. If an idiom was known, the rater would circle the number corresponding to the ratings in the semantic transparency scale. Due to the large number of items that the raters were asked to rate, there was no qualitative aspect to this section. In fact, part of the reason to include the previous section was to encourage raters, through written output, to think about and consider the transparency more carefully, so as to prime them for assessing the longer complete list in this quantitative section. According to several raters who were polled about their time on task, this part of the questionnaire took approximately 30-50 minutes to complete, which was well more than half of the total time estimated to complete the questionnaire. As aforementioned, these ratings

would later serve to help designate clearly defined transparency levels and inform idiom selection for Study 3 and Study 4.

3.2.3.4 Pilot-informed changes to transparency questionnaire

Before distributing the finalized version to the rater participants, a number of minor changes were made to the questionnaire after analyzing the results from the pilot. The pilot was completed by three native speaker teachers at the university where the researcher worked at around the time of the data collection. Based on the initial results from the pilot raters, some idioms appearing in the qualitative section were shuffled around and replaced with other idioms to give a mix of high and low semantic transparency idioms. The reason for this was because the qualitative section that examined the perceived connections between the literal and figurative meaning only consisted of 30 out of the 222 total idioms in the study. Having a balanced number of higher and lower semantic transparency idioms might allow for a more anecdotally diverse comparative analysis.

During the pilot, it was also discovered that one of the raters was unsure how to rate due to cultural background assumptions. Proper nouns comprised some parts of a few idioms, such as *Achilles* in *an Achilles heel*, and *Pandora* in *open a Pandora's box*. It is highly likely that someone with knowledge of who Pandora was and what she did would give a higher transparency rating to *open a Pandora's box* than someone who was unfamiliar with her story. To address any possible confusion raters might have regarding this issue, a paragraph was added to the instructions telling raters to rely on their background knowledge in their ratings for *individual words* that make up the idioms.

This approach should not pose a methodological issue with the transparency ratings. Even though L2 learners would likely be unfamiliar with many of these historically and culturally loaded individual words, there is no reason to think that learners cannot act on this background knowledge to their benefit when they are explained what these words refer to. To clarify, I am concerned with how transparent an idiom is perceived as informed by the literal parts of the idiom; this requires knowing what each literal word means. The decision for native speakers to rate based on their own intuition, however, does have important methodological implications, and this is dealt with in the next section.

3.2.3.5 Methodological issues with semantic transparency ratings

An issue that must be addressed before proceeding to discuss the results of Study 1 is related to the way in which native speakers rated the semantic transparency. The decision to have native speakers directly rate semantic transparency based on their own cumulative knowledge and intuition as opposed to rating based on how transparent idioms would appear to a second language learner have significant potential consequences. In the latter case, the native speaker raters would have the additional burden of considering all of the factors that could contribute to obscure or elucidate the figurative meaning of idioms *for second-language learners*. Rather than adopt this indirect method, for my purposes, it was preferable to allow raters to rate directly based on their own perceptions. See Irujo (1993) and Steinel, Hulstijn, and Steinel (2007) for studies that have used different methods for eliciting semantic transparency ratings.

Skeptics could argue, however, that having native speakers rate directly in this way could also introduce its own set of intervening variables. For instance, it is possible that native speakers could be familiar with some of the etymologies for the idioms to be rated, which could lead to higher ratings compared to those rated by native speakers unfamiliar with said etymologies. At the heart of this matter is whether or not such etymological knowledge should contribute to semantic transparency ratings. After all, if semantic transparency is to be viewed in a more objective, less idiosyncratic light, then would it not be better to disregard culturally contained etymological knowledge and rate purely based on encyclopedic world knowledge and knowledge of conceptual metaphors?

My response would be no, for two reasons. To begin with, it is operationally difficult, if not impossible, to delineate with precision the line separating culturally contained knowledge with encyclopedic world knowledge. Such a blurry line could be thought of as a continuum of probability. To illustrate this let us consider two idioms that could both exhibit very different, yet at the same time equally plausible degrees of probability as a kind of world knowledge for different people. For *give someone the green light* (*fig. give someone permission to do something*), one might assume that given the ubiquity and standardization of traffic signals, all but the most secluded people in the world would be familiar with what a green light indicates for commuters and the implications that has for the semantic transparency of that idiom. One could argue, however, unlikely as it may seem, that a very secluded person might not be aware of this, and therefore such knowledge is not universal. Alternatively, consider

the idiom *throw in the towel*, which means *to give up*. The etymology of this idiom harkens to the domain of boxing, in which the throwing in of the towel signals the end of a boxing match due to a boxer being badly beaten. Is it fair to say that such knowledge is restricted to a very limited set of cultural contexts? In a globalized world, there are images, customs, and rules related to popular sports and many other domains in life that can be disseminated through movies, television, and other such media—is it not possible that L2 learners could be familiar with and capitalize on such knowledge, which would in turn make an idiom more transparent for that learner? Attempting to delineate and systematize in a consistent manner the separation of world versus culturally, socially, or geographically contained knowledge for raters to adhere to in their rating would likely introduce more problems than it would solve.

Secondly, the benefit of having 15 independent raters for 222 idioms is that any idiom that elicits very divisive ratings (especially in comparison to other idioms) can be easily identified and dealt with accordingly. By examining the standard deviations for individual idioms, it is also possible to have an indication if some other variable, such as difference in background knowledge, is coming into play. If it is the case that a particular idiom elicits fairly consistent ratings across all or most of the 15 raters, then it is reasonable to think that differences in etymological background knowledge was not a significant factor for the rating of that idiom.

In sum, semantic transparency rating procedures are imperfect and suffer from at least some kind of methodological disadvantage no matter what approach is adopted. Yet, this is not to diminish the potential value of semantic transparency ratings as a tool to investigate metaphorical idioms within the context of this thesis, which is concerned with fostering metaphorical elaboration for learning idioms via any means necessary. Any means includes, but is not limited to etymological knowledge. Furthermore, I maintain that etymological knowledge can potentially elucidate the figurative meaning of idioms, and therefore a high degree of rater agreement will either indicate that such knowledge does not differ greatly between most raters, or there is too little knowledge of it among raters to significantly impact the ratings. We now turn our attention to discuss this degree of agreement in order to answer our first research question:

To what extent do raters agree in their semantic transparency ratings?

3.2.4 Results and discussion

Analysis of the semantic transparency ratings revealed a high level of agreement among the 15 native speaker raters. A Cronbach's Alpha measure of inter-rater reliability was at .914, which indicates a strong degree of internal consistency (DeVellis, 2012) among the raters. The strength of the internal consistency is not only critical to support the remainder of this study, but it also provides evidence in line with a cognitive linguistics view of semantic transparency. That is, semantic transparency of idioms is not completely arbitrary, but rather is in part influenced by underlying conceptual metaphors and widely understood encyclopedic world knowledge. Insofar as the rating questionnaire is valid as an instrument to measure semantic transparency, the high inter-rater reliability corroborates to a certain extent this non-arbitrary relationship between semantic transparency and some idioms.

For this study, rater consistency, as a scalable phenomenon, can provide tentative insights into the possible scope and delimitations of interpreting idioms via their literal constituent parts. If, for instance, the ratings for one particular idiom show a much smaller degree of variance when compared to a different idiom, this could indicate a more constrained interpretation for this idiom (be it transparent or opaque) relative to the other. Conversely, an idiom that has been rated more erratically could imply a stronger degree of arbitrariness and a larger scope for interpretation. Naturally, other confounding variables can unfortunately muddle the data, and for this reason, it is essential to compare ratings of individual idioms and also draw from qualitative data gleaned from the priming task in the rating questionnaire in order to have a clearer understanding and more informed discussion about what can account for differences in ratings.

3.2.4.1 Rater consistency for individual idioms

Closer inspection shows a substantial range of standard deviations among the semantic transparency ratings of individual idioms ranging from 0.3 for *go cold turkey* to 1.9 for *an Achilles heel*. This suggests that despite overall high agreement among raters, some idioms elicited far more erratic ratings than others. By grouping idioms according to how consistently they were rated, it might be possible to tease out some group wide features or commonalities that contributed to the greater or lesser degree of agreement. In order to do this, let us first examine idioms from the extremes of both ends of the standard deviation range in Tables 9 and Table 10 on the following page.

Table 9: Upper 10% of idiom rating consistency

<i>Idiom</i>	<i>Semantic Transparency</i>	<i>Std.</i>
1) Go cold turkey	1.1	0.3
2) For the hell of it	1.5	0.5
3) Not cut the mustard	1.2	0.5
4) Blood, sweat, and tears	4.6	0.7
5) Be a big fish in a small pond	4.6	0.7
6) Free as a bird	5.1	0.7
7) Be skating on thin ice	5.5	0.7
8) Be skin and bones	5.0	0.7
9) Smooth sailing	4.8	0.7
10) A drop in the bucket	4.9	0.8
11) Kick the bucket	1.3	0.8
12) Walk into the lion's den	4.7	0.8
13) Not beat around the bush	1.6	0.8
14) A piece of cake	1.4	0.8
15) Not be rocket science	4.6	0.8
16) Spill the beans	1.9	0.8
17) The jury is still out	4.5	0.8
18) Have something under your belt	2.1	0.8
19) Kill two birds with one stone	5.0	0.8
20) The end of the road	5.0	0.8
21) The rat race	2.2	0.8
22) The tip of the iceberg	5.2	0.8

Table 10: Bottom 10% of idiom rating consistency

<i>Idiom</i>	<i>Semantic Transparency</i>	<i>Std.</i>
201) God's gift to women	3.9	1.5
202) Puppy love	3.3	1.5
203) Throw down the gauntlet	2.6	1.5
204) Be someone's guinea pig	3.4	1.5
205) Stand a chance	3.1	1.5
206) A reality check	3.5	1.5
207) Like a bat out of hell	3.0	1.5
208) Blood is thicker than water	3.0	1.5
209) Between a rock and a hard place	3.7	1.5
210) Lose your mojo	2.4	1.5
211) Be back to square one	3.2	1.6
212) Money talks	3.3	1.6
213) Leave no stone unturned	3.7	1.6
214) Hit the sack	3.3	1.6
215) Be pushing up daisies	2.5	1.6
216) A rude awakening	3.7	1.7
217) Strike while the iron is hot	3.5	1.7
218) The black sheep	3.5	1.7
219) Drink like a fish	4.0	1.7
220) Play devil's advocate	3.1	1.7
221) Throw in the towel	3.9	1.8
222) An Achilles heel	3.5	1.9

The first notable observation is that only high and low semantic transparency idioms are instantiated in Table 9, while Table 10 is almost entirely composed of mid transparency idioms (as the reader will recall, for the purposes of this study, 1.0-2.9 = low transparency; 3.0-4.0 = mid transparency; and 4.1-6.0 = high transparency). This is unsurprising, as average ratings that fall on either extreme of the semantic transparency scale must necessarily have relatively high agreement among raters. This is because the stronger the disagreement among raters, the more likely there will be ratings from both ends of the scale, yielding an average that falls closer to a middle rating. This suggests that, as a whole, idioms falling into the high and low transparency groups enjoy stronger internal consistency than do their mid transparency counterparts. Indeed, the average standard deviations according to transparency level in Table 11 below substantiate this claim. A one-way ANOVA also showed that the standard deviations were statistically different for different levels of semantic transparency, $F(2,219) = 28.065, p < .001$.

Table 11: Average standard deviations by transparency level

Transparency Level Sample Size	Low Transparency (N = 59)	Mid Transparency (N = 95)	High Transparency (N = 68)
Average Std.	1.05	1.27	1.03

3.2.4.2 Accounting for disagreement in ratings

Another possible explanation to account for greater or lesser degrees of internal consistency found in the data could be linked to the raters' background knowledge. In the rater instructions, raters were told that they could rely on whatever background knowledge they had of individual literal words in the idioms while using the rating scale. The rater instructions were deliberately explicit about this point because I was convinced it was important to reduce the number of assumptions raters took into account while rating. If raters took it upon themselves to assume what literal words would be known or unknown to an L2 learner, then that could introduce another variable in how the rater proceeded to rate the idiom. Moreover, the pilot of the rating questionnaire revealed that some raters in the priming task considered cultural factors in their ratings. For the idiom *to be skating on thin ice*, one rater wrote that the transparency would depend on the degree to which ice-skating was salient in the target culture. Rather than further confound ratings by adding another layer of

cultural assumptions, it was thought best to allow raters to directly assess the transparency based on their own understanding. What this means operationally, however, is that for idioms containing proper nouns, such as *Achilles* in an *Achilles heel*, culturally and historically bound origins can render the idioms' meaning either very transparent if known or very opaque if unknown. As I was aware from the outset that this was a possibility, I included *an Achilles heel* as one of the target idioms in the priming task in one form of the rater questionnaire. In Table 12 below are the four qualitative responses for this idiom.

Table 12—Qualitative responses for *an Achilles heel*

Rater	Justification for rating on priming task
Rater 1	This is really difficult to explain. I guess this is based on the story of "Achilles", but I don't think semantically the relationship is clear. It requires cultural knowledge.
Rater 2	You would need to know the history of this phrase to know its meaning.
Rater 3	No verb to help reveal the meaning and it requires some knowledge of ancient history.
Rater 4	Cultural knowledge is everything here. This is utterly opaque without it.

As we can see, there seems to be a consensus among these four raters in terms of their understanding that this idiom is historically based. Yet, three of these four raters assigned this idiom a low semantic transparency rating (1, 1, and 2), while the fourth rater assigned it the highest rating of a 6. In fact, out of all 15 raters, three raters assigned the lowest score of a 1 and another three assigned the highest score of a 6, which is partly why this idiom was the most disagreed upon idiom of all 222 idioms rated. In spite of my efforts to curtail such occurrences with my amendment to the background section following the pilot (see section 3.2.3.4), it is possible that the presence of a proper noun as part of the idiom still confused some raters and thus contributed to higher disagreement for idioms of this type.

The idiom *play devil's advocate* generated similar disagreement among the raters with a standard deviation of 1.7. Due to the collocational strength of *devil's* and *advocate*, this idiom was also chosen as one of the idioms to appear in the priming section of the rater questionnaire in order to see how that might impact the rating. If raters treated *devil's advocate* as a single unit of semantic meaning, then

the entailments associated with that meaning could provide more semantic clues and potentially lead to a higher rating. Conversely, if the raters only considered each literal word individually, then the relationship between the literal and figurative parts might seem less pronounced. Table 13 below draws upon the qualitative data on the priming task to elucidate these finer points.

Table 13: Qualitative responses for *play devil’s advocate*

Rater	Justification for rating on priming task
Rater 5	The implication here is that the opposing point-of-view is clearly wrong (and possibly evil), but is adopted for the sake of argument.
Rater 6	The devil (evil). Someone suggesting the worst possible outcome.
Rater 7	You’d have to know that ‘play’ could be act, have an idea of who the devil is, and understand that acting the part of his advocate would just be taking the other side of an argument and not being a devil worshipper.
Rater 8	If you know the word ‘advocate’ the meaning of this idiom is very clear.

Both rater 5 and 6 appear to recognize the devil as a metaphorical symbol of something evil in their interpretation, yet it is interesting how they differ in the nuance of their explanations. While rater 5 refers to a morally dubious “opposing point-of-view”, rater 6 explains the meaning as the “worst possible outcome”. This seemingly slight distinction highlights the complexity of many idioms and how even native speakers might share closely interrelated, yet clearly not identical understandings of a number of idioms. As the idioms’ complexity of meaning was not controlled for in this study, it is possible that some idioms conveyed different shades of meanings among the raters, which in turn could have affected the ratings (for further discussion on differing interpretations of idioms among raters, see section 4.2.3.4.1 in Chapter 4 detailing the picture rating norming session).

Lastly, it is imperative to point out the possible role of etymological origins in the outcome of the ratings. Idioms that were originally motivated by well known etymological origins might have elicited inconsistent ratings because raters who were familiar with an idiom’s etymological origin would have more contextual clues to discern a relationship between the literal parts and the figurative meaning. The idiom *throw in the towel* (standard deviation = 1.8) is a good example of this because an informal survey of rater participants revealed that many but not all of them were

aware of the connection between this idiom and the source domain of boxing. In boxing, when a boxer is badly losing a match, his or her coach can signal to stop the fight by throwing a towel into the boxing ring. Since the meaning of the idiom is to *admit failure or defeat*, knowing the etymological origin would clearly elucidate the meaning of the idiom via its literal constituent parts. Given that the etymological origin for this particular idiom seemed to be familiar with many but not all of the raters, it is unsurprising that the ratings for this idiom were not consistent.

Skeptics might argue that due to the number of potentially confounding variables described above, the validity of the ratings should be called into question. While it must certainly be acknowledged that many individual idioms suffered from inconsistent ratings, the overall inter-rater reliability was remarkably high, with the Cronbach's Alpha at .914. Admittedly, those questionable individual idioms appeared to have disproportionately made up the mid transparency grouping of idioms for reasons described in section 3.2.4.1. Yet somewhat surprisingly, qualitative data from the priming task was strikingly similar even for idioms that tended to elicit a higher standard deviation in the rating. Justification for the rating of the mid transparency idiom, *to ruffle feathers*, illustrates this well in Table 14 below.

Table 14: Qualitative responses for *to ruffle feathers*

Rater	Justification for rating on priming task
Rater 5	This compares dissatisfied acquaintances to birds, who, through insensitive handling, have had their feathers disjointed.
Rater 6	I can visualize feathers out of place on a bird (or something) as that animal was disturbed by something.
Rater 7	This is possibly clearer depending on how the listener knows birds/can picture how a bird might feel if its feathers were ruffled.
Rater 8	I can clearly imagine an animal/bird being unhappy/disgruntled when you move its feathers just like we don't like people touching our hair.

To ruffle feathers had a semantic transparency rating of 3.2 and a standard deviation of 1.2, which was close to the average for mid transparency idioms (1.27). In spite of the notable standard deviation, however, all four raters who encountered this idiom on the priming task explained their semantic transparency rating in a similar fashion by citing birds and employing comparable descriptive language such as *dissatisfied*, *disturbed*, and *disgruntled* in their explanations. This qualitative convergence shown for *to ruffle feathers* should highlight the fact that some measure of rater disagreement does not necessarily entail vastly different interpretations.

3.2.4.3 Accounting for agreement in ratings

As we saw in Table 9, the idioms that elicited ratings with smaller standard deviations tended to have extremes of transparency; that is to say they were either highly transparent or not very transparent at all. Although raters were allowed to rely on background knowledge of the literal constituent parts while rating, idioms falling into the high and low transparency groupings necessarily had a high degree of consistency because otherwise erratic ratings would have caused the average to fall closer to the middle rating. For those idioms in the low transparency grouping, this could mean that idioms motivated by culturally bound and obscure origins were less well known or unknown to raters, thereby rendering any reliance on background knowledge ineffectual. Alternatively, the original motivation of these idioms, even if known, might not have sufficiently elucidated the figurative meaning simply by virtue of being low transparency. In either case, what can be safely assumed is that no matter the reason, raters found it difficult to understand the relationship between the literal constituent parts and figurative meaning of idioms falling into the low transparency grouping. In support of this claim, let us draw from qualitative data from the priming task found in Table 15 below.

Table 15: Qualitative responses for a *piece of cake*

Rater	Justification for rating on priming task
Rater 5	I hear this idiom all the time, but I've never understood the connection between easy tasks and dessert pastries.
Rater 6	Cakes relate to easy → how?
Rater 7	I can't imagine any way that this idiom could be interpreted as easy.
Rater 8	I think this would be easily confused with eating. It is not connected to being easy.

As we can see, the four raters who encountered this idiom as part of the priming task could not find any meaningful connection between the literal constituent parts and the figurative meaning. Indeed, the semantic transparency rating was a 1.4, with 11 out of the 15 raters assigning a *piece of cake* the lowest rating of a 1. Though this constitutes a very small sample of qualitative data for just one low transparency idiom, it does highlight the perceived lack of a relationship between the literal and figurative meaning by the raters.

3.2.4.4 Conclusion

Based on evidence collected both from the semantic transparency ratings and priming task, it appears that on the whole the native speaker raters in this study rate consistently among themselves and often draw upon similar encyclopedic world knowledge to explain their understanding of many idioms. Therefore, the answer to the first research question would be that native speaker raters tend to agree substantially in their ratings of semantic transparency of idioms in this study. These findings are consistent with the cognitive linguistics view that the relationship between the literal constituent parts and figurative meaning of many idioms is not completely arbitrary and as such can be exploited for both pedagogical and research-oriented purposes. Two caveats, however, that must be emphasized are that 1) the ratings cannot be viewed as actual semantic transparency but rather perceived semantic transparency as a result of individual differences between raters and 2) idioms can have a greater or lesser scope of interpretation depending on a number of factors described in this section.

3.3 Study 2

What characteristics of idioms lead raters to rate them as being of higher or lower transparency?

I hypothesized that idioms that have underlying conceptual metaphors or otherwise readily recognizable and cross-culturally understood metaphorical concepts would tend to elicit higher transparency ratings, as these would presumably be more accessible and comprehensible to raters irrespective of background or country of origin. For instance, common encyclopedic world knowledge about fire and how it interacts with fuel might facilitate understanding of “add fuel to the fire” (to make a bad situation worse). On the other hand, it was posited that conventionalized idioms with more culturally restricted metaphor and metonymy would be more likely to be rated as opaque. As an example, consider “red tape” (official rules and documents that seem unnecessary and cause delay), which alludes to the former British practice of tying together documents with a red ribbon. Such an origin is likely unknown to most, and even if known, it might not guarantee increased transparency.

3.3.1 Participants

Study 2 does not make use of participants per se. However, the semantic transparency ratings obtained in Study 1 are important for informing the analysis and subsequent discussion for Study 2. Please refer to section 3.2.1 for details about the participants used for gathering semantic transparency ratings.

3.3.2 Materials

Much of the analysis in Study 2 relied upon the etymological notes found in a number of idiom dictionaries. In Table 16 on the following page, I've included all of the idiom dictionaries that I initially consulted in compiling the data on the etymologies of the idioms concerned. Further citational details for each can be found at the end of the references.

Table 16: Information on idiom dictionaries surveyed

Dictionary	Publisher	Code	Etymological Notes	Comments
A Dictionary of American Idioms (5 th edition)	Barron's	BAI	None	Includes information about part of speech, register, and example sentences for over 8,000 idioms.
American Idioms Dictionary (4 th edition)	McGraw-Hill's	MAI	None	Includes information about parts of speech, register, examples, and very occasional pictures for over 14,000 idioms.
American Idioms Handbook	Webster's New World	WAI	Infrequent	Over 3,500 Idioms are organized topically and are explained in more detail.
Dictionary of American English Idioms and Slang	J.D. Hunter (self published)	HAI	None	Includes information about part of speech, register, and examples sentences for over 5,000 idioms
Dictionary of English Idioms	Oxford	OAI	Frequent	Includes information about register, etymology, and historical quotations for over 6,000 idioms.
The American Heritage Dictionary of Idioms	Houghton Mifflin Harcourt	HDI	Very frequent	Over 10,000 idioms with etymology, dates of origin/first use, example sentences, and register.
Dictionary of idioms and their origins	Linda and Roger Flavell (self-published)	IORI	Always	Over 600 idioms with highly detailed notes on their origins
Idioms Dictionary	Collins Cobuild	CID	Occasional	Over 5,000 idioms with information on register, etymology, and example sentences.

3.3.3 Design and method

The hypothesis underlying this research question presupposes that the way in which raters perceive an idiom's semantic transparency could be related, in part, to how an idiom is motivated. As the reader will recall, an idiom is motivated when non-arbitrary elements exist between an idiom's literal and figurative meaning. Although all idioms are assumed to be motivated, motivation can occur through a number of channels: conceptual, encyclopedic, and cultural to name a few (see sections 2.3.2.1 and 2.3.2.2 for more on this topic). As culturally motivated etymologies and origins of many idioms are often restricted, obscure, forgotten, uncertain, or unknown, it seems reasonable to postulate that these idioms will more often than not be perceived as lower transparency. Conversely, conceptually or encyclopedically motivated idioms might be perceived, on the whole, as being more semantically transparent, as their motivation derives from cross-cultural embodied experience or encyclopedic world knowledge.

The first step I took in testing this hypothesis was to analyze the idioms falling into the highest and lowest perceived semantic transparency ratings. By juxtaposing these two groups, I was able to look for patterns and commonalities pertaining to each grouping (see Table 17 and Table 18 in section 3.3.4 for details). Furthermore, I was able to consider how different motivational sources might have contributed to the idioms' higher or lower semantic transparency rating in order to get a sense of the tendencies of each grouping. Since I hypothesized that the higher transparency idioms would be more likely to be conceptually or encyclopedically motivated than lower transparency idioms, I could compare idioms from both extremes of the scales to determine if there was any evidence for this before proceeding to a more systematic and in depth analysis.

Following the initial approach mentioned above, I furthered the investigation more objectively by referring to the etymological notes made available by the idiom dictionaries listed in Table 16 on page 80. In such a way, I could curtail any of my own biases by referring to the stipulated etymologies written by lexicographers. By surveying a sufficient number of well-known idiom dictionaries, I could better determine the frequency of etymological notes and associated origins for the idioms of interest. It is important to note that half of the idiom dictionaries surveyed had no or very few etymological notes, and for that reason they were not helpful in addressing this research question. Of the remaining dictionaries (OAI, HDI, OIRI, and CID), all but the Collins Cobuild Idioms Dictionary made frequent use of etymological notes. Though CID employed etymological notes more sparingly, the initial idioms in this thesis were selected from this dictionary, so it was still included as a valuable cross-referencing source even in cases where the etymology was not listed. For the reader's reference, a complete list of the idioms' denotation and etymological notes were collected and reproduced in Appendix L from these four idiom dictionaries.

The etymologies gathered and compiled from the OAI, HDI, OIRI, and CID allowed me to uncover, both quantitatively and qualitatively, evidence of the link between motivational source and perceived semantic transparency. In the results and discussion on the following page, I will present the findings from each stage of the analysis. This includes 1) the initial comparison of the highest and lowest semantic transparency idioms as determined by the raters in Study 1, 2) the quantitative differences between etymological frequencies and discrepancies found

among the four dictionaries, and lastly 3) a discussion on some anecdotal evidence from individual idioms. In the next section, we turn our attention to these results and discuss how they aid in answering the research question for Study 2:

What characteristics of idioms lead raters to rate them as being of higher or lower transparency?

3.3.4 Results and discussion

I will begin the discussion by first presenting the results from the initial comparison of the idioms falling on the two extremes of the semantic transparency scale. In Table 17 and Table 18 on pages 82 and 83 are the upper and lower 10% of idioms from each end of the semantic transparency ratings.

Table 17: Top 10% of highest perceived transparency idioms

<i>Idiom</i>	<i>Semantic Transparency</i>	<i>Standard Deviation</i>
1) Be skating on thin ice	5.5	0.7
2) Add fuel to the fire	5.4	0.9
3) Win the battle, but lose the war	5.3	1.1
4) Recharge your batteries	5.2	0.9
5) The tip of the iceberg	5.2	0.8
6) Free as a bird	5.1	0.7
7) Be caught in the act	5.1	1.1
8) A necessary evil	5.1	1.3
9) An accident waiting to happen	5.0	1.0
10) Stab someone in the back	5.0	1.0
11) Kill two birds with one stone	5.0	0.8
12) The end of the road	5.0	0.8
13) Be on autopilot	5.0	0.9
14) Be skin and bones	5.0	0.7
15) A drop in the bucket	4.9	0.8
16) Give someone the green light	4.9	1.1
17) A hidden agenda	4.9	1.1
18) Be alive and kicking	4.8	1.0
19) Drag sb. kicking and screaming	4.8	1.0
20) The light at the end of the tunnel	4.8	1.0
21) Be caught with your pants down	4.8	1.0
22) Smooth sailing	4.8	0.7

Table 18: Bottom 10% of lowest perceived transparency idioms

<i>Idiom</i>	<i>Semantic Transparency</i>	<i>Standard Deviation</i>
201) Tie the knot	2.1	1.0
202) One sandwich short of a picnic	2.1	1.0
203) Have something under your belt	2.1	0.8
204) Go bananas	2.0	1.2
205) The birds and the bees	2.0	1.2
206) Turn over a new leaf	1.9	1.0
207) Catch someone red-handed	1.9	0.9
208) Red tape	1.9	1.2
209) Be under the weather	1.9	0.9
210) Spill the beans	1.9	0.8
211) Face the music	1.9	0.9
212) Give sb. a run for their money	1.9	1.0
213) Get a kick out of something	1.8	0.9
214) Sell someone down the river	1.7	0.8
215) Tongue in cheek	1.7	0.9
216) Not beat around the bush	1.6	0.8
217) For the hell of it	1.5	0.5
218) A catch 22	1.4	1.1
219) A piece of cake	1.4	0.8
220) Kick the bucket	1.3	0.8
221) Not cut the mustard	1.2	0.5
222) Go cold turkey	1.1	0.3

3.3.4.1 General observations

Prior to scrutinizing individual idioms, I will first compare the central tendencies of both transparency groupings in order to determine just how high or low the semantic transparency ratings were in relation to the 6-point Likert scale provided to the raters. In such a way, I can have a better estimation of how strongly the ratings correspond to the extremes of the scale. This will allow me to take note of discrepancies, if any, between the highest and lowest perceived transparency ratings, which will further inform the discussion between these two groups. In addition to semantic transparency, it is also necessary to examine the overall standard deviation for each group, as this can help to elucidate whether or not there was any meaningful difference in the degree of agreement among raters for the idioms collectively in each group. Table 19 presents this data on the following page.

Table 19: Descriptive statistics for semantic transparency ratings

ST = Semantic transparency; Std. = Standard deviation

<i>Idiom Grouping</i>	<i>ST Mean</i>	<i>ST Median</i>	<i>ST Range</i>	<i>Std.</i>
Top 10% of highest perceived ST	5.03	5.0	1.3	0.93
Bottom 10% of lowest perceived ST	1.74	1.9	1.0	0.87

Both groups share similar findings in the descriptive statistics above. While the data for the lowest transparency grouping had lower range and deviation from the mean compared to the highest transparency grouping, this difference is not significant. The median, however, shows us that for both groups, the median transparency rating was about 1 point from each end of the 6-point Likert scale. Given the sizable sample of total idioms (N=222), what this tells us is that relatively few idioms in this study were perceived as being the highest or lowest transparency by all 15 raters. Tellingly, the top rated idiom, *be skating on thin ice*, was collectively perceived as a 5.5, a full half point away from the highest transparency possible according to the rating scale. Conversely, the lowest transparency idiom in this study, *go cold turkey*, was collectively rated at 1.1, indicating that most raters were not able to perceive even a slight connection between the literal parts and the figurative meaning. What this suggests is that while there were cases in which all or nearly all raters saw no relationship at all between the literal constituent parts and figurative meaning, there was no such unanimity for the highest possible transparency rating (6.0). For the reader's reference, the 6-point Likert scale for the semantic transparency ratings as well as individual ratings for these two idioms are provided in Table 20 and Table 21 on pages 84 and 85.

Table 20: Semantic transparency rating scale

1	2	3	4	5	6
The words that make up the idiom have no apparent semantic relationship at all to its figurative meaning	The words that make up the idiom have only a very vague semantic relationship to its figurative meaning	The words that make up the idiom have only a vague semantic relationship to its figurative meaning	The words that make up the idiom have a somewhat clear semantic relationship to its figurative meaning	The words that make up the idiom have a clear semantic relationship to its figurative meaning	The words that make up the idiom have a very clear semantic relationship to its figurative meaning

Table 21: Ratings for *be skating on thin ice* and *go cold turkey*

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
Skating on thin ice	6	6	4	5	6	5	5	6	6	6	6	6	5	4	6
Go cold turkey	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2

The finding that the most semantically transparent idiom in this study was a full half point from the highest possible rating could indicate that, at least among the raters involved in this study, even the idioms that were rated the highest do not seem to consistently convey a “very clear” semantic relationship between the literal parts and figurative meaning. Indeed, 2 out of the 15 raters assigned a rating of 4, indicating only a “somewhat clear” semantic relationship between literal and figurative elements. On the other hand, the lowest rated idiom seemed to somewhat equally perplex the raters, leading 13 out of 15 to assign it the lowest rating of 1, with the remaining two raters assigning it a 2.

3.3.4.2 Observations of quantitative data

The data generated by comparing the etymological notes of the idiom dictionaries (see Appendix L: Etymological data) revealed a number of relevant considerations that should be addressed before dissecting in detail any individual idioms. Firstly, it should be noted that a substantial number of idioms were unlisted in many of the four dictionaries used. Though this was expected since these dictionaries varied greatly in the total number of entries included (from about 600 in IORI to over 10,000 in HDI), it is important to establish that there was no great difference in the total number of unlisted entries between transparency groups. Otherwise, it could be the case that one transparency grouping included a disproportionate number of idioms either deemed too low frequency or unimportant by the lexicographers who wrote these dictionaries. Such a case might introduce a further unwanted variable that would complicate the analysis. A tally of each group, however, showed that the cumulative number of unlisted idiom entries was 26 out of a possible 88 (22 idioms x 4 dictionaries), or 29.5% for the high transparency idioms and 18 out of 88, or 20.5% for the low transparency idioms. This shows that though there was a number of unlisted idioms, a fairly similar majority of idiom entries were provided among the four dictionaries for the high and low transparency idioms under scrutiny in Study 2.

A second consideration is the frequency for which listed idioms have accompanying etymological origin notes. This is important because the omission of etymological notes could possibly offer insights about the way in which idioms are motivated. It is of course impossible to know with any certainty why a particular idiom may not have accompanying etymological notes. It could be the case that there is no known etymology, or perhaps the existing explanations are tenuous or unreliable and therefore go unlisted. However, it is not unreasonable to posit that one potential reason lexicographers might exclude etymological notes is when the origin is so clear that notes would prove superfluous. That is, idioms whose origins strongly relate to encyclopedic world knowledge or embodied experience might comparatively have fewer or no etymological entries among the four dictionaries, because this kind of knowledge is not necessarily culturally bound and therefore are less likely to require explanation. If this is true, then we would expect the incidence of etymological notes to be more frequent among the low transparency idiom group, because, as posited at the beginning of Study 2, perceived lower transparency might be a result of, at least in part, culturally or historically bound knowledge.

In order to determine whether there is evidence of this, we return to the data to see if there is any marked contrast in the number of cases of etymological notes between the two transparency groups. For the high transparency group, a tally revealed that etymological notes were provided for 27 of the 62 (43.5%) listed idioms. In contrast, for the low transparency group, etymological notes were included in 44 out of the 70 listed idioms (62.9%). This indicates a 44.3% increase in the incidence of etymological notes for the low transparency group of idioms. The two obvious caveats to this finding are that the idioms in this study were not randomly selected, as they were intended to address other research questions in this thesis as well, and perhaps more importantly, as mentioned, I cannot be certain why etymological notes were excluded. The author of IORI, however, did convey to me that idioms whose etymologies were “self-explanatory” were sometimes excluded unless there was some compelling reason to include it (L. Flavell, personal communication, September 24, 2015). If the lexicographers in the remaining three dictionaries adopted a similar methodology, then it is possible that this marked decrease in

etymological notes among the higher transparency idioms is connected to the motivational source obviating explicit explanations.

Finally, a further manner of attempting to answer this research question quantitatively would be to compare the number of disputed etymological origins across both transparency groups. If it is the case that an idiom's etymology is very clear due to encyclopedic world knowledge or embodied experience, then there would likely be just one, uncontested explanation. If, on the other hand, the precise origin of the idiom is disputed, this could be indicative of idioms whose etymology derives from a specific historical event or culturally bound context. With regards to the idioms in each transparency group in Table 17 and Table 18, there was a single case (4.5%) of a disputed etymology (*alive and kicking*) for the high transparency group, but there were six such cases (27.3%) for the low transparency group (*tie the knot*, *spill the beans*, *face the music*, *kick the bucket*, *cut the mustard*, and *go cold turkey*). Again, while this cannot be taken as strong evidence for the reasons mentioned earlier, cumulatively, along with the previous data, patterns that support the hypothesis appear to be emerging between the two groups of idioms.

3.3.4.3 Discussion of qualitative data

I will now attempt to triangulate the findings above by comparing in detail one high transparency idiom and one low transparency idiom. Such a comparison will add qualitative depth to the discussion in Study 2 by illustrating with concrete and detailed examples how semantic transparency, etymology, and motivational sources can be related. This discussion is best served by comparing the etymologies of those idioms falling at the furthest extremes of the scales: *skating on thin ice* and *go cold turkey*. Since these two idioms constitute the highest and lowest perceived transparency idioms in Study 2, they will serve as the most suitable and prototypical candidates of high and low semantic transparency for comparison. By juxtaposing the etymologies of these two idioms, any differences relating to possible motivational sources should become clearer. In Table 22 on the following page, the etymologies and related data are presented for these two idioms.

Table 22: Etymological data for *be skating on thin ice* and *go cold turkey*

Idiom	OAI	HDI	IORI	CID
1) be skating on thin ice	<p>Denotation: in a risky or precarious situation</p> <p>Etymology: Not listed</p>	<p>Denotation: in a precarious or risky position</p> <p>Etymology: This idiom, which alludes to the danger that treading on thin ice will cause it to break, was first used figuratively by Ralph Waldo Emerson in his essay <i>Prudence</i> (1841).</p>	Not listed	<p>Denotation: If someone is skating on thin ice, they are doing something which could have unpleasant consequences for them.</p> <p>Etymology: Not listed</p>
222) go cold turkey	<p>Denotation: suddenly and completely stop taking drugs</p> <p>Etymology: the image is of one of the possible unpleasant side effects of this, involving bouts of shivering and sweating that cause goose flesh or goose pimples, a bumpy condition of the skin which resembles the flesh of a dead plucked turkey.</p>	<p>Denotation: immediate, complete withdrawal from something, especially an addictive substance; also, without planning or preparation</p> <p>Etymology: This term may have come from the earlier expression TALK TURKEY (for blunt speaking). At first used strictly for abrupt withdrawal from drugs or alcohol, it was soon transferred into quitting any habit.</p>	<p>Denotation: to come off (hard) drugs abruptly, rather than gradually and more easily</p> <p>Etymology: This phrase, which is of American origin, has been drug-world terminology since at least the first quarter of the twentieth century. A favorite explanation for the use of <i>cold turkey</i> in this context is that it is a plain dish requiring no preparation and served up without frills or ceremony: by analogy, the withdrawal method is the most basic and straightforward. Other commentators claim that the phrase is descriptive of an addict's clammy mottled skin which looks like that of a plucked turkey once this drastic treatment is underway. There is however, a third explanation. When the expression <i>cold turkey</i> was coined another American idiom <i>to talk cold turkey</i>, meaning 'to be frank, to talk in plain terms', was current (this was a twist on the earlier phrase to talk TURKEY, which had the same meaning) and it is possible that the drug-related term derived from this.</p>	<p>Denotation 1: if someone goes cold turkey, they suddenly stop taking drugs that they depend on</p> <p>Denotation 2: if someone goes cold turkey, they suddenly stop having or doing something that they are used to</p> <p>Etymology: Not listed</p>

In Table 22 on page 88, we can observe that for *skating on thin ice*, one etymological entry is provided, while three are given for *go cold turkey*. Relying on the sole etymological entry in the case of *skating on thin ice*, we can see that the risk or danger that the figurative meaning expresses is likened to a similar such precarious situation in which one is skating on thin ice. This precariousness, presumably, is due to the risk of the ice breaking and the skater plunging into icy cold waters—a thoroughly unpleasant and likely perilous scenario. This particular idiom is suitable to show just how encyclopedic world knowledge can elucidate the meaning of a particular idiom. Ice skating, while obviously not suited to some climates, is likely to be at least vaguely familiar to most people in most countries, owing to the widespread, near universal consumption of media through television, movies, the internet, and so on. Furthermore, most would also be familiar with the basic physical properties of ice and what results when too much pressure is applied across a thin layer of it. This knowledge can be assimilated and drawn upon to facilitate understanding the figurative meaning via the literal constituent parts of the idiom.

In the instance of *go cold turkey*, the analysis is not so straightforward. This is because there are no fewer than three etymological origins provided. One of the origins is clearly culturally bound as it is tied to another American idiom “to talk turkey”. The remaining two explanations are rather difficult to categorize because they are not delimited in a historical or cultural way, but at the same time, it is not clear that they could be considered encyclopedic world knowledge either. One of these etymologies alludes to the physical symptoms of drug addiction. According to this etymology, the appearance of the skin of a plucked and cold turkey is similar to that of a drug addict’s when the addict is suffering from withdrawals. The third and final explanation associates the way cold turkey is prepared with the withdrawal method of quitting an addiction. While the latter two etymologies could be considered relating to encyclopedic knowledge strictly speaking (knowing what avian skin looks like and familiarity with Western gastronomy), it is doubtful that the relationship between the idiom’s literal parts and these etymologies could be considered salient, and therefore does not likely contribute to elucidating the figurative meaning of *go cold turkey*.

What I mean is that, unlike *skating on thin ice* in which the literal constituent parts have a direct correspondence to what the etymology alludes to (i.e. literally

skating on thin ice), the literal constituent parts in *go cold turkey* introduce a metaphorical use in *go*, semantic ambiguity in *cold*, and metonymical shortcuts in “turkey”. In this idiom (as well as many others such as *go berserk*, *go bananas*, *go Dutch*, and so on), *go* here is used in the metaphorical sense of *become*. Though this distinction is perhaps apparent to many, this more abstract use of the supposed literal constituent part *go* could be misleading. Furthermore, *cold* could be interpreted as referring to a living turkey *feeling cold* as opposed to the actual temperature of turkey skin *being cold* alluded to in the etymology. After all, there is no particular reason to discount *turkey* as meaning a live animal since *skin* is omitted from the literal constituent parts. This brings me to the final observation regarding metonymy. This could be a case of PHYSICAL WHOLE FOR PART metonymy, in which *turkey* is standing for *turkey skin*. As shown, this omission not only can create ambiguity regarding *turkey*, but can also influence the way in which *cold* is interpreted. For these reasons, it is not difficult to see why *go cold turkey* was perceived as being very low transparency.

The contrast between *skating on thin ice* and *go cold turkey* highlights an important, and particularly for Study 2, critical finding: Aside from the figurative meaning of idioms, even the individual literal constituent parts of idioms themselves can be ambiguous and non-literal, which in turn might impact perceived transparency. Although this does provide an additional and potentially insightful angle for analysis, I recognize that variables such as this will necessarily weaken any findings based on the motivational sources of idioms. A recurring finding throughout the studies reported on in this thesis is that due to the complexity of idioms at both the literal and figurative level, it can prove very challenging to control for all of the intervening variables, both known and unknown. For this reason I thought it essential to triangulate data from multiple sources, both quantitatively and qualitatively, in order to more rigorously test the hypothesis. It must be said, however, that even with the support of triangulated analyses, testing this hypothesis is difficult due to the multifaceted nature of idioms and the limitations of the data collection method. Only four of the nine original idiom dictionaries provided sufficient etymological notes, and among those four, many of the idioms in Study 2 were unlisted. Furthermore, comparing and contrasting individual idioms from the high and low transparency grouping also proved to be methodologically challenging because the motivational sources are clearly not the only factor impacting transparency.

3.3.4.4 Conclusion

In Study 2, I have attempted to contribute to the discussion on the relationship between the perceived semantic transparency of idioms and how this could be related to motivational sources. In spite of the limitations of Study 2 discussed in the previous section, there does appear to be some support indicating that the way in which an idiom is motivated can impact its perceived transparency. Quantitatively, I observed that the high transparency idioms in Study 2 had a lower incidence of etymological notes than did the low transparency idioms. One possible accounting for this is that high transparency idioms are more likely to be motivated by encyclopedic world knowledge or embodied experience, and as a result, these idioms might be more self explanatory than idioms motivated by a delimited cultural or historical context. Furthermore, the incidence of conflicting etymologies cited in the dictionaries was higher among the low transparency idioms in Study 2. If the hypothesis in Study 2 is true, then this is expected, as low transparency idioms with motivational sources rooted in obscure or otherwise unknown cultural or historical contexts would be more likely, compared to high transparency idioms, to have multiple etymological accounts. Finally, the qualitative comparison between *skating on thin ice* and *go cold turkey* provided concrete examples clarifying just how encyclopedic world knowledge might impact the semantic transparency of idioms, yet it also revealed the complexity involved in and difficulty associated with categorizing idioms according to motivational sources.

CHAPTER FOUR: METAPHORICAL ELABORATION THROUGH PICTURES AND L2 MEANING RECALL OF IDIOMS

4.1 Introduction

In this chapter, we turn our attention to the role of picture type for enhancing the meaning recall of English idioms for second language learners. It is here first that the notion of *metaphorical elaboration* will be put to the test by exposing participants to idioms in one of three picture conditions: *no picture*, *literal only picture*, and *literal + figurative picture*. By having both *literal only* and *literal + figurative* picture conditions, any additive contribution to recall afforded by the metaphorical and metonymical elements in the *literal + figurative* picture condition can be better isolated and measured. Furthermore, the semantic transparency ratings from the previous chapter will come into play as an important means of comparing the relative effects the three picture conditions have on different transparency level groupings of idioms.

4.2 Study 3

How do levels of perceived semantic transparency interact with the different picture conditions in terms of their effect on meaning recall?

Through a process I am calling metaphorical elaboration (see section 2.6.4 for a review), I hypothesized that presenting metaphorically imbued pictures alongside idioms during presentation would enable learners to remember them better, especially those idioms in the low transparency group. Specifically, I examined the extent to which metaphorical elaboration could contribute to learners' meaning recall of the figurative meaning of the target idioms immediately and two weeks after initial exposure. Support for the positive effects of metaphorical elaboration was found among the high transparency grouping of idioms, but not the mid or low transparency groupings. Furthermore, a number of picture internal factors had a great impact on between condition meaning recall of individual idioms, suggesting that the effectiveness of metaphorical elaboration is strongly tied to the nature of the idiom in question and the complexity, restrictions, and type of figuration in the pictures.

4.2.1 Participants

Student participants in Study 3 were third semester university students majoring in Policy Studies at a Japanese university in central Japan. The initial pool totaled 64 participants coming from three intact classes I was assigned to teach at the time of carrying out Study 3. Although these were elective classes in that students could choose between a number of different “Special Topics” courses taught by different teachers, all upper stream students in the English program were required to enroll in a Special Topics course during their third and fourth semester. Furthermore, according to the director of the program (personal communication), only approximately half of the students took the time to choose and sign up for a particular ‘special topic’. Those students who did not sign up were assigned to whatever remaining Special Topics classes were available until the class sizes were balanced out. This could indicate that classes were composed of a mix of students with varying degrees of motivation to learn in English. Also, in spite of the fact that this was essentially an English-medium content course, the participants’ English proficiency on the whole, as evidenced by both my estimation as an English instructor and the students’ TOEFL scores, was at the intermediate level (TOEFL averages for class 1, 2, and 3, were 467, 466, and 454, respectively).

The other participants in Study 3, those that took part in the picture rating and paraphrase judging, were native speaker university level English teachers. As for the picture raters (see section 4.2.3.4 for details on the picture rating process), there were two Canadians and one American. All three of these participants were also transparency raters in Study 1, and based on their thorough and insightful comments on the rater questionnaire, I considered them to be good candidates to take part in the crucial picture rating as well. Two of these three picture raters and I also acted as judges for the post-treatment paraphrase coding (this is detailed in section 4.2.3.6).

4.2.2 Materials

The materials for Study 3 consisted of the pre-treatment picture rater instructions and scales, the post-treatment paraphrase categorization instructions, and of course, the actual treatment itself along with the related handouts utilized by participants. In Table 23 on the following page, I have outlined the content and purpose of each of these materials chronologically from pre-treatment to post-treatment.

Table 23: Study 3 materials overview

Materials	Content	Purpose
Pre-treatment picture rater instructions	Instructions and scales for native speaker raters to rate <i>literal + figurative</i> and <i>literal only</i> pictures for idioms	To vet the picture pairs associated with candidate idioms to appear in the treatment
PowerPoint treatment and participant handouts (including posttests)	4 phase timed PowerPoint treatment of target idioms, and related participant handouts and posttest material	To administer treatment and collect data (i.e. participant produced L1 paraphrases)
Post-treatment paraphrase categorization instructions	Instructions and coding method for categorizing data produced in the treatment	To reliably categorize participant data into 'correct', 'partially correct', and 'incorrect' categories

4.2.3 Design and Method

Study 3 was beyond question the largest and most complicated of the five studies appearing in this thesis. The planning and preparation leading up to the actual treatment involved multiple stages of development including the narrowing and choosing of idioms, the picture creation and selection process, the design of a PowerPoint treatment, and the translation and rating of thousands of participant responses. In order to guide the reader more smoothly through the necessary stages of the design and method, I will proceed by describing in detail the considerations and procedures for each major stage in the order indicated below:

- 1) Semantic transparency levels
- 2) Idiom selection criteria
- 3) Picture creation process
- 4) Picture rating process
- 5) Treatment design
- 6) Paraphrase translation and categorization

I will begin by explaining how the results from the transparency rater questionnaire informed the decision to have the three distinct levels of semantic transparency I designated. This is necessary to cover, as semantic transparency is one of the key variables in Study 3. Once this is done, I will expound on the criteria adopted for choosing the best possible candidate idioms to appear in the treatment. This will help show how the initial pool of the 222 idioms were first winnowed in a methodical and sound manner. Following this, the methods associated with the other key variable, the picture conditions, will be discussed, including the collaboration involved in the

picture creation process and the methodology for vetting the pictures themselves. Next, I will explain how the variables of semantic transparency and picture condition were implemented and operationalized in the treatment. Here, all of the relevant aspects of the different phases of the treatment will also be outlined and rationalized. Finally, the procedure for analyzing the resulting data on the immediate and delayed posttests will be provided before moving on to the results and discussion.

4.2.3.1 *Semantic transparency levels*

The same transparency rater questionnaire (see Appendix B: Transparency rater instruments) that was devised to help answer the first two research questions in the previous chapter was also vital in playing a key role here in Study 3. To clarify, semantic transparency, as a variable to be examined in the current study, needed to be operationally defined, and the transparency ratings based upon the 6-point Likert scale allowed me to do just that. Simply put, I scrutinized the distribution of ratings and delineated cut off points to separate transparency into *low*, *mid*, and *high* groupings. Specifically, I grouped the initial 222 idioms into ranges of 4.0-6.0 for high, 3.0-4.0 for mid, and 1.0-3.0 for low.

The reasons for denominating three levels of transparency were threefold. Firstly, having a 'mid-level' of transparency would effectively act as a buffer between high and low transparency levels. This would help mitigate the influence of any margin of error as a result of individual differences among the transparency raters. Though the inter-rater reliability of the transparency raters was shown to be quite high, it was still, to my mind, preferable to have a clear separation between high and low transparency idioms. Secondly, three levels of transparency appeared to better represent the scalable nature of transparency than would simply having two levels, high and low. Any more than three levels could have introduced its own set of complications, such as not having a suitable pool of idioms to draw from in each grouping. Finally, having three transparency levels was appealing from a methodological perspective because there were also three picture conditions (*literal + figurative*, *literal only*, and *no picture*) and three intact classes, which would allow for a balanced, 3X3 Latin square design. For details on the treatment design, refer to Table 30 in section 4.2.4.1.

The designated range for mid transparency (3.0-4.0) was smaller than that for high and low to accommodate the distribution patterns of the idioms on the scale

(See Appendix C: Rater transparency data for details). That is to say, as fewer idioms fell on the extremes of the scale, I adjusted the point range so that roughly an equal number of the 222 idioms would fall into each transparency grouping (low, N=59; mid, N=95; high, N=68). I do not believe, however, that this is problematic from a design viewpoint, because the ranges for high and low are identical, and the mid range still falls precisely in the middle of the total range.

These transparency groupings will be referred to throughout this chapter and the next in relation to Study 3 and Study 4. However, as noted above, there were dozens of idioms in each transparency grouping, and the next section will concern itself with laying out criteria so as to further narrow down the idioms to include those that were best suited to be part of the treatment.

4.2.3.2 Idiom selection criteria

Given the somewhat generous number of idioms in each transparency level grouping, I was at liberty to be fairly selective in going forward. I was mindful at the time that other L2 vocabulary studies involving only one or two session treatments tended to introduce about 20 to 25 new words or phrases (see Barcroft & Sunderman, 2008; Farley et al, 2012; Griffin & Harley, 1996; Schneider et al., 2002; Steinel et al., 2007), and this was for good reason. Too few idioms not only offer fewer observations in the data to extrapolate from, but also pose the risk of ceiling effects since a smaller lexical set is easier to learn. On the other hand, too many idioms could place an unreasonable burden on participants, leading to little to no meaningful learning to be measured in posttests. Though I had this target range for the N size of idioms to be included in the treatment, I was also aware that whatever idioms I selected at this stage would be further winnowed during the picture rating process (see section 4.2.3.4 for details). With this expectation in mind, I aimed to have at least double this figure, or 40 to 50 idioms, to proceed to the picture creation process and undergo picture rating. The criteria I followed for narrowing down the idioms to this number included choosing those that appeared to have high imageability and a lack of L1-L2 exact equivalent. Also, though word frequency for literal parts was an initial consideration, it was not a disqualifying criterion, as it was dealt with using L1 glosses. Each of these considerations will be examined in the sections that follow.

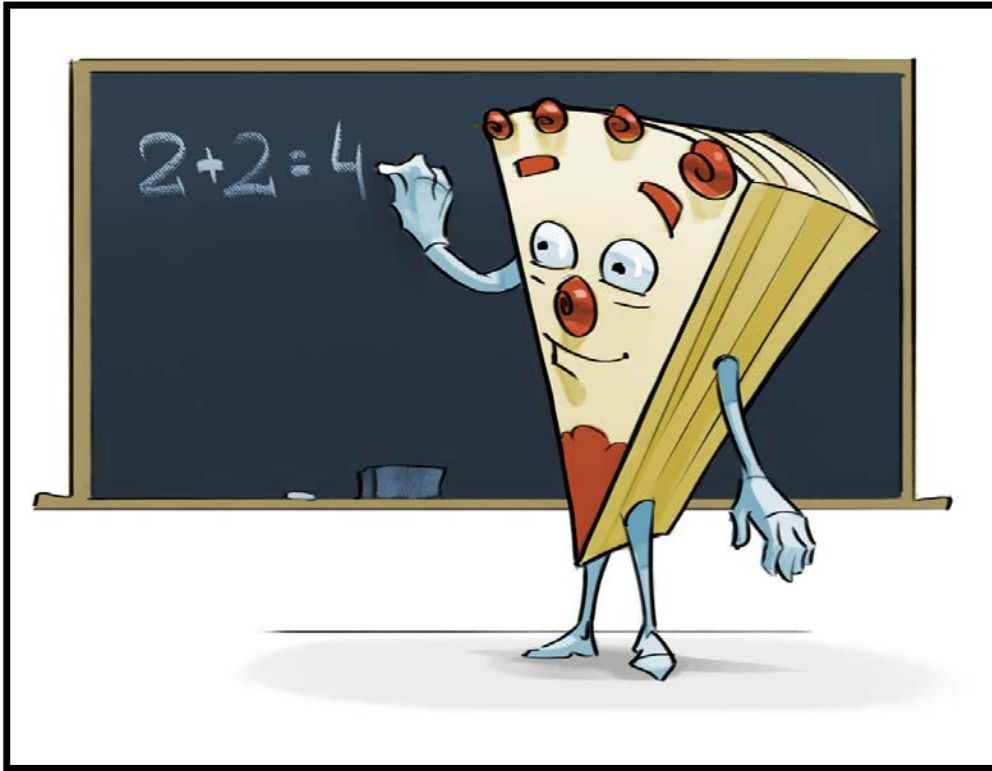
4.2.3.2.1 Imageability

It was essential to show preference for highly imageable idioms owing to the pertinence of pictures in Study 3. Not only did this preference hold for the literal constituent parts of the idiom, but there also had to be a means of conveying the figurative meaning in the pictures as well. With this in mind, it soon became apparent that for the literal representation, the literal word parts referring to specific and concrete hyponyms were generally more easily conceived and visually represented than were more vague and abstract hypernyms. Moreover, the relative difficulty of conceptualizing ways in which to pictorially express the figurative meaning and at the same time visually tie it in with the literal parts depended much on the nature of the figurative meaning itself.

To illustrate some issues of imageability (see Nelson & Schreiber, 1992 for further discussion), consider the idiom *a blessing in disguise* (*fig. something that causes problems at first but later brings greater advantages*). Although this idiom was perceived to be of high semantic transparent with a rating of 4.6, the literal words and figurative meaning were sufficiently vague so as to disqualify this idiom on the grounds of imageability. A blessing is a fairly abstract notion (the top hits in a Google image search reveals many vaguely spiritual images of clasped hands or religious figures bestowing a blessing upon the heads of devotees), and a disguise is rather broad in that there are many kinds of disguises. Moreover, the figurative meaning is also extremely general, as ‘problems’ and ‘advantages’ can take many forms.

It is also worth mentioning that hypernymic words, expressed as part of the literal or figurative meaning, were not necessarily problematic. In many cases metonymy was a useful visual tool to stand for a more general concept as a kind of prototypical instantiation. In addition, anthropomorphism often aiding in linking the literal parts of an idiom to the figurative meaning. For instance, both metonymy and anthropomorphism were utilized in the conception of the *literal + figurative* picture for *a piece of cake* (*fig. an easy task*). In Figure 3 on page 98, the anthropomorphized cake is working a simple math problem on the board. Here, the easy math problem is a kind of metonymy standing for an easy task so that the literal *piece of cake* can be associated with the figurative meaning, *an easy task*, via the indicated metonymy.

Figure 3: *Literal + figurative picture for a piece of cake*



Though there were numerous other examples of idioms and imageability to draw from, many of the pictures appearing later in the results and discussion will serve to elucidate and instantiate the varying means of pictorially conceptualizing idioms in a more concrete and imageable way. It is enough to say for now that imageability was a primary concern, and a considerable number of idioms were eliminated based on idiom inherent features, such as some of those described in this section, which made them unsuitable for pictorial representation in a highly controlled experiment. For a comparison of *literal + figurative* and *literal only* pictures used in Study 3 and Study 4, please see Appendix E: Treatment pictures.

4.2.3.2.2 L1-L2 exact equivalents

Another potential issue was L1-L2 literal and figurative equivalents. Research has shown that cognates are learned and retained more easily than non-cognates (Costa et al. 2005; Lotto & de Groot, 1998; Tonzar et al. 2009). Conversely, idioms that share identical literal forms but have similar, yet non-equivalent figurative meanings can lead to negative transfer (Irujo, 1986b). For these reasons, efforts were made with the aid of an L1-L2 bilingual to identify and eliminate idioms with L1 equivalents

for either literal or figurative meanings. For example, the idiom *strike while the iron is hot* has a near exact equivalent in both literal and figurative meanings in Japanese, so this idiom was discarded from the final pool. Other idioms had different literal words, but had similar figurative meanings. *A drop in the bucket* is a close equivalent to the Japanese idiom *yakiishi ni mizu* (*water on a red-hot stone*). Idioms that fell into this category were allowed as sufficiently distinct literal parts would likely diminish any advantage to recall afforded by a similar figurative meaning in the L1.

4.2.3.2.3 Word frequency and L1 glosses

In the earlier stages of developing the methodology, I considered eliminating any idiom whose literal parts fell outside the 2,000 most frequent English words. This was because most of the participants in the study were at the intermediate level, and any lack of knowledge of the literal meaning of words appearing in the target idioms in the treatment would obviously interfere with the successful unpacking and interpreting of the literal-figurative relationship embedded in the pictures. Even with the use of a vocabulary pre-test, the low frequency of some literal parts comprising otherwise highly imageable idioms, such as ‘hatchet’ in *bury the hatchet*, would necessitate either discarding all data related to participants unfamiliar with the word, or excluding that idiom from Study 3. Neither of these options was appealing, so instead I opted to gloss all low frequency literal parts in the participants’ L1.

The advantage of using L1 glosses was that I could ensure that all participants would have access to the literal meanings for all of the literal words of target idioms appearing in the treatment, irrespective of their individual frequencies. As Boers and colleagues (2009) point out, knowledge of the literal word parts is of course a necessary prerequisite that enables participants to make sense of how the literal meaning might relate to the figurative meaning. Furthermore, glosses also had the desirable effect of removing any doubt about the correct sense of any polysemous literal word parts. On the other hand, an over abundance of glosses could prove to be intrusive or distracting to participants during the treatment. In order to address this, literal words to be glossed were informed both by frequency checks and results from the vocabulary pre-test on the pilot version of the treatment so as to limit their occurrences in the treatment. More details on the role of glosses and how they were implemented to control for word frequencies in the treatment will be discussed further in section 4.2.3.5 on treatment design.

4.2.3.3 Picture creation process

The picture creation process was something of a drawn out endeavor that initially relied on two Japanese student participants. A considerable number of the pictures produced by these participants proved to be ineffectual at representing the figurative elements pictorially. Mainly, based on my correspondences with them, this was due to their lack of a figurative understanding of the idioms. Though their artwork was fine from an aesthetic point of view, they had almost no experience with English idioms, and this made it very challenging for me to convey to them many of the associated nuances of the figurative meaning that needed to be expressed in the pictures. Since the *literal + figurative* and *literal only* picture conditions constituted the very core of Study 3, it was imperative to have the best possible pictorial representations for each condition. Thus, I discarded these initial pictures and hired a professional illustrator with near native-like proficiency in English.

The illustrator was an Estonian national based in Spain, but who had a very strong familiarity with English idioms. Over the course of several months, pictures for 44 of the initial 222 idioms were drawn and revised based on my direct collaboration with him. At first, I would send a spreadsheet file with the idioms to be drawn along with basic information about the idiom and what pictorial elements to include in the *literal only* picture and *literal + figurative* picture (for a sample of these notes, see Appendix D: Picture collaboration notes). Following this, the illustrator would respond with his intended course of action, sometimes indicating modifications or offering suggestions to improve upon the initial conceptualization. After the pictures were finalized and drawn, I would review them and sometime indicate minor changes to be made in order to produce the best possible finished product. This was important as picture pairs (*literal only* and *literal + figurative*) for each of the 44 idioms were to undergo picture rating, and I wanted to minimize the chance of idioms being eliminated from the final treatment due to one of their associated pictures not meeting the criteria outlined in the next section.

4.2.3.4 Picture rating process

Rating the pictures served two primary purposes. Firstly, in order to validate the *literal only* and *literal + figurative* picture conditions, it was crucial to show that each picture visually conveyed what was intended according to the picture condition to

which it corresponded. Operationally, this meant demonstrating that the *literal only* pictures only explicitly comprised the literal constituents for a given idiom, while the *literal + figurative* pictures comprised both the literal parts *and* the figurative meaning. This is because in this way any mnemonic contribution to recall afforded by metaphorical or metonymical visual elements could be better isolated and measured in between condition analyses. Secondly, it was also essential that pictures for each picture condition visually expressed those literal and figurative elements to a sufficient degree. As visual information can often be ambiguous (Fodor, 1981), it would be highly questionable to rely only on my own intuition and notions of literal and figurative representation in pictures. However, having multiple independent raters rate the pictures based on a set of carefully thought out and well defined criteria would strengthen their validity for the purposes of Study 3.

In addition to the fundamental need of the pictures to adequately convey literal and figurative elements, there was a secondary issue worthy of exploration—that of the bizarreness of the pictures. Research on visual information and memory has uncovered the finding that bizarre images tend to be remembered better than ordinary ones (Geraci et al., 2013; McDaniel & Einstein, 1986; McDaniel et al., 1995; Toyota, 2002, Worthen & Loveland, 2001). This *bizarreness effect* on its face seems intuitive, as novel and unusual information should stand out in memory more than information that is unremarkable and familiar. Pictures, as a form of art, would seem especially susceptible to this effect as a result of the creative influence of the illustrator, and it seems plausible that pictures that express highly unusual depictions could create stronger memory traces in the mind. Moreover, pictures based on idioms would appear to inherently constitute highly novel and unusual elements due to their sometimes strange and marked strings of literal words (e.g. *go cold turkey*; *out of the blue*) and unrelated figurative meanings. Owing to these considerations, the degree of perceived bizarreness of the pictures was rated alongside the perceived literal and figurative representation.

In order to measure how well the pictures represented literal and figurative elements of the idioms as well as the overall bizarreness, three distinct scales were created for the participants, which are described in Table 24, Table 25, and Table 26 found on pages 102 and 103. For all three scales, a 4-point Likert scale was used.

Choosing a 4-point scale for the rating of images seemed ideal, since a 5-point scale would allow for neutral ratings in the middle. Neutral ratings would not be effective at informing the research design since the purpose of rating the images was to vet the quality and degree of literal and figurative representation in the pictures to be included in the treatment.

Table 24: Scale for literal-visual representation

not well represented well represented
 ←----->

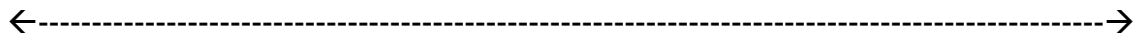
1 Poor	2 Inadequate	3 Adequate	4 Good
The literal parts are not well represented . Some of the literal noun objects are not in the image.	The literal parts of the idiom are represented to a degree , but there are too many unnecessary items that do not contribute to the figurative meaning or the literal parts are too small or difficult to identify.	The literal parts of the idiom are adequately represented . Their presence is obvious . Most of the non-literal items contribute in some way to the figurative meaning. Some literal action verb parts might be represented in the resultative state.	The literal parts of the idiom are well represented . Their presence is very obvious . Almost all non-literal items contribute in some way to the figurative meaning. Some literal action verb parts might be represented in the resultative state.

The function of the scale of literal representativeness was to measure to what degree the picture was thought to comprise and foreground the literal parts of the idiom. A picture that adequately or well represents the idiom’s literal constituent parts would be one in which the literal components are figured into the picture prominently so that a participant would have no difficulty in identifying them. Furthermore, most or all other objects or items in the picture would be either backgrounded and uninteruptive, or essential elements contributing to the overall figurative meaning. Poorly or inadequately represented idioms would be those in which the literal elements were either too small or not obvious due to other, unrelated and distracting extraneous items that didn’t contribute to the figurative meaning.

Table 25: Scale for figurative-visual connectedness

weak relationship

strong relationship



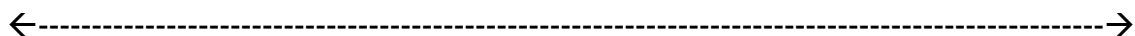
1 Poor	2 Inadequate	3 Adequate	4 Good
Even if the learner already knows the figurative meaning of the idiom, he or she will have great difficulty understanding the relationship between the figurative meaning and the image.	Even if the learner already knows the figurative meaning of the idiom, he or she might have some difficulty understanding the relationship between the figurative meaning and the image.	Once a learner knows the figurative meaning of the idiom, he or she can somewhat easily understand the relationship between the figurative meaning and the image.	Once a learner knows the figurative meaning of the idiom, he or she can easily understand the relationship between the figurative meaning and the image.

The scale for figurative-visual connectedness is expressly relevant for the rating of the *literal + figurative* pictures. It is for these pictures that raters must decide, based on this scale, the degree to which said pictures convey the figurative meaning of the idioms. It is important to clarify that this scale was not intended to reflect how clearly the figurative meaning could be understood from the picture upon initial exposure to an idiom, but rather, *upon knowing* the figurative meaning, how well the learner could make sense of and interpret the literal and figurative elements in the picture. The reason for this is because in Study 3, learners were supplied the pictures along with the meaning throughout most phases of the treatment. If a learner was able to sufficiently comprehend the relationship between the supplied meaning and the meaning encoded through the imagery in these illustrations, then it is possible that memory traces of the picture itself would serve as a trigger for activating the figurative meaning of the idiom, thus enhancing the meaning recall.

Table 26—Scale for bizarreness

less bizarre

more bizarre



1 Very Unremarkable	2 Somewhat Unremarkable	3 Somewhat Bizarre	4 Very Bizarre
This image is very unremarkable.	This image is somewhat unremarkable.	The image is somewhat bizarre.	The image is very bizarre.

As aforementioned, the *bizarreness effect* has shown that bizarre visual information tends to be remembered better than ordinary information. This rather straightforward scale was designed to add depth and an additional perspective in the discussion for the results of Study 3. It should be pointed out, however, that unlike the scales for the literal and figurative elements, the bizarreness ratings were not meant to act as a disqualifying criterion. This is because there is no reason to think that unremarkable pictures would necessarily be ineffectual, yet if there was great variation between the meaning recall of picture conditions, the bizarreness ratings could be used to inform and triangulate such findings.

4.2.3.4.1 Picture rating norming session

In an effort to ensure that picture raters understood and interpreted the three scales described in the previous section, it was necessary to have a norming session with example pictures. To achieve this, I used some pictures for idioms that were not to appear in the treatment as a means to clarify aspects of the scales and ensure picture raters rated in a more consistent manner. Before beginning the norming session, raters were given a few minutes to read through an instructional section regarding basic information related to the rating and to peruse the descriptors in the three scales. At the start of the norming session, raters were told that they would be asked to openly discuss their ratings for the example pictures, but following the norming session they should refrain from discussing their ratings with other raters until all work had been submitted to me.

The example pictures I selected were for the explicit purpose of elucidating particular aspects of the rating scales. The aim of this approach was to minimize any misunderstanding of the scales by norming with pictures that represented clear instances of higher or lower ends of the different scales. Among these, one picture was a clear example that depicted the literal parts, but did very little to contribute to the figurative meaning. Another illustration conveyed both literal and figurative elements, but contained too many superfluous and extraneous items. In a couple of cases, the literal parts were present to a degree, but were not figured prominently enough to make them readily obvious.

After the raters rated each of the example pictures, the group convened to share their ideas and explain why they assigned particular ratings for that illustration. The group purposefully stopped to discuss after each illustration rather than rating all

six examples consecutively, so that any insights gained from the ensuing discussion could be applied to rating the subsequent example pictures. The resulting discussions yielded a number of anecdotally insightful observations about the ratings. Specifically, there were two notable unforeseen variables that appeared to occasionally thwart the consistency of the ratings throughout the norming session. These were idiosyncrasies and differences in the raters' understanding of the figurative meaning of the idiom, and the way in which the literal parts of an idiom interacted with each other.

As an example of disagreement over some of the nuanced differences among the raters' understanding of the figurative meaning, consider the case of *over the hill* (fig. *old and past one's best*). While all three raters agreed that the picture was at least adequate at conveying the meaning of 'being old', one rater felt that this idiom was more commonly used to express a sense of 'being past one's prime', often used in the domain of sports, rather than referring to age in the absolute sense. For this reason, he gave it a slightly lower rating than the other two raters. A further point of contention among the raters centered on how they perceived the literal parts to interact. One rater felt that 'over' equated to 'beyond' rather than 'on the other side of the hill' and that the picture did not do a good job of representing that. The other two raters did, on the other hand, find the literal parts to be well represented because they understood "over" in a way consistent with the picture. See Figure 4 below for the example picture in question.

Figure 4: Example picture for *be over the hill* in picture rater norming



The norming session took about an hour to finish, and the raters were asked to complete the ratings for the remaining pictures on their own (see Appendix E: Treatment pictures for a complete set of the picture pairs that proceeded to the treatment). Once the picture raters had completed their ratings, I collected and compiled the data and calculated the inter-rater reliability for each scale and average ratings for all idiom pictures based on those scales.

For an idiom to be considered for inclusion in the treatment, its associated pictures (*literal only* and *literal + figurative*) had to both receive an average of 3.0 (adequate) on the related scales. That is to say, for *literal only* pictures, the average rating score had to be at least 3.0 for its literal-visual representation; for *literal + figurative* pictures, a 3.0 average rating was required for both literal-visual representation *and* figurative-visual connectedness. In a few cases, if there was a discrepancy between raters of 2.0 points or more in the ratings, the picture raters were required to justify their ratings, review the justifications for the other two raters, and either maintain their original rating or reevaluate it (see Appendix F: Picture rater data for details on the ratings as well as rater justifications and/or modifications in cases where discrepancies were noted). Below in Table 27 is the inter-rater reliability for both the original ratings and post discussion modifications.

Table 27: Cronbach’s Alpha inter-rater reliability for picture ratings

(3 raters for 88 pictures)

Literal-Visual Representation	Figurative-Visual Connectedness	Degree of Bizarreness
Pre-discussion .634	Pre-discussion .891	.843
Post-discussion .772	Post-discussion .927	

The first matter to note is that the inter-rater reliability was quite high even for pre-discussion ratings for figurative-visual connectedness corresponding to the *literal + figurative* pictures. Though the literal-visual representation (which as a reminder was required for both *literal only* and *literal + figurative* pictures) was not quite as strong, the post-discussion ratings raised it to .772, which is in the range of acceptable values for reliability (DeVellis, 2012). Based on these rating averages, eight pictures failed to meet the minimum criteria for literal-visual representation, and

two were excluded for the same reason for figurative-visual connectedness. This left the majority of idioms and related picture pairs to form part of the treatment design, which we will finally turn to in the next section.

4.2.3.5 Treatment

The design of the treatment can be summed up as a fairly controlled and incrementally staged input-driven presentation of new idioms to the student participants in three intact classes I taught (refer back to section 4.2.1 for information on the student participants and class context). In order to better guide the reader through the different stages of procedures involved in the treatment, I have provided Table 28, which overviews the process below.

Table 28: Overview of treatment procedures

Stages of treatment	Materials	Content
Introduction of treatment to students	Consent forms and treatment procedures	Inform students of consent and explain how the treatment will benefit them
Biographical information and pre-test data	Background form and pre-tests	Collect details on participants and determine what words and idioms appearing in the treatment they already know
Phase 1 of treatment	PowerPoint and student handout	Participants attempt to interpret the meaning of the idioms
Phase 2 of treatment	PowerPoint and student handout	Participants select key word associated with the meaning of the idioms and confirm
Phase 3 of treatment	PowerPoint and student handout	Participants select the idiom that corresponds with the provided L1 paraphrase
Phase 4 of treatment	PowerPoint and student handout	Participants attempt to reproduce the learned paraphrases for the idioms and confirm
Data collection	Immediate posttest	Participants attempt to reproduce the learned paraphrases for the idioms
Data collection	Delayed posttest	Participants attempt to reproduce the learned paraphrases for the idioms
Data collection	Exit interview questionnaire	Participants respond to questions regarding the treatment

At the start of class, I informed students of the treatment and made them aware of their right not to participate (See Appendix A: Ethics forms). Following this, participants completed a brief background form and vocabulary pre-tests. The treatment itself was carried out entirely through a PowerPoint presentation to which participants responded via their student handouts. In each phase of the PowerPoint treatment, 9 low, 9 mid, and 9 high transparency idioms appeared in one of the picture conditions (*literal + figurative*, *literal only*, and *no picture*). In all phases except the first, participants were supplied the correct answer after a determined number of seconds had passed in order to confirm their responses. After the treatment was finished, the immediate posttest elicited the L1 paraphrases participants learned for the idioms in the treatment. Two weeks later an identical posttest with an exit interview questionnaire was given.

4.2.3.5.1 Biographical information and vocabulary pre-tests

Before beginning the treatment, all participants provided basic biographical details so that those could be used to inform any findings later uncovered in the data analysis. In addition, it was essential to administer two types of vocabulary pre-tests in order to determine what words and idioms participants already knew the meaning of. The most crucial pre-test was for the idioms, as existing knowledge of them would have called into question the validity of the treatment. That is, since I aimed to measure meaning recall of the idioms, it was important to show that learning had occurred as a result of the treatment and not due to existing knowledge. At that point, however, I had already had a good understanding about what idioms were very likely to be unknown because I had several months prior ran a smaller pilot in preparation for Study 3. On the pilot study I eliminated the few idioms that similar proficiency participants were occasionally familiar with, such as *a piece of cake*. I decided to eliminate such idioms in the finalized version of the treatment so as to avoid having to exclude participants due to their existing knowledge. As it was, none of the 64 initial participants in Study 3 demonstrated that they knew the meaning of any of the 27 idioms in the treatment.

There was another vocabulary pre-test that was simply a list of all of the literal words that made up the 27 idioms. This was less consequential than the idiom pre-test because as mentioned earlier in this chapter all mid and low frequency words were glossed in the L1 (refer back to section 4.2.3.2.3 on word frequency and L1

glosses for details). However, it was informative in the aforementioned pilot for Study 3, which allowed me to have a sense of what literal word parts needed to be glossed, so that I could avoid over-glossing in the treatment slides. I kept this pre-test in Study 3 as well to see if incidental learning for literal meanings could occur through explicit learning of the figurative meaning. By having a record of what literal words were unknown before the treatment, I could later measure whether any of those participants picked up the meaning as a result of treatment. Though this was not the focus of any study in this thesis, such a *kill two birds with one stone* benefit was personally interesting to me, so I kept the vocabulary pre-test of literal words in Study 3.

4.2.3.5.2 Overall design of the PowerPoint

The PowerPoint treatment was designed to stimulate participants to interact with the target idioms in four distinct phases. With each advancing phase, the tasks became progressively more difficult, so that the benefit of repeated exposures to the target idioms occurring in the earlier phases could offset the increased cognitive load imposed by the tasks of the latter phases. This was done as a means to establish the form-meaning link of the L2 idiom in a gradual fashion, eventually leading up to the ultimate goal of mapping an L1 paraphrase of the figurative meaning to the form of the idiom. The first phase initiated this process by encouraging participants to guess about the figurative meaning; the second phase required participants to select amongst distractors a key word associated with the idioms' figurative meaning; the third phase supplied an L1 paraphrase to which participants had to match the correct corresponding L2 idiom; and the final phase attempted to elicit from participants that very same L1 paraphrase in the previous phase. The different picture conditions (*literal + figurative, literal only, and no picture*) occurred at every phase in the treatment so as to reinforce whatever effects it might have had on recall of the idiom in question.

Throughout all phases of the treatment, the verbal and visual input was counterbalanced to the effect that time on task for and number of exposures to the target idioms and their figurative meanings would be equal. To control for recency effects on the posttest, idioms were order randomly within each transparency level so that same idioms would not appear at the end of each phase. As this is somewhat complicated, a graphical representation of the design can be found in Appendix H: Treatment materials, under the heading *PPT counterbalancing and sequencing*

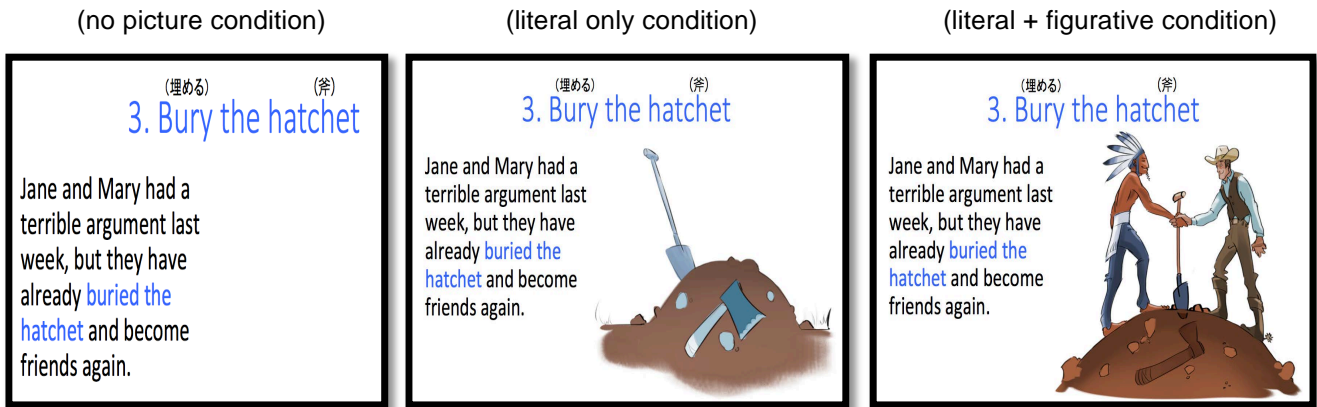
scheme. The table found there lays out the precise information concerning the exact sequence of the 100+ slides in the treatment as well as the picture condition corresponding to each slide for each intact class. The phase-by-phase design will become much clearer in the sections that follow as I describe each phase in more detail and provide examples of each.

4.2.3.5.3 Phase 1

Before beginning phase 1, participants were given brief instructions explaining that they would be presented with a series of idioms accompanied by contextualized sentences and in most cases pictures as well. Participants were instructed to make use of whatever verbal and visual information they saw to guess about the meaning of the idiom and to write it down on the paper supplied to them within the allotted amount of time (35 seconds for each of the 27 idioms). They were also advised to write their answer in English or Japanese as they wished. I determined that participants should be able to use their L1 when taking notes on their ideas, particularly due to the fixed timing of the slides (though it is important to note the precise timing for all phases was informed by the pilot preceding Study 3). If participants were forced to take notes in the L2, this might lead some participants who were weaker in writing to be at a disadvantage by not being able to formulate their ideas within the allotted time. Moreover, allowing participants the option to write in their L1 would likely lead to more sophisticated and nuanced interpretations of the idioms in the post treatment analysis.

In this initial phase of the treatment, participants were shown in succession each of the 27 target idioms along with an accompanying example sentence and in one of the picture conditions. The purpose of phase 1 was to offer participants an opportunity to capitalize on contextual clues in the literal word parts of the idiom, its related example sentence, and, importantly, any associated picture (*literal + figurative* or *literal only*) in order to discern the figurative meaning. This should allow for deeper processing to occur as participants attempted to formulate an interpretation in the absence of answer choices. Significantly, phase 1 did not provide participants with the figurative meaning, as this was introduced gradually over phase 2 and phase 3. Figure 5 on the following page shows an example of how the slides appeared in phase 1 for each of the different picture conditions. For a preview of examples from all four phases, see *Study 3 treatment phases* in Appendix H: Treatment materials.

Figure 5: Phase 1 example slides



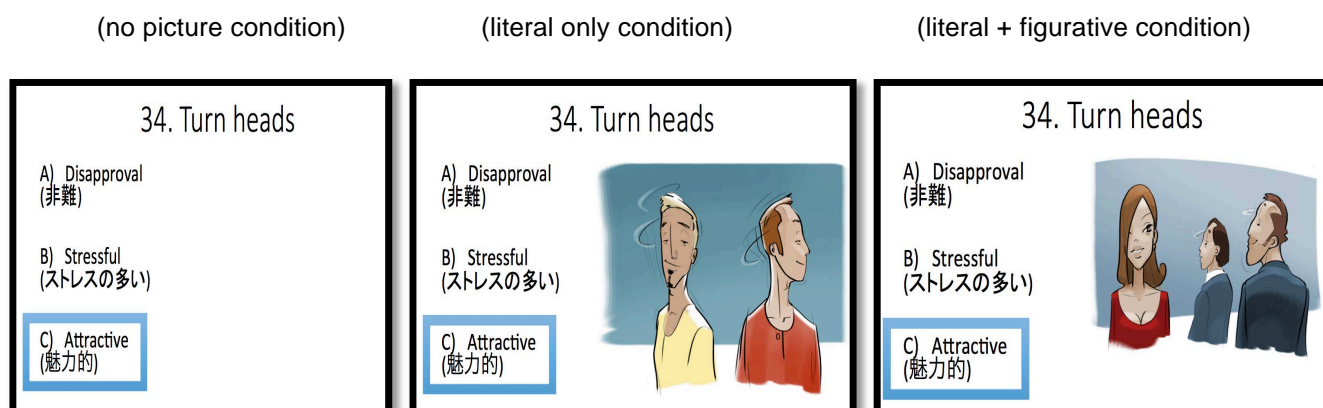
It should be noted that in sound pedagogical practice, learners would likely be supplied more substantial and varied contextual support before making guesses about the idioms' meanings. However, due to the experimental nature of the design and the desire to have highly controlled conditions, I decided to only provide limited context initially. Aside from a methodological standpoint, there were also sound reasons on pedagogical grounds. The argument could be made, for example, that too much initial verbal information would distract participants from both the form of the idiom and the key elements in the pictures. That is, if participants do not notice embedded metaphorical elements in the pictures or consider carefully the literal constituents of the idioms, then they cannot take advantage of the benefits posited under *metaphorical elaboration*. In any case, too many verbal clues could further run the risk of making the meaning too obvious to trigger any deeper processing to occur, which was one of the aims of phase 1.

On the other hand, having no verbal contextual support would have been equally undesirable, because this would greatly disadvantage the *no picture* condition. This is because, in the absence of any example sentences, idioms met by participants in phase 1 in the *no picture* condition would have nothing, other than the literal parts of the idiom, to rely on for their interpretations. For these reasons, I struck a balance between these two opposing approaches by providing a single example sentence for each idiom.

4.2.3.5.4 Phase 2

The second phase constituted the first attempt of the treatment to explicitly provide information on the figurative meaning of the idioms in an easily digestible, scaffolded manner through related key words and phrases. On the instruction slide, participants were told they would see the same group of idioms again, except that this time they would have to choose, among three options, a word or short phrase which they believe to be related to the idiom. After 11 seconds, the correct key word or phrase would be indicated for additional 4 seconds to allow participants time to confirm their answer choices. For a list of all key words associated with the target idioms, refer to Appendix H: Treatment materials, under the heading *glossed words, key words, and translation*. Figure 6 below presents an example of phase 2 for each picture condition after the answer was displayed.

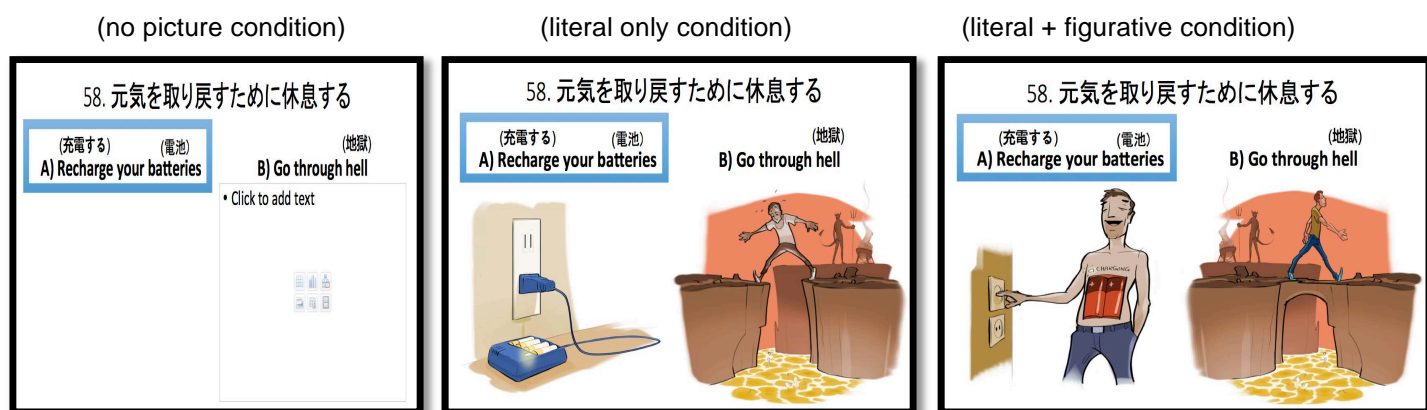
Figure 6: Phase 2 example slides



4.2.3.5.5 Phase 3

We now turn our attention to the critical third phase, in which the direction of learning is reversed and the first exposures to the paraphrased figurative meaning of the idioms are given. In phase 3, participants were told that they would see the figurative meaning of the idioms from the previous phases at the top of the slide. Below the meaning, participants would see two idioms, one of which would correctly correspond to the provided meaning. Participants here were given 8 seconds to respond (the earlier pilot for Study 3 showed that the paraphrases in the L1 and fewer distractors led to quicker response times compared to phase 2) followed by another 4 seconds to confirm their answer choices. See Figure 7 on the next page for an example of how phase 3 appeared in each picture condition.

Figure 7: Phase 3 example slides



At this point, some clarifications about the methodology of phase 3 warrant discussion. Firstly, I purposely reversed the direction of learning (meaning eliciting the target form as opposed to the vice versa in phase 2) for two reasons. One reason was out of a concern to limit too much textual input per slide. Even though paraphrases were in the L1, some were longer than others, and I preferred that participants focus on one paraphrase pertaining to one or two idioms instead of two paraphrases pertaining to only one idiom. The other reason was simply due to my impression that such a reversal would add a sense of balance to the overall design by allowing participants to retrieve information in multiple ways.

It should also be made clear that the picture condition associated with each of the two idioms (answer and distractor idioms) in this phase were not necessarily the same because the idiom randomly assigned to appear as a distractor had to obviously be presented in the same condition throughout the entire treatment for that particular intact class. Though this is a very fine point, I make mention of it because the reader might be confused as to why the middle and far right slides in Figure 7 depict *recharge your batteries* and *go through hell* in different picture conditions (*literal only* and *literal + figurative*) within the same slide. Different intact classes of participants were exposed to idioms under counterbalanced picture conditions, and those conditions had to remain constant throughout all four phases of the treatment for any given idiom. If further clarification is desired, the *PPT counterbalancing and sequencing scheme* found in Appendix H: Treatment materials is helpful in illustrating this.

4.2.3.5.6 Phase 4

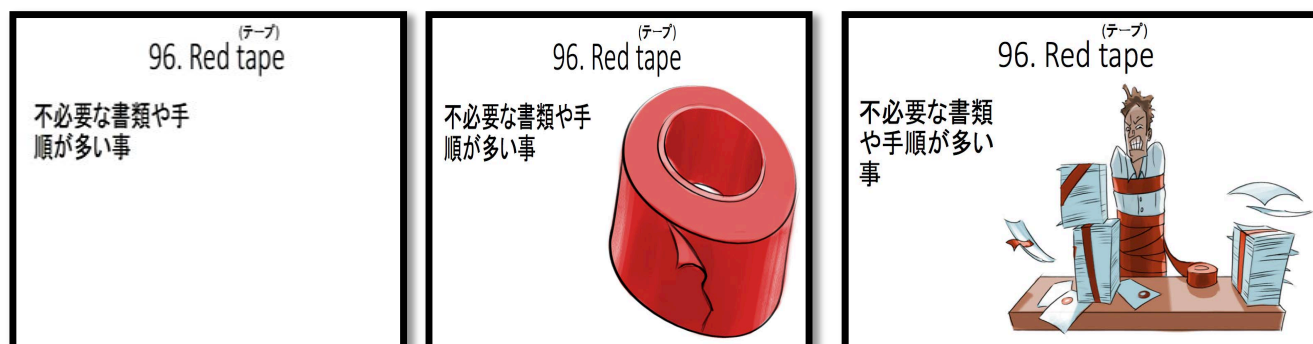
In the fourth and final phase of the treatment, participants were supplied with only the idiom itself in one of the three picture conditions. Participants were told in the instruction slide to try as best as possible to reproduce on their worksheet the L1 paraphrase they learned in the previous phase for the idiom in question. After 18 seconds the slide revealed the L1 paraphrase initially introduced in the previous phase for the idioms, allowing an additional 12 seconds for participants to make any corrections to their initial attempt. The purpose of this phase was to allow participants an opportunity to recall the meaning of the idiom as opposed to recognizing it, as recall indicates a stronger *degree of strength of knowledge* than recognition (Laufer & Goldstein, 2004) and reflects what will be expected of them on the posttests. Given the difficulty of reproducing a paraphrase from memory, I considered phase 4 an important stage in solidifying the likely very fragile initial learning acquired up to this point. Figure 8 below shows how the idioms in each picture condition appeared after the answer was shown.

Figure 8: Phase 4 example slides

(no picture condition)

(literal only condition)

(literal + figurative condition)



A second reason for eliciting the paraphrases in this way was informed by what has been referred to in the literature as *transfer appropriate processing* (Morris et al., 1977). TAP posits that access to and retrieval of information is related to the format-specific way in which that information is processed and acquired during study and testing. Numerous studies have found support for the facilitative effect of structurally shared, format-specific encoding between study, testing, retrieval, and

memory (McDaniel & Kearney, 1984; see also Barcroft, 2002; Barcroft, 2003; Barcroft et al., 2011). What this means in the current context is, according to TAP, learners will recall items better if the format of elicitation is structured similarly to the format of testing. Since the posttests elicit meaning recall, I thought it best to have at least one phase mirror the nature of the task on the posttests.

This fourth phase of the PowerPoint concluded the treatment. The full length of the treatment from start to finish was approximately 45 minutes and it involved the learning of 27 idioms presented over these four phases in one of three picture conditions. Now that the treatment has been sufficiently detailed, I will now address the data collection tool that was used to measure meaning recall on the immediate and delayed posttest.

4.2.3.5.7 Immediate and delayed posttests

Immediately following the treatment, participants were given a paper-based meaning recall test and allowed enough time to write their answers. The format of the test was simply a randomized list of the 27 idioms with a space next to each idiom in which to write responses. Participants were instructed to try to recall to the best of their ability the L1 paraphrases they learned for each idiom and write them down in the appropriate spaces. These were then collected, and exactly two weeks following the treatment, a similar delayed posttest was given. One minor difference on the delayed posttest, however, was that the L1 literal glosses were provided for those idioms with infrequent literal constituents so as to control for any between-idiom word knowledge differences at the literal level of meaning (this was unnecessary on the immediate posttest as participants had just seen the glosses in all four phases of input on the treatment). For a sample of participant responses, refer to *example screenshot of meaning recall posttest responses* in Appendix I: Sample participant data.

In addition to the delayed posttest, there was a short exit interview in which participants responded to a few questions related to their perceptions of their learning of the idioms in the treatment. I was particularly interested in eliciting participants' perspectives on what idioms were perceived to be the easiest to remember and their reasons to account for that. At the time, I thought that such data might prove useful in triangulating findings later uncovered in the analysis of the meaning recall posttest results. Importantly, I also confirmed that participants did not intentionally study any of the target idioms at any point during the two weeks

between the treatment and the delayed posttest, as this could confound the results. This exit interview questionnaire, along with the handouts used during the treatment, and the immediate and delayed posttests following the treatment can all be found in Appendix H: Treatment materials.

4.2.3.6 Paraphrase translation and categorization

After all the data had been compiled, the daunting task of translating and categorizing the approximately 2,900 paraphrases lay ahead. As for the translation, I hired a Japanese national who had spent more than 13 years living abroad in the USA to undertake the task of translating the Japanese L1 paraphrases into English. The translator's command of English was native-like, and there were very few instances in which I had to follow up with her on her work. Those instances where I did have questions regarding the way in which she worded a translation were resolved by in-person discussions.

Once I had reviewed and confirmed that all of the translations into English were error free, I entered all of the translated paraphrases from the immediate and delayed posttests into what ended up being a massive spreadsheet. In order to measure meaning recall, however, I needed to develop a means to quantify them. The paraphrases could not simply be judged as correct or incorrect because of their qualitative nature. Some paraphrases captured well the meaning of the idioms, while others were often missing key elements or incorrect altogether. Owing to the nature of the qualitative data, I devised a categorization scheme in order to better reflect the graduated degrees of correctness found in the paraphrases, which is found below in Table 29.

Table 29: Paraphrase categorization scheme

Correct	The paraphrase contains the core meaning of the idiom.
Partially correct	The paraphrase contains some element(s) related to the meaning of the idiom, but the core meaning is absent.
Incorrect	The paraphrase has no relation to the meaning of the idiom.
Blank	The answer is left blank.

Undoubtedly, the distinction between a *correct* and *partially correct* paraphrase introduces a degree of subjectivity, and this naturally necessitates independent judgments from native English speakers. To this end, I hired two independent paraphrase judges who also participated in the transparency rater questionnaire and picture rating (see section 4.2.1 for details). I also acted as an independent judge so that there would be at least three judgments in order to help resolve any disagreements over categorizing individual paraphrases. In preparation for the judgments, I held a meeting with the two other judges to explain the task and answer any questions they had regarding the categorization scheme. Though a norming session would have perhaps minimized the number of disagreements, I wanted to avoid overly imposing my notion of what constituted a core meaning of the idiom necessary for a *correct* judgment.

Following the meeting, I sent the paraphrase spreadsheet to the judges, who proceeded to categorize each paraphrase into one of the four categories indicated in Table 29 on the previous page. I should emphasize that the information key indicating picture conditions for individual paraphrases was in a separate file so as to blind myself and the other judges to any biases, subconscious or otherwise, in making judgments. To facilitate the judging process, the judges color-coded the spreadsheet cells containing the paraphrases with green, yellow, red, and purple indicating *correct*, *partially correct*, *incorrect*, and *blank*, respectively (see the *example screenshot of translated student paraphrases* in Appendix I: Sample participant data). When all the data was completed and returned, I compared all of the cells between my spreadsheet and the spreadsheets of the other judges, taking note of any discrepancies between the judgments.

Collectively, there were 267 disagreements among a total of approximately 2,900 paraphrases, representing a disagreement rate of about 9.2%. To resolve these disagreements, a meeting took place that lasted approximately 3.5 hours. During this meeting, every case of disagreement was considered and until a consensus was reached. Most cases were resolved quickly, especially if the disagreement was the result of a coding error. In a few cases, more deliberation ensued until all of the judges arrived at an agreement. After concluding the meeting, I created a master spreadsheet file updated with the final judgments from the meeting. For a summary of all the resolutions that resulted from this discussion, refer to Appendix J: Paraphrase judgment resolutions.

The final step before analyzing the data was to quantify the results of the judgments by assigning a value to each category. Ultimately, I decided to award *correct* paraphrases with 2 points, *partially correct* paraphrases with 1 point, and *blank* and *incorrect* paraphrases with no points. After doing this, I sorted the data along the lines of transparency and picture condition in order to answer the research question for Study 3:

How do levels of perceived semantic transparency interact with the different picture conditions in terms of their effect on meaning recall?

4.2.4 Results and discussion

In order to answer the research question for Study 3, it was necessary to compare the between condition recall rates. As the reader will recall, this part of the study involved two variables: semantic transparency and picture condition. The semantic transparency variable consisted of three levels (*low*, *mid*, and *high*), as well as the picture condition variable (*no picture*, *literal only picture*, and *literal + figurative picture*). Specifically, I am concerned with determining the extent of any effect the picture conditions have when idioms are isolated by transparency levels. This is because it was initially hypothesized that the lower transparency idioms would benefit more from pictorial support. As lower transparency idioms tend not to have a clear relationship between the literal constituent parts and the figurative meaning, the pictures with both literal and figurative elements were hypothesized to allow for a visual pathway to access the meaning when verbal retrieval fails.

4.2.4.1 Approaches for analysis

Prior to presenting the data from the immediate and delayed posttests, however, it is important to remind the reader about the way in which participants were divided across conditions and the reasons underlying these decisions, as they have a strong bearing on the approach to analyzing the data. As there were three intact classes involved in this study, the most straightforward and simple research design would have been to simply assign each intact class to a specific picture condition (*no picture*, *literal only picture*, or *literal + figurative picture*). However, due to concerns

both for external validity and ethical considerations, I decided to counterbalance variable conditions across the three classes. Regarding external validity (see Hudson & Llosa, 2015, for a recent overview related to design issues) I was concerned that there might be non-negligible differences (e.g. English proficiency level) between the three intact classes that could confound the results. Although I had no strong reason to believe this, I had not yet gained access to the students' TOEFL scores, and therefore had only my teacher intuition to rely upon, which I believed to be insufficient for such a controlled type of experiment (when TOEFL scores were eventually released, analysis revealed that there was no significant difference between intact class score averages—please refer back to 4.2.1 for details). By essentially collapsing the classes together in which each student received each condition an equal number of times but for different idioms, I could minimize any between class intervening variables, proficiency related or otherwise. Furthermore, although this study does not have a control group per se, the *no picture* condition was thought to be of the least pedagogical value (indeed it turned out that this was the case), and as a result it seemed unfair to subject an entire class to a lengthy PowerPoint treatment of questionable benefit.

This decision, while addressing the two concerns mentioned above, did lead to some constraints on the analysis. The most impactful constraint was the inability to compare posttest scores between participants as a whole in a single analysis. To elucidate why this was the case, consider the 3X3 Latin square in Table 30 on the next page. Since participants in intact class 1, for example, saw three of the nine idioms from each transparency grouping in a different picture condition, their cumulative score for that transparency level would be meaningless. In other words, in order to have an independence of observations between participants, I needed to isolate the idioms grouped under each picture condition for each intact class, represented by the three rows in Table 30. In the first row, for instance, I would only be able to compare those particular nine idioms for which intact class 1 saw *no picture*, intact class 2 saw *literal only pictures*, and intact class 3 saw the *literal + figurative pictures*. The remaining 18 idioms could not be included in such a comparison because each respective class saw these under different conditions, as Table 30 shows.

Table 30: Treatment research design

Idioms	Intact Class 1	Intact Class 2	Intact Class 3
9 idioms (3 low, 3 mid, & 3 high)	No Picture	Literal Only	Literal + Figurative
9 idioms (3 low, 3 mid, & 3 high)	Literal Only	Literal + Figurative	No Picture
9 idioms (3 low, 3 mid, & 3 high)	Literal + Figurative	No Picture	Literal Only

What this means operationally is that the only way to carry out a complete between participant statistical analysis would be to have multiple separate trials. Not only would multiple trials introduce retest bias, but also the statistical power of each trial would be greatly diminished since only the recall rates of three idioms for each transparency level would be compared at a time. Moreover, any one idiom in each trial could be much more influential in affecting the overall recall, and given the ceiling effects that were observed for certain idioms, this could potentially confound the results.

Alternatively, in place of comparing participant groups through multiple trials, the idioms themselves could be grouped by transparency and assigned recall values based on the cumulative scores from participants who were exposed to a given idiom under a specific condition. In such a way, we can compare the effect of each of the three picture conditions on all of the idioms in a single analysis, while at the same time avoiding the said disadvantages associated with multiple trials. Thus, the results that follow are the data from comparing the effect picture conditions had on derived meaning recall values between the idioms themselves, grouped by transparency level.

4.2.4.2 *Between-idiom recall rates*

We now turn our attention to the data for the between idiom recall rates. As the reader will recall, posttest participant responses were paraphrases written in the participants' L1, which were later translated into English and finally categorized by raters into the categories of *correct*, *partially correct*, *incorrect*, or *blank*. In order to analyze the data, these categories were given a numerical value of 2 for correct, 1 for partially correct, and 0 for incorrect. If, for instance, in intact class 1 (N=18), six participants answered a particular idiom correctly, another six answered partially

correctly, and the remaining six answered incorrectly, the raw score for this idiom would be 18 out of a possible 36 points $[(6 \times 2) + (6 \times 1) + (6 \times 0)]$. Raw scores were then converted into a percentage value to facilitate interpretation, so in the example above, the converted recall score would be 50% (18/36). In Table 31 below, the descriptive statistics for how well each transparency level grouping of idioms performed are provided.

Table 31: Descriptive statistics for between idiom recall

Transparency Level	Picture Condition	Descriptive Stats.	Immediate Posttest	Delayed Posttest
Low Transparency	No Picture	Mean	95.05	41.97
		N	9	9
		Std. Deviation	6.31	25.74
	Literal Only Picture	Mean	96.27	60.50
		N	9	9
		Std. Deviation	4.61	20.99
	Literal + Figurative Picture	Mean	96.91	62.67
		N	9	9
		Std. Deviation	3.78	28.80
Mid Transparency	No Picture	Mean	91.04	55.55
		N	9	9
		Std. Deviation	9.08	15.93
High Transparency	Literal Only Picture	Mean	93.52	70.97
		N	9	9
		Std. Deviation	8.21	17.85
	Literal + Figurative Picture	Mean	95.37	71.30
		N	9	9
		Std. Deviation	4.37	13.89
No Picture	Mean	85.81	49.07	
	N	9	9	
	Std. Deviation	8.13	22.78	
	Literal Only Picture	Mean	87.95	56.48
		N	9	9
		Std. Deviation	5.20	19.58
	Literal + Figurative Picture	Mean	91.04	67.30
		N	9	9
		Std. Deviation	5.66	15.87

In Table 31, we can see that there was something of a ceiling effect on the immediate posttest, with most transparency groupings yielding a recall rate of over 90%. The relatively small standard deviations also suggest that the recall rates for individual idioms within each grouping were also quite high in most cases. On the other hand, we do see sharp declines in recall on the delayed posttest across conditions and also much more substantial standard deviations as well. Considerable attrition was expected to occur across all conditions, as initial learning of vocabulary is very fragile (Schmitt, 2008), and participants were not exposed to any of the target items in the intervening time between immediate and delayed posttests. Of much more interest are the staggering standard deviations that appeared in the data from the delayed posttests. This suggests that there was great variation in the relative difficulty between individual idioms in each transparency grouping. Such variation is perhaps not so surprising, however, when one considers the wide array of between idiom factors aside from transparency that can impact difficulty, such as the length of the idiom, the complexity of the meaning, the concreteness of the literal words and figurative meaning, just to name a few. Indeed, it was precisely for this reason that this study necessarily needed to be a between group rather than within group research design, because it would have proven very difficult to select different idioms of equivalent difficulty to compare across picture conditions.

4.2.4.3 Recall between any picture and no picture

As differential recall by condition is our primary concern, let us now observe between condition recall on the delayed posttest. It is first worth pointing out, that at least in absolute terms, the *no picture* condition yielded the lowest recall rates across both transparency and picture conditions. In other words, out of the nine possible condition-level combinations, the three combinations involving *no picture* produced the poorest recall averages. This seems to suggest that, at least for the pictures used in this study, any picture produced better overall results than no picture at all.

These results are consistent with findings from SLA research regarding the mnemonic benefits afforded by pictures to promote learning, as many studies have found that pictures generally aid learners retain the meaning of vocabulary (Boers et al., 2008, 2009; Chun & Plass, 1996; Farley et al., 2012; Jones, 2004; Jones & Plass, 2002; Liu, 2004; Shen, 2010; Szczepaniak & Lew, 2011). Yet most of these studies did not involve metaphorical idioms, much less a comparison of metaphorical

and literal pictures, and it was somewhat surprising to discover in Study 3 that the *literal only* picture condition appeared, on the surface, to offer participants such a notable mnemonic advantage over the *no picture* condition. When relevant pictures are paired with non-idiomatic and concrete vocabulary words, we would expect that the learner could more directly comprehend the verbal-visual pairing, thereby possibly leading to better recall. In contrast, as metaphorical idioms, especially those of lower transparency, seemingly have literal parts that have little semantic correspondence to the actual figurative meaning, it is rather surprising that participants seemed to benefit from the *literal only* picture condition.

There are a number of explanations to account for why any picture appeared to be better than no picture at all in every possible comparison at the transparency group level in this study. Although the *literal only* picture may not have revealed very clearly the figurative meaning for many of the idioms in this study, it could have been that just by having these literal-visual elements present encouraged deeper processing of the idioms' figurative meaning. By presenting pictures representing the literal word parts, participants might have taken advantage of the vividness and richness that visuals provide to more carefully ponder and draw their own conclusions about how these might possibly relate to the figurative meaning they were supplied during the treatment. Such an explanation is supported by Levels of Processing theory, as it posits that learning is more durable when information is processed more deeply (i.e.—more effort and cognitive resources are involved in the learning process). Alternatively, it might simply be the case that pictures inherently generate more interest than simply verbal input alone. In other words, it could be that having a relevant word-picture pairing encourages greater noticing as participants' attention is more drawn to the input, both visual and verbal, which in turn lead to better learner outcomes.

These explanations would also be consistent with findings that while the use of pictures can aid learners retain the meaning of words, it can actually hinder learners from learning the form (Boers et al., 2008; 2009). Since attentional resources are divided between the visual and verbal input, it is intuitive that such multimodal input could encourage recall of meaning for some of the reasons mentioned above. Yet, when learners shift their focus to visual input, that translates into less time spent noticing the way the word is spelled (refer back to section 2.6.3 for further discussion). Though this is relevant for L2 instructors to consider for pedagogical application, meaning recall was the focus of this study, and as a result,

form recall was not measured. One of the foci is, however, the differential meaning recall between the two types of pictures used in this study, which I will now address.

4.2.4.4 Recall between literal only and literal + figurative picture groups

Secondly, and more importantly, is the differential recall between the two picture conditions (*literal only* and *literal + figurative*). As the reader will recall, at the beginning of this chapter, I hypothesized that the *literal + figurative* picture condition would be of most benefit to the recall of idioms under the low transparency grouping, as the figurative elements in the picture could act as a visual pathway to memory when verbal retrieval fails. In other words, since lower transparency idioms presumably have a less clear literal-figurative relationship, the pictures with the embedded figurative elements were posited to elucidate more the meaning during the treatment and also better aid in recall upon recollection of the image compared to higher transparency idioms. Surprisingly, not only did this hypothesis seem to be refuted by the data in the Table 31 on page 121, but the opposite effect appeared to have taken place. As such findings can be better represented graphically, consider Figure 9, Figure 10, and Figure 11 on pages 124 and 125.

Figure 9: Recall rates for low transparency grouping

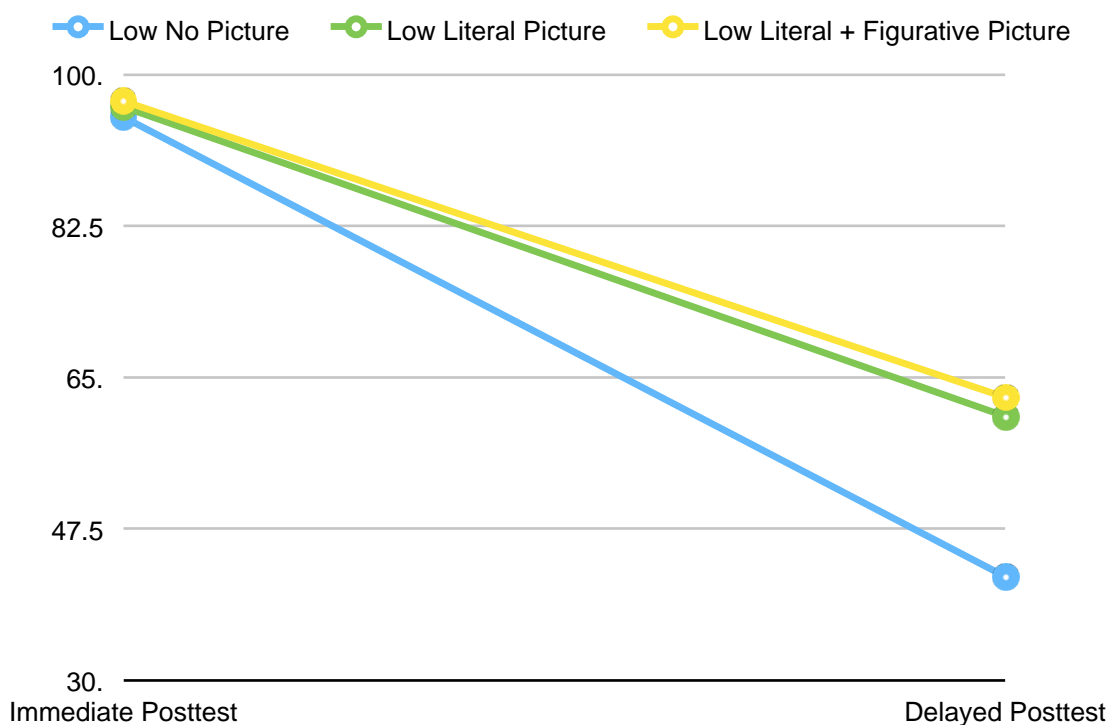


Figure 10: Recall rates for mid transparency grouping

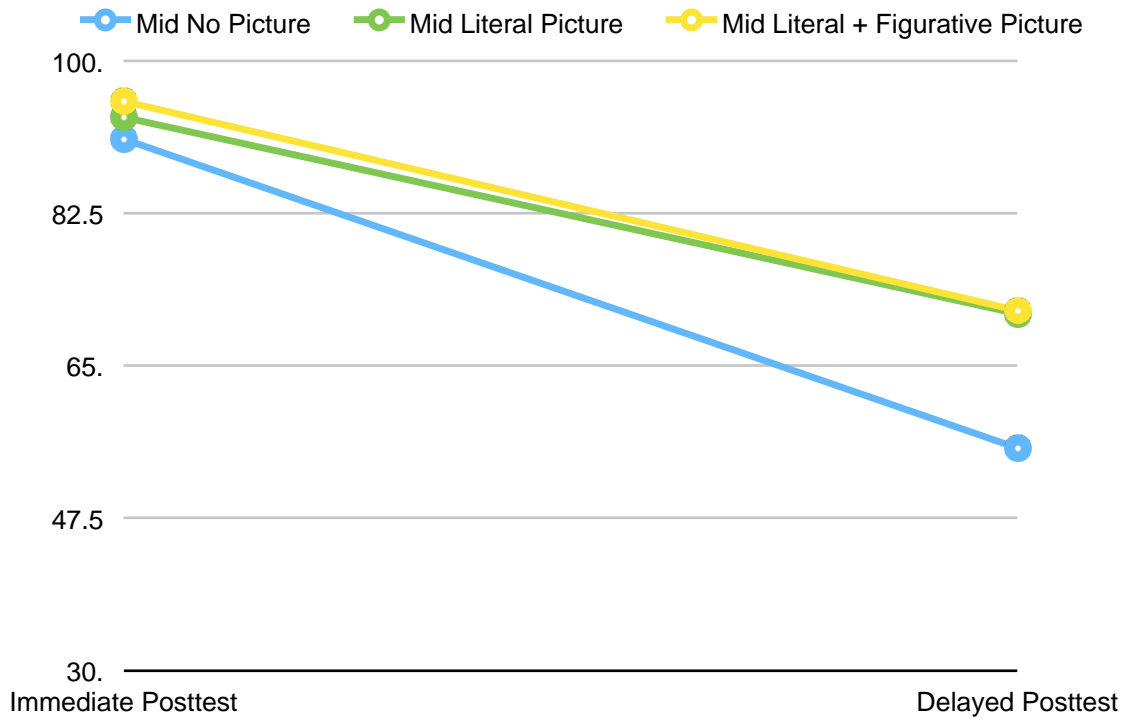
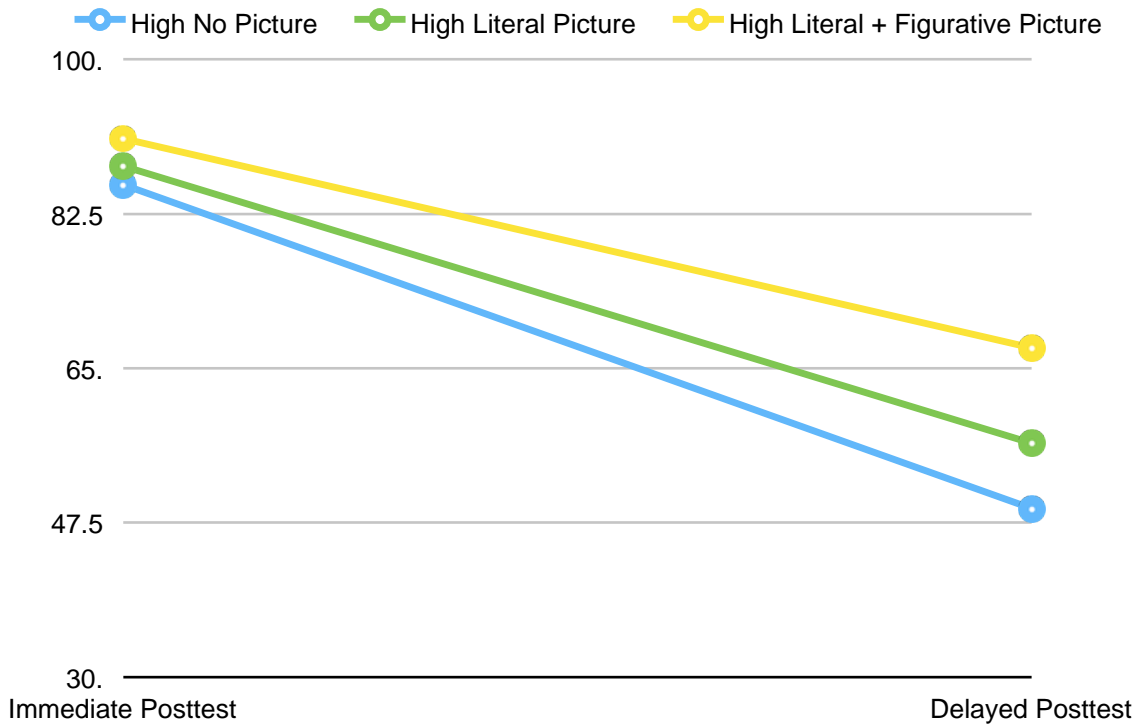


Figure 11: Recall rates for high transparency grouping



For our low and mid transparency groupings (Figure 9 and Figure 10), it is apparent that there was very little difference in the average recall between the *literal only* and *literal + figurative* picture conditions. In both cases the immediate posttest to delayed posttest trajectory is nearly overlapping. This indicates that there does not appear to be any effect for the type of picture on the low and mid transparency groupings as a whole. This should not however, be taken to mean that there was no significant variation in mean scores between the two picture conditions for individual idioms in these two transparency groupings. In fact, at the individual idiom level, the mean recall was often very different, but in some cases it was the *literal + figurative* picture that elicited stronger recall, while in other cases, it was the *literal only* picture. Though this is an important finding and further explanation is necessary to account for such variation, such a discussion is more suited to a later section of this chapter (sections 4.2.4.7 and 4.2.4.8) when variation of individual idioms is compared. Suffice it to say for now that the *literal + figurative* picture condition seemed to be of benefit much of the time, yet it also had the potential to mislead learners with the additional elements present, which possibly neutralized any overall positive effect for the mid and low semantic transparency level groupings of idioms.

For the high transparency grouping in Figure 11, however, the trajectories diverge much more, with the *literal + figurative* picture condition outperforming the *literal only* and *no picture* conditions. Moreover, the recall average of the *literal only* picture condition lies slightly closer to the average of the *no picture* condition than it does to the *literal + figurative* condition. To analyze these disparities more rigorously, a two-way repeated measures 3X3 ANOVA was carried out comparing the between idiom meaning recall values, which is found below in Table 32.

Table 32: ANOVA tests of between-subjects effects

Source	df	F	Sig.	Partial Eta Squared
Picture condition	2	6.172	0.003	0.146
Transparency	2	2.175	0.121	0.057
Picture Condition*Transparency	4	0.202	0.936	0.011

Firstly, from Table 32, we can observe a significant effect occurring for picture conditions. Interestingly, however, no significant effect was found for transparency level. This is somewhat surprising given that scholars have argued that low

transparency idioms can be difficult to understand and therefore high transparency idioms should be shown preference when making curricular decisions (Cooper, 1998; Irujo, 1986a). Still, the aforementioned sizable standard deviations between mean recall of individual idioms across all transparency groupings highlight the fact that transparency is just one among many features of an idiom that can impact its difficulty. We do see that in absolute terms, mean recall for the low transparency grouping was the lowest, and the high transparency grouping was the highest, yet these differences in mean recall were perhaps not so stark given the host of other factors that were likely influencing recall. This implies that perceived lower semantic transparency idioms might not be as pedagogically troublesome as some of the literature might suggest. Alternatively, it could be that lower transparency idioms are only a significant impediment to learning when learners must work out the meaning on their own, unaided by instructor driven intentional learning. In this study, learners were supplied with the figurative meaning in the L1 at later stages of the input, so it is possible that once learners know the figurative meaning, semantic transparency has less of an impact on recall. Stated differently, semantic transparency could prove to be an important variable in terms of correctly guessing the meaning, but once the meaning is known, its relevance for retaining the meaning is probably lessened.

Returning to the results from the ANOVA, since a significant effect was discovered for picture conditions, though, it is necessary to look at pairwise comparisons between the different levels to locate where any effects occur. To this end, the Tukey HSD post hoc test was selected. Not only is this particular post hoc test commonly used across the literature, but it is recommended when there are equal numbers of cases between groups, which is the case for this analysis. Below in Table 33 are results from the post hoc test.

Table 33: Tukey HSD post hoc test of recall rates by picture condition

Picture Conditions	Sig.	95% CI Lower	95% CI Upper
No Picture			
Literal Only Picture	.045	-15.5952	-0.1381
Literal + Figurative Picture	.003	-18.7434	-3.2863
Literal Only Picture			
No Picture	.045	.1381	15.5952
Literal + Figurative Picture	.595	-10.8767	4.5804
Literal + Figurative Picture			
No Picture	.003	3.2863	18.7434
Literal Only Picture	.595	-4.5804	10.8767

As the data show, the post hoc test reveals that the effect occurs between the *no picture* condition and *both* picture conditions. Given that there was a considerable difference in mean scores between *no picture* and *any picture* across all three transparency level groupings, this is what we would expect. However, no such effect was found between the two picture conditions. Given the sample size and data, this is unsurprising for two reasons. The first of which is related to the small N size (N = 9 idioms per transparency level group), which can make it more difficult to tease out an effect (Pallant, 2013). More importantly, however, is the fact that this post hoc test is considering all transparency levels cumulatively in its comparison of mean values. What this means is that the negligible mean differences between the two picture conditions in the low and mid transparency recall rates (Figure 9 and Figure 10) are diminishing, in statistical terms, any effect of the observed mean difference for the high transparency idioms (Figure 11).

Due to these results, I cannot claim that there was a significant difference overall between our two picture conditions. Yet, what can be claimed is that using any picture, in this study, led to statistically significant improvements in meaning recall over using no picture at all across all transparency levels. It could simply be the case that imbuing pictures with figurative elements does not sufficiently contribute to meaning recall so as to create a substantial effect. Alternatively, and perhaps more likely judging from the recall of individual idioms, figurative elements in pictures can be very helpful in some cases, but disadvantage learners in other cases (further discussion on this matter follows near the end of this chapter), which could have lessened the strength of any positive effects.

Still, it cannot be ignored the fact that in absolute terms, there seemed to be a notable difference in recall between the *literal only* and *literal + figurative* picture conditions for high transparency idioms on the delayed posttest. It is worth accounting for *why* there was such a marked difference in mean scores for this grouping, but not mid transparency or low transparency idiom groupings in this study, especially since this difference has occurred contrary to the hypothesized condition (i.e. in the high not low transparency picture condition). Moreover, though I did not find a significant effect between the two picture conditions, I did find significant effects between no picture and both picture conditions, yet the strength of these effects have not yet been examined. Indeed, measuring the relative effect size between *no picture* and *literal only picture*, and *no picture* and *literal + figurative*

picture conditions will provide a better sense of the power of each effect in both picture conditions over the no picture condition. Since effect size ignores N sizes in its calculations, this might allow for a clearer interpretation of what the observed mean differences, particularly for the high transparency idioms, signify in terms of pedagogical value and application. Below in Table 34 can be found the Cohen's d effect size for the aforementioned comparisons.

Table 34: Cohen's d effect size calculations for delayed posttest recall

Transparency	Picture Condition	Effect Size
Low	No Picture → Literal Only Picture	0.788
Low	No Picture → Literal + Figurative Picture	0.758
Mid	No Picture → Literal Only Picture	0.911
Mid	No Picture → Literal + Figurative Picture	1.053
High	No Picture → Literal Only Picture	0.349
High	No Picture → Literal + Figurative Picture	0.928

Cohen's d effect size utilizes a simple formula that calculates the distance, in terms of standard deviations, between two means. Standard interpretation of effect size results designate .2 as small, .5 as moderate, and .8 as large effect sizes. If this interpretation is applied to the between mean difference of our *no picture* and picture conditions, we can see that there are large effects sizes for all gains between *no picture* and picture conditions except between our *no picture* to *literal only* picture conditions in the high transparency group. It is here that we have a small to moderate effect size, which is in stark contrast to the remaining effect sizes.

It is difficult to pinpoint why recall for the high transparency idioms under the *literal only* condition produced a substantially smaller effect than all other *no picture* to picture comparisons. It could be that the figurative elements in the *literal + figurative* picture condition were more obvious for high transparency idioms and participants were able to more easily associate the relevant visual aspects of the picture to the figurative meaning of the idioms, thereby facilitating recall. However, this explanation alone is insufficient, because we do not see a notable increase in effect size for the *literal + figurative* condition, but rather a notable decrease for the *literal only* condition. It might be that this difference is due to chance, but given the

surprising variation between recall across conditions for some individual idioms, I suspect this is not the case. Despite efforts in this study to control for picture quality, such as by having picture raters, it must be said that visual representation is not an exact science, and it is possible that factors at the individual picture level are contributing to these overall differences in transparency group averages.

4.2.4.5 Descriptive statistics for high transparency idiom recall

In order to more deeply investigate potential factors influencing the between-idiom recall variation, it would be fruitful to examine recall differences between picture conditions for individual idioms in the high transparency grouping, and scrutinize the associated pictures of those idioms for which there was the most sizable between-condition gaps in recall. Below, in Table 35, are the recall rates by idiom and condition. As before, correct paraphrases were given a score of 2, partially correct 1, and incorrect or blank 0. The totals for each were then averaged and converted into a percentage to facilitate between group comparisons.

Table 35: Recall rates for high transparency individual idioms

Idiom	Condition	Imm.	Del.	Condition	Imm.	Del.	Condition	Imm.	Del.
1) A drop in the bucket	No Pic	89.5	78.9	Lit. Only	86.1	77.8	Lit + Fig.	88.9	80.6
2) Come out of your shell	No Pic	100	86.8	Lit. Only	86.1	83.3	Lit + Fig.	94.4	83.3
3) Give sb. the green light	No Pic	94.4	41.7	Lit. Only	100	60.5	Lit + Fig.	100	72.2
4) Go through hell	No Pic	86.1	50.0	Lit. Only	89.5	78.9	Lit + Fig.	86.1	88.9
5) Pull the plug	No Pic	80.6	33.3	Lit. Only	86.1	38.9	Lit + Fig.	94.7	63.2
6) Raise eyebrows	No Pic	81.6	31.6	Lit. Only	83.3	41.7	Lit + Fig.	88.9	41.7
7) Recharge your batteries	No Pic	77.8	66.7	Lit. Only	83.3	50.0	Lit + Fig.	81.6	63.2
8) The end of the road	No Pic	88.9	36.1	Lit. Only	86.1	44.4	Lit + Fig.	92.1	57.9
9) Turn heads	No Pic	75.0	22.2	Lit. Only	92.1	31.6	Lit + Fig.	94.4	50.0
Total	Average	85.8	49.1	Average	88.0	56.5	Average	91.0	67.3

The data in Table 35 reveal some of the expected trends in terms of recall by condition. It should not go unnoticed, however, that idioms 1 and 2 appear to show very little difference in recall between the three conditions on the delayed posttest.

Furthermore, idiom 7 appears to be an anomaly in that the “no picture” condition, typically the weakest condition, elicited the highest recall on the delayed posttest. The remaining six idioms, however, show our expected recall gains between *no picture* and *literal only* picture, and then again between *literal only* picture and *literal + figurative* picture conditions. First, let us attend to those idioms that appeared to show very little difference in meaning recall between conditions.

4.2.4.6 Ceiling effects and L1 transfer

Earlier in this chapter, I mentioned that ceiling effects appeared throughout in the immediate posttest, but also for some individual idioms on the delayed posttest as well. In Table 35, we can observe that for *come out of your shell*, and to some degree, *a drop in the bucket* elicited high recall rates across all picture conditions on both the immediate and delayed posttest. These ceiling effects help to explain why there are no large differences in mean scores for these idioms, but it is important to understand the reason these ceiling effects have occurred for these idioms in the first place. L1 transfer might help account for these findings, because there are metaphorical expressions in the participants’ L1 that might have facilitated learning and recall. Indeed, in one study (Irujo, 1986b), it was found that identical L1 literal idiom counterparts aided participants in their successful production of the target idioms. Furthermore, although the results in Irujo’s study (ibid.) showed some signs of negative transfer for L1-L2 idioms with similar literal parts, overall participants fared much better on recognition and comprehension measures of these idioms compared to those L1-L2 idioms with unrelated literal parts.

Here in Study 3, it was discovered that for *come out of your shell* there was a similar expression in Japanese (*kara wo yaburu*), which literally means *to break out of the shell*. Although the figurative meaning of this Japanese expression is more general and can apply to more situations than overcoming shying as in the English idiom *come out of your shell*, it can encompass such an interpretation as well. In such a case, it is then understandable how students were able to more easily recall the figurative meaning of this idiom, irrespective of picture condition. In addition, although there is no known close equivalent in the participants’ L1 for *a drop in the bucket*, in Japanese there is a similar figurative meaning in the phrase *yakiishi ni mizu* (lit. *water against a hot red stone*). In both idioms, water is metonymically standing for a small amount of something, so it is possible that this L1-L2 shared

association contributed to the high recall rates. This is of course, aside from other likely contributing variables, such as *a drop in the bucket* being rated as the second highest transparency idiom in the study and having a relatively straightforward figurative meaning (*having less than what you need*).

4.2.4.7 Between-idiom recall disparities by picture condition

Now that we have addressed some of the potential issues related to ceiling effects, let us now consider possible explanations for idioms that elicited larger disparities in meaning recall across picture conditions. The high transparency idiom that appeared to generate the largest between picture disparity of recall was *turn heads*, which means to *notice someone or something attractive*. We can observe that on the delayed posttest, the *no picture* condition elicited a recall of 22.2%, while the *literal only* picture elicited 31.6%, and finally the *literal + figurative* picture elicited 50% recall. Given that the only difference, in terms of input the participants received, was the picture involved, it is appropriate to now compare these two pictures to take note of what might have led to such a disparity. The pictures used for this idiom appear in Figure 12 below.

Figure 12: Picture conditions for *turn heads*



As can be seen, the picture to the left displays two men, acting on their own agency to turn their heads, but we have no indication why, only that their heads are turning. The picture on the right includes an attractive female drawing the attention of the two men, causing their heads to turn, so that the figurative meaning of noticing something attractive is present in the picture. It is necessary to point out that the

image of the woman is acting as a metonymic association standing for something attractive. It is important to point this out because many of the images relied on using such metonymic associations to help elucidate the figurative meaning of the idioms. In fact, the recall rate for this idiom under this picture condition would have been even much higher than 50%, but several participants over specified their paraphrase, indicating that *turn heads* meant to notice a beautiful woman, which led to a disproportionate number of partially correct responses.

Earlier I mentioned that while pictures can often offer a powerful pathway to memory, they also have the capacity to mislead learners. Anecdotal evidence of this from participant paraphrases will appear throughout this and subsequent chapters, and while it does seem that the *literal + figurative* picture conditions elicited the best learner outcomes overall, there are some potential drawbacks to using such pictures. This is especially true for pictures that are overly complex due to a nuanced or complicated figurative meaning that is difficult to express visually. As was shown in the example of *turn heads* and will be shown again in Chapter 5, the more elements that are present in a picture, the more likely L2 learners will be to focus in on some particular aspect of picture to help shape their understanding of what the expression means. While this often can aid students in recalling an idiom's meaning, in other cases the participant will erroneously focus on some non-central aspect of the picture and over-specify the meaning. As another example of this, let us consider the two pictures used for the idiom *pull the plug*, which means *to put a stop to an activity or project* (the other meaning of this idiom, *to suspend medical treatment and end someone's life*, was not used in this study). The two pictures for this idiom can be found below in Figure 13.

Figure 13: Picture conditions for *pull the plug*



It should be mentioned that, as before, the *literal + figurative* picture (on the right) for this idiom elicited a far higher recall rate (63.2%) than the *literal only* picture (38.9%). Yet again, the *literal + figurative* condition would have elicited an even higher recall rate if not for a number of paraphrases receiving partially correct scorings due to over-specification. Intact class 2 received the *literal + figurative* picture condition for *pull the plug*. This particular picture attempted to convey the figurative meaning by having someone unplug a computer that someone was using for work, thus putting an end to whatever the man was working on. What's particularly interesting about the class 2 partially correct responses is that every one of them implies an agent that is causing someone else to stop or end what they are working on. The other two classes, which received the *no picture* and *literal only* picture, did not produce a single response indicating an agent. Below in Table 36 are the partially correct responses produced by these participants on the delayed posttest.

Table 36: Attributing agency due to over-specification for *pull the plug*

"To make someone quit their work"

"To stop someone from doing something in the middle of something"

To interrupt someone from doing something"

"To make someone stop doing something"

"To make someone stop working"

This has important implications not only for teaching idioms using pictures, but even more broadly, teaching vocabulary with pictures. While pictures in this study overall tended to aid learners in recall, in a few cases such as with *pull the plug*, the pictures seemed to lead to over-specification. On the one hand, it is encouraging to see evidence of the learner honing in on specific aspects of pictures when paired with particular lexical items because it supports the notion that pictures can indeed be summoned up weeks after the treatment and potentially act as a pathway to recall. On the other hand, as the picture cannot always visually represent every feasible contextualization of a particular lexical item, learners could easily be led astray by focusing on specific aspects of the picture and constricting the meaning based on their interpretation of it.

4.2.4.8 Pictorial factors influencing recall

Earlier in this chapter (section 4.2.4.4) I noted that though the mean recall rates of the *literal only* and *literal + figurative* picture conditions were very similar overall for both the mid and low transparency groupings, there was still considerable variation between picture condition recall at the individual idiom level for all groupings. We have already explored possible pictorial factors accounting for these differences for our high transparency grouping above, yet ample evidence from our other two transparency groupings can help to illuminate and corroborate the previous finding about the potential for pictures to both mislead and aid learners. Given the widespread use of pictures in commercial textbooks for not only idiomatic expressions, but vocabulary generally, it is important to draw attention to instantiations of how pictures can shape L2 learners' semantic perception and understanding to better inform sound pedagogical practices involving pictures for learning lexica. In order to do this, we should first observe the idioms for which the picture conditions elicited the greatest differences in recall (Table 37) and their associated pictures.

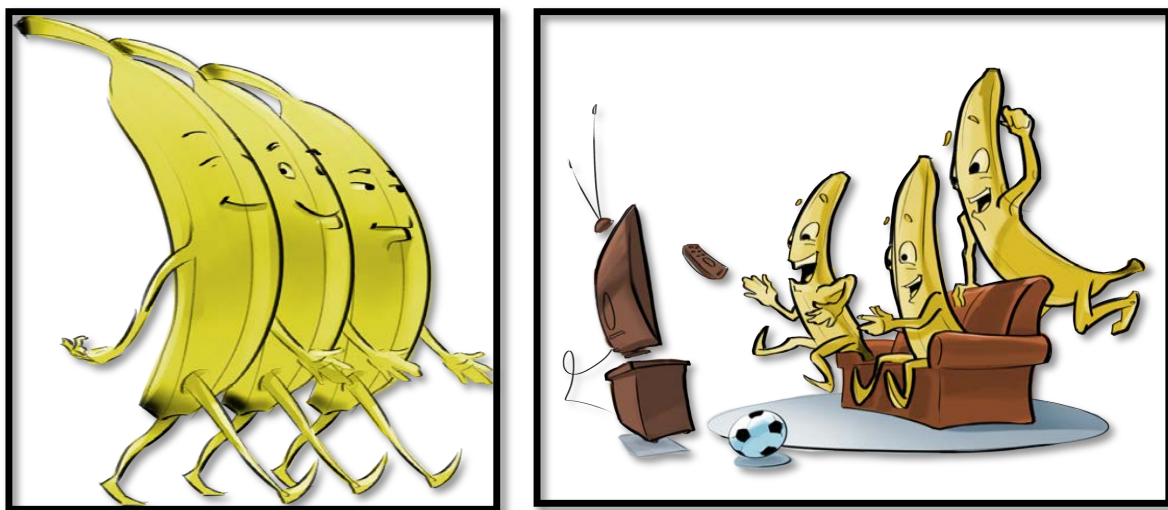
Table 37: Mid and low transparency idioms with sizable between picture recall

Idiom	Tran	Cond.	Del.	Cond.	Del.	Cond.	Del.	Diff.
Go bananas	Low	No Pic	52.8	Lit. Only	55.6	Lit + Fig	88.9	+ 33.3
Bury the hatchet	Low	No Pic	66.7	Lit. Only	66.7	Lit + Fig	91.6	+ 24.9
Have your back to the wall	Mid	No Pic	41.7	Lit. Only	36.1	Lit + Fig	58.3	+ 22.2
Have a lot on your plate	Mid	No Pic	61.1	Lit. Only	86.1	Lit + Fig	61.1	-25.0

The four idioms above represent those idioms that elicited at least a 20% or greater gap in recall between the *literal only* and *literal + figurative* picture conditions on the delayed posttest (the size of the difference from *literal only* to *literal + figurative* picture conditions can be found in the last column). Since we are now examining idioms from both the mid and low transparency grouping, these four idioms account for 22.2% of the total number of idioms in those groupings (4 out of 18 idioms). As can be seen, in three out of the four idioms, the *literal + figurative* picture condition appeared to elicit much greater recall

than both the *no picture* and *literal only* picture groups, while the idiom *have a lot on your plate* seems to have benefitted most from the *literal only* picture condition. The largest difference occurs between the *literal only* and *literal + figurative* picture conditions for *go bananas*, in which the recall value elicited from the *literal only* picture was just over 55%, while the *literal + figurative* picture elicited a much higher recall at 88.9%. In order to better understand what might have contributed to such a marked difference in recall, let us observe the pictures used for *go bananas* below in Figure 14.

Figure 14: Picture conditions for *go bananas*



In both pictures we have anthropomorphized bananas (anthropomorphosis was thought to be a useful and memorable way of expressing and relating some of the literal noun parts of the idioms with their constituent verbs). In the *literal only* picture, we simply see three bananas walking (to convey a sense of movement associated with the *go* in *go bananas*) with a mix of facial expressions so as not to betray the figurative meaning of excitement. The *literal + figurative* picture again has three similar bananas, but in this picture, the figurative element of excitement is represented through both the facial expressions on the bananas as well as the TV and soccer ball metonymically standing for an exciting televised sporting event so as to give a cause for the bananas' excitement.

Accounting for such a vast difference in which only slightly more than half of participants recalled the meaning of this idiom for the *literal only* picture, yet the great majority of participants managed to recall the meaning for the *literal + figurative* picture is challenging, especially given these were the results of the two weeks delayed posttest. Vocabulary research in general has shown that initial learning of new words is very fragile (Schmitt, 2008), so it was unexpected that even after two weeks time with no subsequent exposures to the target items (exit interviews confirmed this) that participants were able to produce (not recognize—an important distinction) the figurative meaning. Yet there are potential reasons to think that the pictures in question contributed to much or most of the variation in this instance.

It should first be said that the *literal + figurative* picture for *go bananas* was considered by the picture raters to be among the better of the *literal + figurative* pictures in general. Although the initial *literal + figurative* pictures needed to receive at least an average rating of 3.0 on the figurative representativeness scale (see Appendix G: Picture rating data) in order to be included in the treatment, this picture received the highest rating of 4 from all three picture raters, indicating that the picture raters believed the figurative meaning to be very well represented in the picture. Indeed, of the original pool of drawings that were rated, (88 pictures, with half of those making up pictures intended to be for the *literal + figurative* condition) only 14 received the highest rating of 4 from all raters on the figurative scale. Given the relatively straightforward figurative meaning of *to become excited* with the familiar and high frequency literal words (banana is a cognate in Japanese) in conjunction with the easily relatable excitement associated with sporting events (soccer is one of the most popular sports among the younger generation of Japanese) and the amusing scene of cheering, excited bananas, the high recall rates become more understandable. Not only do these findings point to the potential influence of pictures on learners, but they also highlight the perhaps limited impact transparency has on recall, given that *go bananas* was among the lowest transparency idiom in the study, yet its delayed posttest recall was among the highest for this picture condition.

Following a similar trend, the two pictures for *bury the hatchet* generated comparable recall rates, with the *literal only* picture eliciting a recall of 66.7% and the *literal + figurative* picture eliciting a 91.6% recall on the delayed posttest. Though the recall gap between picture conditions here is not quite as large as in the previous example with *go bananas*, we again have a surprisingly high recall for the *literal + figurative* picture group. Below in Figure 15, we can see once again the pictures for both conditions. In the interest of full disclosure, there was a small, but perhaps important oversight by the illustrator for the *literal only* picture that might have contributed to the considerable recall gap. The reader will notice that as the hatchet is not colored in to match the color of the soil, it might be taken to be on top of the mound of dirt rather than buried under it. The *literal + figurative* picture is more explicit in this regard, although it might be more difficult to visually discern.

Figure 15: Picture conditions for *bury the hatchet*



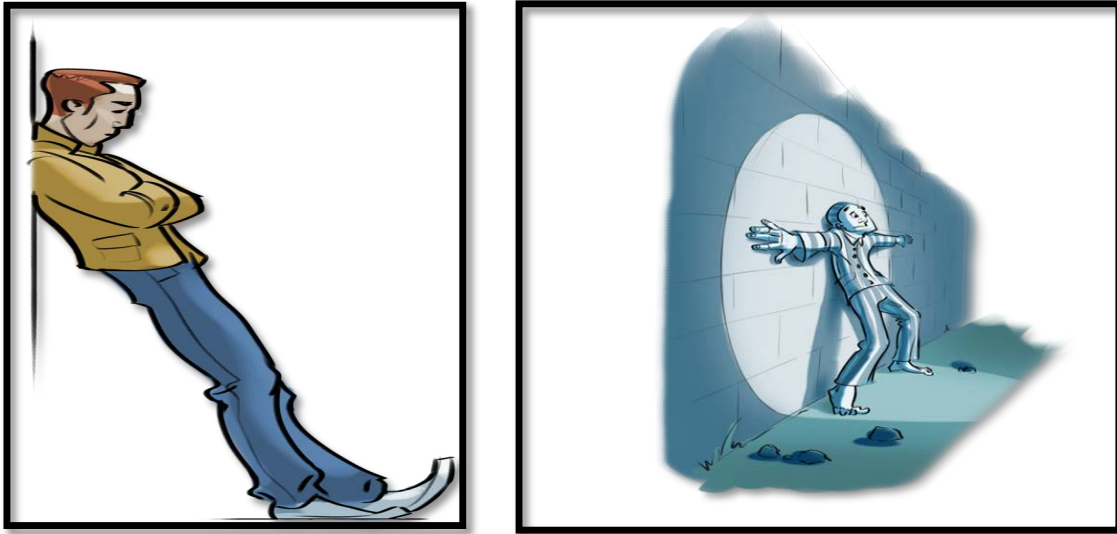
In the case of these pictures, astute participants might possibly make the connection between putting a weapon (a seemingly clear metaphor for violence or war) out of sight and making peace, yet the *literal + figurative* picture attempts to make this connection more explicit with the addition of the native American and cowboy standing atop the mound shaking hands. Though some cultural knowledge about American history and the antagonistic relationship between “cowboys and Indians” would likely elucidate the meaning even further, it is perhaps enough to have two clearly different types of people shaking hands in an act of accord atop a buried weapon to signify the figurative

meaning of *making peace*. Unlike the case of *go bananas*, participants as a whole were not as familiar with the literal parts (*hatchet*, and to a lesser extent *bury*) of this idiom, as indicated by the pre-test (as a reminder, to control for this, lower frequency words were glossed in the L1 over the corresponding literal word on the treatment and delayed posttest). On the other hand, the figurative meaning is quite short and straightforward, which means that there was less of a burden to remember a longer paraphrase, and perhaps for this reason, there were very few partially correct responses elicited for this idiom.

This lack of partially correct answers is worthy of discussion because the observed trend for many of the idioms in this study seemed to indicate that the longer, more complicated, and abstract the figurative meanings of the idioms, the more likely participants were to provide a partially correct answer. In such instances as above, with *bury the hatchet*, the participants either remembered the L1 translation (*to make peace*) or they didn't, resulting in a score of 2 or 0. For many other idioms that had more nuanced figurative meanings, participants recalled some elements of the meaning, but failed to produce some important part, which lowered overall recall with partially correct scores of 1. It is difficult to understate the pedagogical implications of this finding. This is because scholars (Irujo, 1986a; Cooper, 1998; Cornell, 1999) have often called attention to aspects of idioms' literal parts as a vital criterion for selecting idioms for intentional instruction, yet there is almost no mention in the literature about how the complexity, length, and abstractness of the *figurative meaning* of idioms can impact learning and therefore should be considered alongside literal components when choosing lexica to teach to students.

Returning to our picture comparisons, our third and penultimate side-by-side examination is for the pictures for the idiom *have your back to the wall* found in Figure 16 on the following page. As opposed to our first two picture pairs, this pairing elicited a much lower recall rate with 36.1% and 58.3% for the *literal only* and *literal + figurative* pictures, respectively. It should be noted that in absolute terms, even the *no picture* condition outperformed the *literal only* picture with a recall rate of 41.7%. What this means is that in this case, interference associated with the *literal only* picture might be contributing more to this variation than any beneficial elements in the *literal + figurative* picture.

Figure 16: Picture conditions for *have your back to the wall*

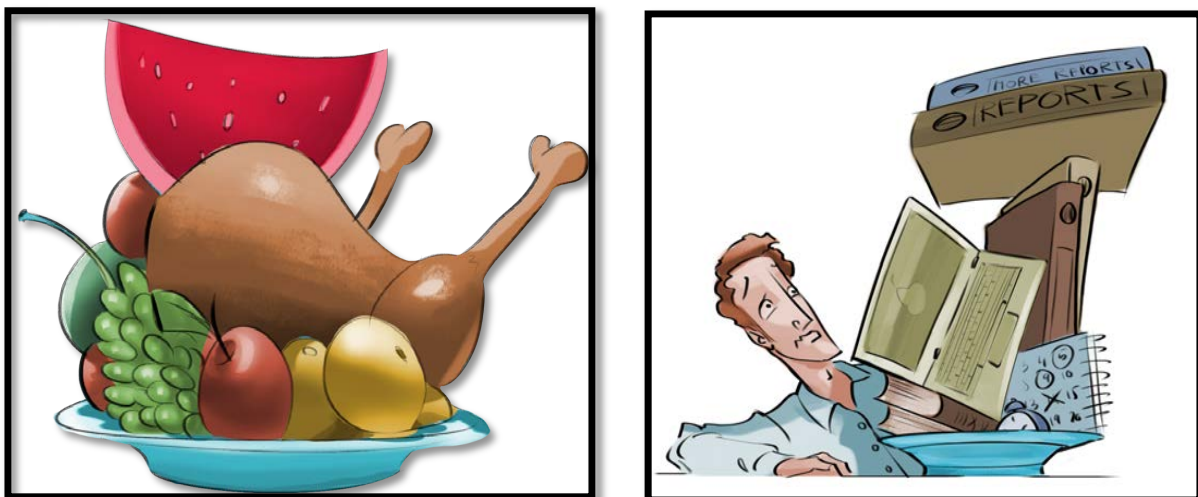


Upon revisiting the precise paraphrases that participants produced, it was found that the participants who saw the *literal only* picture above provided strikingly similar incorrect answers that all centered around the idea of depression or anxiety. What makes this particularly intriguing is that none of the participants from other conditions (*no picture* and *literal + figurative picture*) produced similar incorrect paraphrases. This points to fairly strong evidence that the participants found something about the man's posture or expression to be indicative of his mood. If so, this was an inadvertent consequence of what the illustrator intended to be "a man with his back pressed against a wall, face is neutral" as per my instructions to him during the picture creation process.

Furthermore, it should be noted that these incorrect answers were not limited to isolated and anomalous responses. In fact, out of the 18 participants who saw this picture, 4 of them indicated that the figurative meaning was "to feel down", and another 2 indicated "to worry" on the delayed posttest. In other words, a full third of participants under the *literal only* condition produced incorrect responses that were very likely connected to their interpretation of the picture they saw a full two weeks after the treatment. This speaks to the influence that pictures can have on recall, even after a delayed period of time. Pedagogically, these findings also suggest that L2 educators should exercise prudence and caution when selecting pictures for teaching vocabulary, as they have the potential to confound and confuse, as well as aid learners.

The final picture comparison is for the idiom *have a lot on your plate*, which means to have a lot of work or tasks to do. As before, the two pictures can be found below in Figure 17. In contrast to the previous three comparisons, the data here revealed a very different trend in that the *literal only* picture group appeared to elicit a far better recall (86.1%) than the *literal + figurative* (61.1%) and *no picture* (61.1%) groups. While the *literal only* picture simply has a plate with a lot of food on it, the *literal + figurative* picture has work-related objects piled on top of each other to metonymically stand for a great amount of work to be done. Furthermore, the expression on the man's face was intended to portray a sense of anxiety from being faced with so many tasks and therefore convey a nuance of "too much".

Figure 17: Picture conditions for *have a lot on your plate*



In this case, judging from the recall of the *no picture* condition, it seems likely that the variation between these two pictures is more a result of the *literal + figurative* picture's lack of effectiveness. This is because as we have seen previously, any picture generally elicited higher recall than no picture at all, yet the recall for the *no picture* and *literal + figurative* picture was identical in this case. This means that perhaps the *literal + figurative* picture did not contribute in any meaningful way to helping participants remember the figurative meaning. Though the objects stacked on the plate in the *literal + figurative* picture were

meant to represent items typically associated with work, such as notepads, laptops, and files, participants might have misinterpreted or misunderstood this connection. It might very well be that the files were interpreted as books, and these along with a laptop might have been considered items of leisure rather than work, which understandably would mislead learners about the meaning and later interfered with recall. It should be said, however, that this is highly speculative, particularly since incorrect paraphrases from the *literal + figurative* group did not reveal any incorrect answers to suggest that this was the case. Conversely, another conceivable explanation was that learners could in fact easily relate to the workload facing the man, so much so that learners did not need to engage in the deep processing necessary to promote recall. Lastly, it could be that variation in recall could simply be due to chance, which is not all that unlikely given both the lack of a clear cause and the number of idioms compared in the study.

4.2.4.9 Conclusion

In answer to the research question, both *literal only* and *literal + figurative* pictures used in this study generally promoted meaning recall of the idioms. Overall, *literal + figurative* pictures produced the most robust effect to meaning recall, especially for high transparency idioms, but no statistically significant effect was detected between the *literal only* and *literal + figurative* picture conditions mean recall averages. This could be for a number of reasons, but the particular methodology used, along with variability of pictorial effectiveness between idioms likely lessened any otherwise detectable effect. Perhaps more importantly, the data from this part of the study revealed two unexpected findings. Firstly, the degree to which the recall of individual idioms vary was quite startling, which signifies that there is perhaps a whole host of factors that either facilitate or add to the burden of learning what an idiom means. Secondly, learners tend to focus in on particular aspects of pictures, and while this has the potential to facilitate learning, it also poses the threat of misleading learners to over-specify the precise meaning of an idiom.

CHAPTER FIVE: METAPHORICAL ELABORATION THROUGH PICTURES AND L2 INTERPRETATION OF IDIOMS

5.1 Introduction

In the previous chapter, Study 3 concerned itself with ways in which to help L2 learners better remember the meaning of idioms in a second language. In a similar vein, Study 4 in this chapter builds upon this pedagogical focus by examining other potential benefits and uses of *metaphorical elaboration* through pictures. Specifically, Chapter 4 investigates the effect the different picture conditions have on participants' ability to correctly interpret the figurative meaning of newly met metaphorical idioms. By eliciting how participants interpret the figurative meaning under different picture conditions and transparency levels, the degree to which pictures and semantic transparency can influence learners' interpretations will become clearer. Any findings will not only be relevant for testing the effectiveness picture-induced *metaphorical elaboration* has for elucidating the meaning of unknown idioms, but it might also serve to inform how pictures, more generally, can lead (and mislead) learners to certain conclusions based on pictorial cues.

5.2 Study 4

Does the use of literal + figurative pictures have a positive effect on learners' ability to interpret the meaning of newly met idioms?

I hypothesized that metaphorical elaboration stimulated through pictures would increase the saliency of the figurative meaning of newly met idioms, which would in turn lead to higher accuracy in participant interpretations. In Study 4, three student participants took part in a think-aloud protocol in which they were presented with 27 English idioms appearing in different picture conditions. The results showed that the literal + figurative picture condition overall contributed to participants correctly interpreting the figurative meaning of the target idioms. However, pictures in both picture conditions, on occasion, also led to misinterpretation and over-specification. These findings corroborate, to a certain extent, the results found for pictures in Study 3 on meaning recall, and also indicate that pictures can be influential at different stages of acquiring vocabulary.

5.2.1 Participants

Unlike Study 3 in which meaning recall was measured between numerous participants, Study 4 involved much richer qualitative data coming from only three participants. Given the descriptive nature of the data and small number of participants, it would be beneficial to describe some of the idiosyncratic discourse styles each participant employed during his or her think-aloud. By describing these discourse styles, we can have a better sense of some of the individual differences among these participants, which will inform our understanding of the data presented.

Participant 1

Participant 1 was a 23-year-old Japanese male in his senior year at university majoring in chemistry. Though all participants were given the option to think aloud in either the L1 or L2, participant 1 used English throughout the entire procedures. This was unsurprising as he was, by my estimation, the most proficient and motivated of the three participants involved in this part of the study (as all three were students in a very small elective speaking class I taught, I knew them quite well). Since he spoke solely in English, there was no concern about any meaning being lost in translation, though this also meant his responses were often ungrammatical and less detailed than the data produced by the other two participants. Despite some ambiguity that resulted because of this, the great majority of data was semantically coherent and intelligible.

Participant 2

Participant 2 was a 22-year-old Japanese female in her senior year at the same university also majoring in chemistry. Though highly motivated, her spoken English was perhaps the weakest of the three participants, so she opted to speak in Japanese for the entirety of the think-aloud. Her discourse style was distinct from the other two participants because she would frame her thoughts mostly as questions, as indicated by a rising intonation at the end of most of her utterances. Interestingly, Participant 2 was the only participant to consistently comment on her own interpretations after seeing the figurative meaning for each idiom. Her reactions to the correct meanings were often quite revealing and added a unique dimension to the qualitative data.

Participant 3

Participant 3 was a 20-year-old Japanese male in his sophomore year at the same university, but majoring in physics. Much like Participant 2, Participant 3 had somewhat weak oral proficiency in English and as a result, elected to speak in the L1 throughout the treatment. In comparison to the other participants, participant 3 was much more explicit about how the picture or idiom word parts contributed to his understanding of each idiom by citing or referring to either during his discourse. Also, participant 3 would sometimes indicate when he thought something about the idiom was metaphorical. Though the other participants also did this to a degree, it was much less explicit.

5.2.2 Materials

The materials consisted of the same 27 idioms, associated pictures, and slides from phase 4 of the PowerPoint treatment in Study 3. To review the picture creation and vetting process, refer back to section 4.2.3.3 and 4.2.3.4. For the complete set of picture pairs see Appendix E: Treatment pictures. Although the same PowerPoint slides from phase 4 in Study 3 were used in Study 4, the method of eliciting data differed significantly, which will be detailed in the next section.

5.2.3 Design and method

Study 4 focused on eliciting qualitative data to better understand how idioms of different transparency levels are interpreted under different picture conditions. What this study sought to uncover is whether or not the *literal + figurative* pictures aided participants in correctly interpreting newly met idioms, and whether or not the extent of that aid was connected to semantic transparency. A think-aloud protocol was thought to be the optimal approach for such purposes, as participants continuously think out loud as they are undergoing the treatment. Firstly, think-alouds have been acknowledged as the best means available to observe participants' thoughts in real time (Gu, 2014). Secondly, for my purposes, they would provide qualitatively rich data that could shed light on how *metaphorical elaboration* is possibly stimulated through verbal and visual information on the slides to the benefit of the learner.

Methodologically, I had to choose between either a between-participant or a between-idiom means of comparison. That is, I could arrange it so that each of the three participants saw the 27 idioms under one specific picture condition, or

alternatively, picture conditions could be counterbalanced so that each participant saw three sets of nine idioms, with each set under a different picture condition. The former of these two options was highly undesirable due to the small number of participants in Study 4. Any individual differences would have had a great impact on the results since a single participant would account for all the data from one picture condition. By counterbalancing the semantic transparency and picture condition variables, I could better mitigate any between participant individual differences that might impact the analysis.

Conveniently, phase 4 of the treatment in Study 3 already provided a carefully thought out framework to accommodate such a design. All of the variables had already been counterbalanced and the idioms were randomly ordered for the three intact classes in Study 3, so all that was necessary to do was extract the set of slides for each of the three intact classes and assign it to one of the three participants. To graphically illustrate the by idiom picture condition viewed by each participant, see Table 38 on page 147. This table indicates the sequence, transparency level, and picture condition of the idioms presented to participants (P3, P2, and P1).

To carry out the think-aloud protocol, I met individually with each of the three participants and explained what I wanted them to do. I provided a laptop on which the participants proceeded through the slides at their own pace while I remained in the room throughout the entirety of the treatment. The first 13 slides of the treatment included details about the procedures, basic background information on what an idiom was, the necessity to keep talking out loud, and an example slide for an English idiom not included in the study. The following key information was provided to participants in both English and Japanese:

You will see 27 different English idioms. Some of these idioms will have pictures and others will not. For each idiom, I want you to use whatever information you see on the screen (the words that make up the idiom and pictures, when you see them) to try and think about and guess the FIGURATIVE meaning of the idioms. For this, you will need to THINK ALOUD and I will record your thoughts on a voice recorder. What I mean by 'think aloud' is that I want you to say out loud everything that you would say to yourself silently while you think. Just act as if you were alone in the room speaking to yourself. Feel free to use either Japanese or English at any time while thinking aloud—whichever is more comfortable for you.

Table 38: Think-aloud protocol presentation sequence

(NP = no picture; LO = literal only picture; L+F = literal + figurative picture)

Order	High Transparency	Order	Mid Transparency	Order	Low Transparency
Slide 14	Give someone the green light	Slide 15	Sit on the fence	Slide 16	Be under the weather
P3	NP	P3	NP	P3	NP
P2	LO	P2	LO	P2	L+F
P1	L+F	P1	L+F	P1	LO
Slide 17	Recharge your batteries	Slide 18	Throw in the towel	Slide 19	Go bananas
P3	NP	P3	LO	P3	L+F
P2	L+F	P2	NP	P2	LO
P1	LO	P1	L+F	P1	NP
Slide 20	Come out of your shell	Slide 21	Have a lot on your plate	Slide 22	Face the music
P3	L+F	P3	NP	P3	L+F
P2	NP	P2	LO	P2	LO
P1	LO	P1	L+F	P1	NP
Slide 23	Raise eyebrows	Slide 24	Have your back to the wall	Slide 25	Tie the knot
P3	L+F	P3	NP	P3	L+F
P2	NP	P2	L+F	P2	NP
P1	LO	P1	LO	P1	LO
Slide 26	Go through hell	Slide 27	A sitting duck	Slide 28	Red tape
P3	NP	P3	L+F	P3	LO
P2	LO	P2	LO	P2	NP
P1	L+F	P1	NP	P1	L+F
Slide 29	The end of the road	Slide 30	A skeleton in the closet	Slide 31	Spill the beans
P3	LO	P3	L+F	P3	NP
P2	L+F	P2	NP	P2	L+F
P1	NP	P1	LO	P1	LO
Slide 32	Turn heads	Slide 33	God's gift to women	Slide 34	The birds and the bees
P3	L+F	P3	L+F	P3	LO
P2	LO	P2	NP	P2	NP
P1	NP	P1	LO	P1	L+F
Slide 35	Pull the plug	Slide 36	A heart of gold	Slide 37	Go cold turkey
P3	LO	P3	LO	P3	LO
P2	L+F	P2	L+F	P2	L+F
P1	NP	P1	NP	P1	NP
Slide 38	A drop in the bucket	Slide 39	Be in the hot seat	Slide 40	Bury the hatchet
P3	LO	P3	LO	P3	NP
P2	NP	P2	L+F	P2	LO
P1	L+F	P1	NP	P1	L+F

Prior to starting the think-aloud, I confirmed that the participants did not have any remaining questions. The participants would then proceed to begin the think-aloud for the 27 idioms from slides 14 to 40 as indicated in Table 38 on the previous page. On each slide, the participants saw at first just the idiom in one of the three picture conditions. Unlike phase 4 in Study 3, however, the slides were not timed, allowing participants as much time as they needed to think-aloud before advancing the animation to reveal the paraphrase for the idiom. I included the L1 paraphrases on both ethical and methodological grounds. It seemed unfair to prevent participants from discovering whether their interpretations were correct or not, and in any case, whatever follow up reactions they might utter in response to the paraphrases could prove insightful in the later analysis.

It took the participants about 40 minutes to complete the think-aloud, and all of the resulting data was recorded on a voice recorder. As participant 2 and 3 spoke in their native tongue, it was necessary to hire a translator to translate their data from Japanese into English. The translator that undertook this task was the same translator that translated the L1 paraphrases in Study 3 (refer back to section 4.2.3.6 for details about this translator). Once this was done, I then compiled all of the transcriptions from the three participants into a spreadsheet so that the data could be systematically analyzed. In the next section, we begin looking at and discussing these results.

5.2.4 Results and discussion

We now turn our attention to the analysis and discussion of the data. From the outset of Study 4, I anticipated that there would be multiple potential outcomes involving participant interpretation of idioms between the three picture conditions (*literal + figurative (LF)*, *literal only (LO)*, and *no picture (NP)*)—*for the sake of brevity*). An interpretation could be correct in the LF condition only, correct in the LF condition in addition to another conditions (LO and/or NP), correct in LO or NP, but not in LF, and finally incorrect in all cases. In order to analyze the data in a systematic and manageable manner, I have divided the data into four separate categories. In Table 39 on the next page, I have included the number of cases and associated idioms this occurred for in each category. For the sake of simplicity, “correct” in the table below refers both to correct and partially correct interpretations. Of the original 27 idioms used in the study, three idioms (*throw in the towel*, *go bananas*, and *come out of your shell*) were indicated as being known to at least one participant on the pre-test and were therefore excluded from the remainder of Study 4.

Table 39: Study 4 categories and related occurrences

Category	1 LF only correct	2 LF + other condition(s) correct	3 Other condition(s) only correct	4 All conditions incorrect
Cases	7	9	0	8
Idioms	A lot on your plate A heart of gold Bury the hatchet Under the weather Red tape Spill the beans The birds & bees	Recharge your batteries Raise eyebrows Have your back to the wall Tie the knot Go through hell The end of the road Have a skeleton in the closet Turn heads Be in the hot seat	N/A	Give sb. the green light Sit on the fence Face the music God's gift to women Pull the plug Go cold turkey A drop in the bucket A sitting duck

Table 39 reveals that, excluding Category 3, each category had a similar number of cases. I am most interested and concerned with, however, the data from Categories 1, 3, and 2, in that particular order. This is because I want to isolate and examine those cases in which the LF picture appeared to comparatively promote understanding (Category 1), and those cases in which the LF picture seemed to comparatively muddle understanding (Category 3). Yet, as we can see, the number of cases for Category 3 was zero, meaning that there were no instances in which a participant only produced a correct or partially correct interpretation in a condition other than LF. Though I somewhat expected this given the hypothesis that the LF condition would better promote participant understanding of idioms, the lack of any cases whatsoever to the contrary is noteworthy. This is certainly not to say that the LF condition facilitated interpretation in every case, though, as Category 2 will show once I compare and contrast the nuances and depth of participant responses between multiple correct and partially correct interpretations in differing conditions.

The participant responses from Category 1 are presented first, as this data most directly relates to answering our research question. Here the data show all of the cases in which the LF condition appeared to aid participants more so than the LO and NP conditions. These cases are summarized below in Table 40. The abbreviations LF, LO, and NP at the beginning of each participant response identify the condition under which that idiom was met, and RA (read answer) identifies the point at which the participant saw the answer so that it is clear where the conjecture ended and the reflection, if any, began. Finally, the parts of the discourse that relate in any way to the figurative meaning of the idiom prior to reading the answer have been underlined and highlighted.

Table 40: Category 1; correct interpretations in only the L+F picture condition

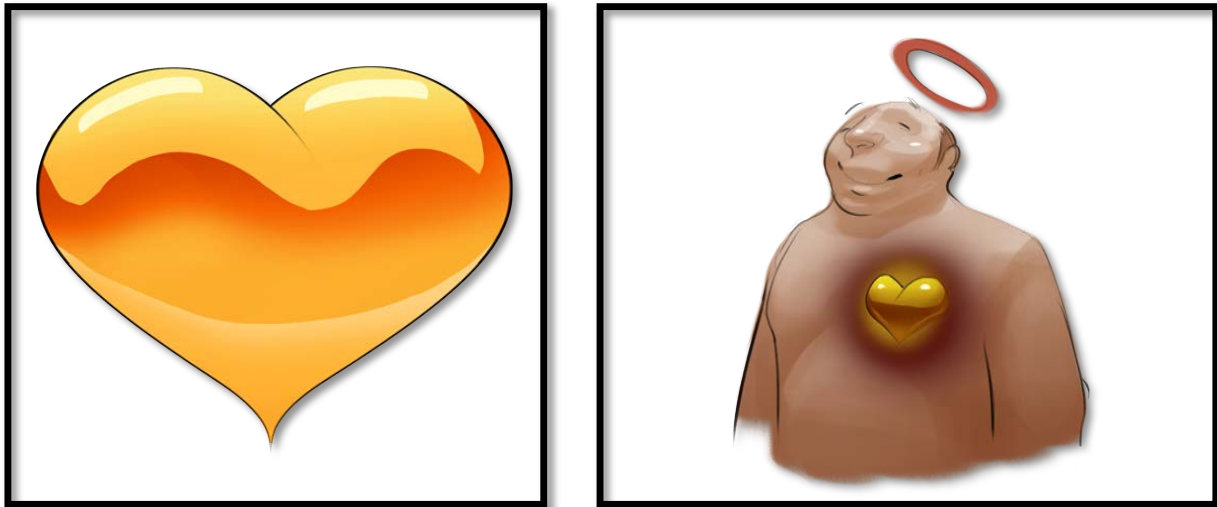
Idiom	Participant 1	Participant 2	Participant 3
1) Have a lot on your plate	(LF) A lot of. Too much food--too much work. He can't do, he don't think he want do so much task or thing he can't have so many things. RA	(LO) Hmm, having a lot in your hand or in stock? An idiom, hmm, having a lot of connections? Maybe not connections. Anyway, having a lot of things. RA- Wrong. Having a lot of important work to do. But that wasn't drawn in the picture. Hmm.	(NP) There's no picture, just words. A lot on your plate. That means you have many things on your plate. Have many plates. I don't really understand the grammar. Using your plate, metaphorically, the things or skills you have. Have many ways to do things. RA--I see.
2) A heart of gold	(NP) Be confident, or too confident, be too confident. Some people respect you and other people don't believe him. He has his [inaudible]...RA	(LF) A gold what? A gold heart? Does gold mean gentle or kind? Steel? It's not steel. It's harder since it's gold. Because gold is hard. Don't give up? Kind? To become a good role model--like an angel? RA--that's right, it's a positive meaning.	(LO) The idiom's meaning is that gold is expensive. A golden heart is unusual and something valuable. I think it's a luxury item and something valuable. RA--ahh, I see.
3) Bury the hatchet	(LF) Stop the war and cooperate with each other. Stop fighting, stop fighting, start the discussion and find out some solution. RA	(LO) Bury the hatchet? Bury the hatchet? Why is it buried? Did someone do something bad with the hatchet? If so..hmm..then it's hidden? Or since it's a hatchet someone cut a tree or something. For example, cutting a tree. Hmm, but why would it need to be buried after cutting a tree? In order to destroy the evidence, I suppose. Or, someone still wants to use it? Ahh it's probably not such a simple meaning like that. Destroying evidence then? RA-ah! Ahhh, after all, weapon, since it's a weapon. If you bury the weapon, then you can't use the weapon anymore.	(NP) I don't know how to pronounce "hatchet". Considering how a hatchet is used and guessing the meaning from burying the hatchet, trying to hide a secret--a hatchet could be used for murder. It could mean to hide something. Or to try to hide a secret forever. RA-I see.
4) Under the weather	(LO) Gloomy and sad. It isn't going well. It's almost rain. RA	(LF) Be under the weather, under the weather, whaaat? I don't understand where the hint is. Physical condition? Physical condition changes maybe? Affected by the weather? Maybe the physical condition changes due to the weather. Technical thing? RA-ah being sick.	(NP) Well, being under the weather, that means, weather, weather, under the weather, the circumstances of the weather, weather, ummm, the weather, the weather, since the weather easily changes, circumstances can change, one's situation can change. In an unstable situation, that's what I think.
5) Red tape	(LF) Make someone or something, make something compact or make someone obey the rule by strict leader or strict system. He is, the leader is, is not good, he doesn't have good management or the thing or person don't stay there. RA	(NP) Red tape. Red tape?? Huh? The color red? I don't see red. It is wrapping paper for presents? I image of red meaning danger. The tape the police use, to keep people out, is yellow. Does it mean good as a contrast? Or literally a bad meaning? Hmm, red? Isn't it tape for presents? Danger? Don't do that such as keep out? RA-Ah, wrong. Why red tape? A warning maybe? I don't get it.	(LO) This idiom means, red tape, from the words and picture, I can only imagine red tape. Red tape is, intended purpose, also considering a situation in which red tape is used. The red color reminds of a town--I think it's a symbol of a tragic situation. RA
6) Spill the beans	(LO) Someone mess up thing or mess up, mess up and make a mistake. The floor become dirty with something. Slip the hand and spill the liquid or solid. RA	(LF) Spill the beans? Reveal? Lure someone in? I not sure or not. Giving information? Giving information and it's a trap? Lure someone in? RA-I see.	(NP) Spill the beans, hmm, this means, when you spill beans it scatters, spilling, first of all, it doesn't mean a good thing. As beans, not just one, many things, well, things need to be taken care of, no, no, well, handle, well, it's a situation where many things need to be taken care of. RA--the meaning (inaudible)
7) The birds and the bees	(LF) People from, people or thing from different places meet and make a new things. Create a new thing. RA	(NP) Birds..birds and bees? Birds and bees? Both are flying? They have similar pronunciation. Whaat? But they have similar pronunciation and both fly. Birds and insects are different. Do birds eat bees? Is it that kind of thing--I'm not sure. RA-aahh. I see. Birds means stork maybe? Bees, what is it? Beehive? Making babies? Hmm?	(LO) From the words and the picture, birds and bees are flying around. I think it's a situation where things are scattered or unorganized. RA-I had no idea.

Before analyzing the data at the individual idiom level, there are a few noteworthy observations relating to the overall findings for this group of idioms. It appears that, at least in this case, the low transparency idioms disproportionately benefitted from the LF picture condition, as idioms 3-7 in Table 40 were idioms that were rated and regarded as low transparency idioms in Study 1 and Study 2. This is unsurprising as we would expect learners to have more difficulty predicting the meaning of lower transparency idioms, and thus have more potential to be aided by pictorial elements that might elucidate said meaning. Secondly, some of the interpretations are fairly semantically close to the actual figurative meaning, such as in the LF response for *bury the hatchet* when the participant said it meant to “stop the war and cooperate with each other” and to “stop fighting”, while other responses have only a very tenuous relationship with the idiom’s meaning, as in *the birds and the bees* when a participant said it meant to “make new things”, or “create a new thing”.

5.2.4.1 Unpacking of metonymic and metaphorical associations

It is important to remind the reader that the picture condition we are most concerned with, *literal + figurative*, relied very heavily on metonymic and metaphorical associations as a way to visually convey some sense of a given idiom’s figurative meaning. As a result, the focus of Study 4 is on participants’ ability to unpack and interpret those associations in the intended way. The think-aloud data should help to elucidate the extent to which learners can indeed make sense of the embedded figurative elements by scrutinizing what aspects of the figurative meaning participants touched upon under the LF condition and also how the same idiom was construed by the remaining participants in the other picture conditions. Though it would be redundant to extensively examine each of the idioms in Table 40, I will focus on highlighting some of those responses that best captured instances of correct and erroneous unpacking of metonymic pictorial elements. Thus, let us first turn our attention to the data for the idiom *a heart of gold*, as this idiom elicited a number of notable examples relating to the different ways metonymic associations can occur and be interpreted. Figure 18 on page 152 shows a side-by-side comparison of both the LF and LO pictures for this idiom.

Figure 18: Picture conditions for *a heart of gold*



The LO picture on the left is simply a heart that is made out of gold, while the LF picture on the right has a golden heart visible through the chest of a man with a halo over his head. During the picture creation process, the illustrator was told, for the LF picture, to draw a “kind-looking man” with a halo over his head in order to emphasize his “goodness”. Here we have a case where metonymy is being expressed via two distinct pictorial elements. Both the friendly expression on the man’s face and the angelic halo was intended to stand for *kindness*. While emotive-based instances of metonymy, such as a smile and friendly expression, are likely to be more universally understood than potentially culturally restricted ones, such as with the halo (participants would have to know about angels and symbols associated with angels), it is not unreasonable to think that, due to globalization, many perhaps previously culturally bound metonymic symbols are now more widely recognized and understood.

The data from the LF and LO picture conditions appear to show metonymic unpacking understandably leading to very different interpretations. Participant 3, who saw the LO picture, surmised that *a heart of gold* related to something valuable. Given that gold has inherent value and is an item of luxury, it is not difficult to see why participant 3 thought this. Whether he came to this conclusion as a result of the word “gold” or due to the picture of the vivid and shiny golden heart is not clear, though it is worth mentioning that participant 1, in the absence of any picture, offered

no similar interpretation. Participant 2 (LF), however, provides us with fairly clear evidence that she was relying on, correctly to some extent, the metonymic associations to interpret the meaning of the idiom. She speculated that it might mean “gentle or kind”, and later went on to say “to become a good role model—like an angel”. Here we can see that she touched on the correct meaning of kindness, but later over-specified her response to include being a good role model. The fact that she used the word “angel” strongly suggests that she was aware of what the halo was meant to represent, yet since what it means to be an angel extends far beyond just being kind, it is not so surprising that she would over-specify the meaning. Nevertheless, participant 2 was the only one of the three participants to cite anything close to the precise figurative meaning of the idiom.

Much the same as *a heart of gold, bury the hatchet* yielded similar evidence of unpacking the metonymic pictorial elements. In this case, participant 1 (LF) offered a concise and somewhat precise interpretation by stating it meant to “stop the war and cooperate with each other” and “stop fighting” and “start the discussion”. Though we cannot know for certain if he means a literal war or if he’s referring to an argument or disagreement when he said, “stop fighting”, his response is much closer to a correct response than either participant 2 (LO) or participant 3 (NP). What makes the data interesting in this case is how participants 2 and 3 might have been misled by the word or pictorial elements for *bury* in *bury the hatchet*. Both participants 2 and 3 seemed to think that the figurative meaning related to hiding or destroying something, such as evidence. It could be that the participants decomposed and interpreted “bury” to mean conceal something, which is quite reasonable given that criminal activity often involves burying something in the ground (or at least that is how it is often portrayed in cinema and television). Furthermore, a hatchet as a potential weapon might reinforce the notion of someone doing something criminal or violent, which might have impacted those participants’ interpretation. Yet for this idiom, the LF picture could have aided in eliminating such interpretations by including a cowboy and a Native American shaking hands in accord atop the buried hatchet to signify “making peace”. Please refer to Figure 19 on the following page, which shows the two pictures in question.

Figure 19: Picture conditions for *bury the hatchet*



The data from *bury the hatchet* suggests that, left to their own devices and lacking any clear guidance, the participants might attempt to unpack and extract meaning from individual word parts on their own in order to arrive at a sensible explanation of the figurative meaning of the idioms. In this case, two of the participants came up with logical and similar guesses, which could arguably be a more likely and plausible interpretation than the actual figurative meaning. In other words, though it is likely that *bury* in *bury the hatchet* is standing for putting something out of sight in order to forget or mend past conflicts (the hatchet is perhaps standing for such conflicts), such an interpretation seems more specific and less probable than simply burying something as an act of concealment. In this instance, at least, the LF picture appeared to constrict the way in which *bury* could be decomposed, and that perhaps aided participant 1 in arriving at his more correct interpretation of the meaning.

The last three idioms in Table 40 on page 150 (*red tape*, *spill the beans*, and *the birds and the bees*) are similar in that the participants under the LF picture condition appeared to be on the right track, but only produced interpretations that were tenuously related to the figurative meanings of these idioms. Yet in these three cases we again observe how the LF pictures might have steered those learners in the right direction. For this reason, let us examine these three together to compare how these idioms and their related pictures were potentially unpacked. The pictures for *red tape*, *spill the beans*, and *the birds and the bees* are found below in Figures 20, Figure 21, and Figure 22, respectively.

Figure 20: Picture conditions for *red tape*

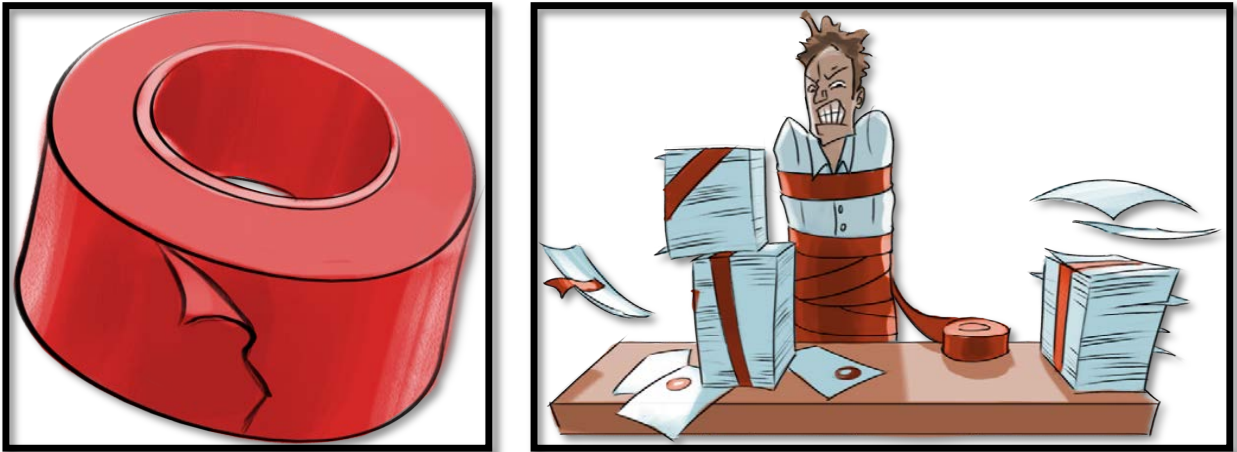
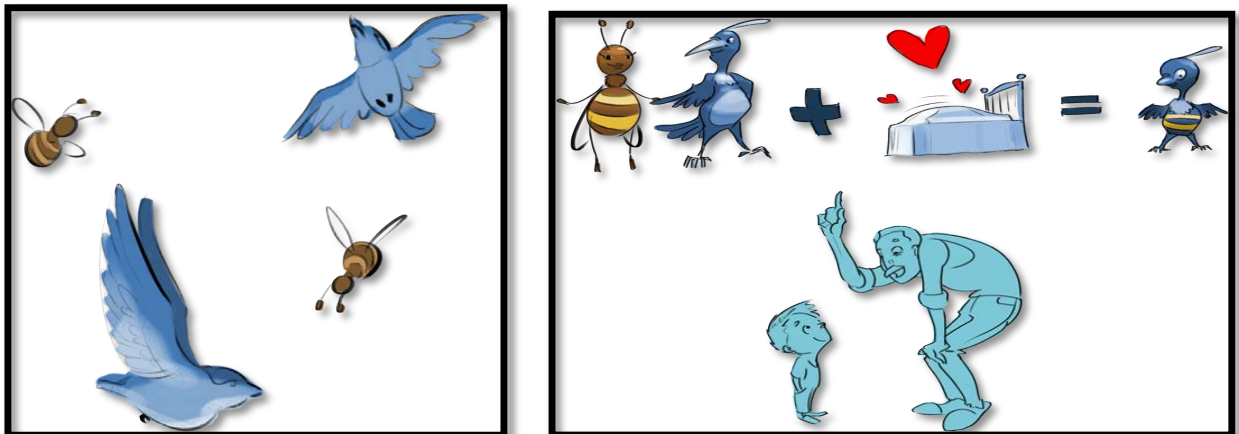


Figure 21: Picture conditions for *spill the beans*



Figure 22: Picture conditions for *the birds and the bees*



I will first address the relevant data from the LF condition for each of these idioms to show what correct aspects of the figurative meaning participants gleaned from the input and how the LF picture might have influenced their interpretations. We can see that participant 1 (LF) cited “make someone obey the rule” in a “strict system” as part of his interpretation about the meaning of *red tape*. Though this is not precisely the correct meaning (to have many unnecessary documents or procedures that cause delay), one could make the claim that under a strict system with many rules, one would expect lots of “red tape”. Similarly, participant 2 (LF) used words like “reveal” and “giving information” when speculating about the meaning of *spill the beans* (*fig. to reveal a secret*). Though she omitted saying anything about a secret, her response does capture the notion of passing along previously unknown information. Finally, participant 1 (LF) provided a comparatively terse response by suggesting that *the birds and the bees* meant to “make” or “create a new thing”. Though the meaning of *the birds and the bees* (*fig. to teach children about sexual reproduction*) is far more specific than the response given, there is a relationship, albeit tenuous, between teaching about sexual reproduction and making new things. More specifically, that relationship is focused on one aspect of the idiom’s meaning, which is that of procreation. Procreation, by definition, literally results in making something new.

For each of these responses, we can observe how particular aspects of the LF pictures might have influenced participants’ interpretations. In the case of *red tape*, the frustrated man physically bound by red tape was intended to metonymically stand for the hindrance one experiences (by being bound) and the annoyance one feels (the look of frustration) when dealing with *red tape*. The many documents with stamps were intended to give a sense that these were an unreasonable amount of official forms and documents to attend to, as opposed to ordinary work-related materials. Though participant 1 did not offer such a nuanced explanation, it does seem he picked up on the idea that there were many rules in some sort of strict system. While it is challenging to discern with any confidence what aspects of the picture led to this response, it is possible that the man’s frustrated look and the many stamped documents is what one would expect in a strict system, thereby leading to participant 1’s interpretation. It is notable that participant 2 (NP) appeared to misconstrue the figurative meaning as she unpacked the literal word parts by associating tape with possibly the ribbons used to wrap presents and then later presumed red to be standing for something dangerous. As she worked her way through the explanation, she then assimilated her guess about the figurative meaning of red with a literal use of tape by wondering if the danger was in any

way connected to the tape police use to keep people out of an area presumably under investigation. Here we can observe some parallels with responses in *bury the hatchet* in which the LF condition might have helped to constrict interpretations. In this case with *red tape*, the LF picture doesn't appear to be particularly suggestive of danger, which might have contributed to constraining participant 1's range of possible interpretations.

Responses for *spill the beans* offered similar insights on how participants under the LF condition potentially unpacked pictorial metonymic associations. While participant 2 (LF) mentioned "reveal" and "giving information" as part of her explanation, possibly by relying on her conventional knowledge about how sensitive information could be transmitted from one person to another (the woman in the picture is leaning in and speaking into the man's ear), participant 1 (LO) concluded a much more concrete and literal interpretation by saying "slip the hand and spill the liquid or solid", which is unsurprising given that all he saw in addition to the idiom's word parts was a picture of beans pouring out of a can onto a surface. Yet, the LF condition in this case is not without its own confounding issues. Although participant 2 (LF) had a somewhat accurate interpretation of the meaning of *spill the beans*, she goes on to over-specify the meaning by suggesting that the information "is a trap" and the woman is luring the man in. Though it cannot be certain, there are at least two possible explanations to account for this over-specification. The translator who translated participant 2 and participant 3's responses from Japanese to English commented that her translation of "lure someone in" was the figurative meaning of a Japanese idiom participant 2 used. The literal meaning of this Japanese idiom is to "spread feed before someone". It is possible that participant 2 extrapolated from her L1 figurative knowledge to assume a similar semantic correspondence in the L2, given the way the woman was pouring beans in front of the man and somewhat seductively whispering into his ear. What this could mean is that though figurative pictorial elements do help to constrain interpretations as we saw in the above examples, they can also act to unnecessarily constrain the meaning in unintended, over-specified, and perhaps uncontrollable ways.

The responses elicited by the different picture conditions for *the birds and the bees* are worthy of closer inspection, particularly due to some of participant 2's (NP) reliance on phonetic cues prior to knowing the meaning, and encyclopedic knowledge in her reflection after knowing the meaning. Participant 2 seemed to notice the alliterative features in *birds* and *bees* during her think-aloud for this idiom, perhaps because there was not much about this idiom to aid in understanding. After all, this was one of the lower semantic transparency idioms, it lacked the presence of any verb, and perhaps

most tellingly, this was under the *no picture* condition. It could be that with such a poverty of verbal and visual cues, learners will take advantage of any perceived distinctive feature, in this case, phonetic, of the idiom. Though participant 2 was unable to correctly interpret the meaning, her apparent awareness of alliteration is noteworthy because alliteration occurs in idioms much more frequently than what would be expected from chance and learner awareness of such features could be harnessed to aid in recall (Boers et al., 2014, see also Lindstromberg & Boers, 2008).

In addition to participant 2 displaying alliterative awareness, she also drew upon her encyclopedic knowledge when exposed to the figurative meaning of the idiom. To account for the figurative meaning, she appeared to associate *birds* in *the birds and the bees* with a stork, a particular white bird that is associated with childbirth. This is interesting for two reasons. Firstly, it provides support for the notion that due to living in an increasingly globalized world, popular stories, myths, and legends can diffuse across cultural boundaries and may be in many cases less contained than is assumed. Secondly, though her rationalization is perfectly reasonable, it is in one sense ironic as the story of the stork is actually untrue and avoids explaining the truth of sexual reproduction to children, while the figurative meaning of *the birds and the bees* alludes to that perhaps uncomfortable talk that parents often have with their children when they do, in fact, try to explain sexual reproduction. This highlights just how difficult some idioms can be to fully understand, as they may be erroneously bundled together with cultural assumptions and prior knowledge that can be difficult to disentangle.

5.2.4.2 Additional data from remaining idioms

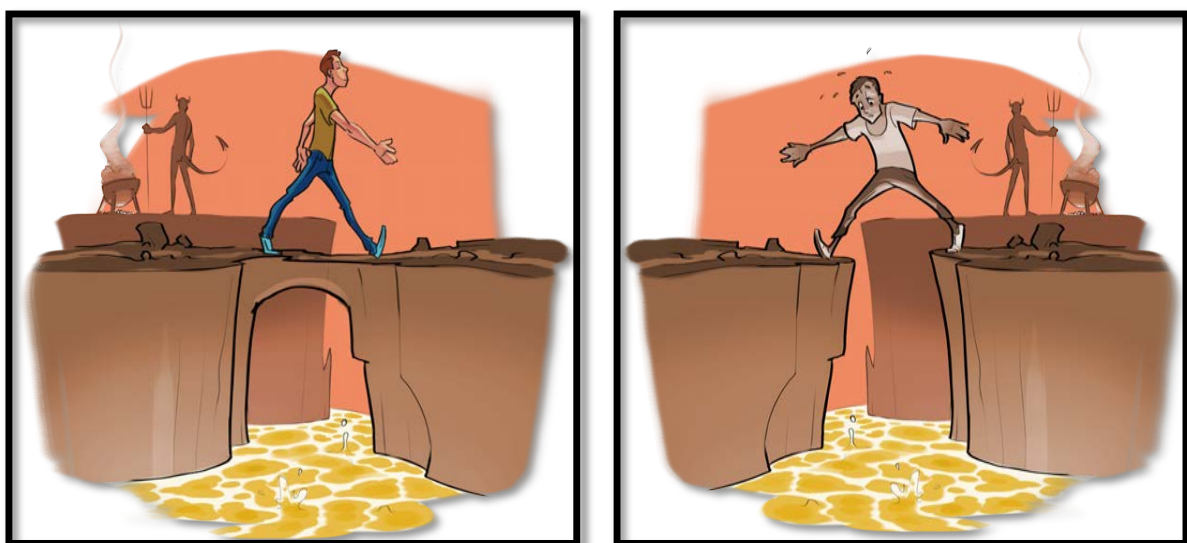
Until now, we have considered the data in cases where the LF pictures only appeared to aid participants in correctly guessing the figurative meaning. Though there were no cases in which participants correctly guessed an idiom's figurative meaning solely in the LO or NP condition, there were numerous cases, nine in total, in which participants were able to correctly interpret, to varying degrees, the meaning of idioms in other conditions in addition to the LF condition. Among these cases were other insightful anecdotal data regarding the ways in which participants interpreted the verbal and pictorial information, which is presented below in Table 41. As a reminder, the underlined data signals instances of participants touching upon correct aspects of the figurative meaning. RA (read answer) indicates the point at which participants were shown the figurative meaning.

Table 41: Category 2; correct interpretations in multiple conditions

Idiom	Participant 1	Participant 2	Participant 3
1) Recharge your batteries	(LO) Refresh your body and mind and brain by having a rest or having a meal or—especially you have a rest like the battery recharge. RA	(LF) To recharge, to do something to feel good, in general. RA—ahh yeah yeah.	(NP) From the meaning of the words, it means recharge your batteries. That means to rest or go out somewhere. Take a day off, that's what I think it means. RA
2) Raise eyebrows	(LO) Be surprised or people feel strange because something strange happened in front of them. They are surprised that unexpected news or, eyebrow, face. RA	(NP) Raise eyebrows. Raise? Raising eyebrows? Getting mad? Raise...raise...Not putting on eyebrows? Being mad or making faces? RA—ah, wrong. Ahh, I see, Facial expressions. After all, when we are surprised by others' actions, our facial expression changes, that's why it's raising eyebrows.	(LF) From the picture, that means roughly when think you look at or people you see or cause an expression of surprise. RA
3) Have your back to the wall	(LO) Be tired and waiting someone or something to happen. There is no, there are no way to escape. He is in dangerous. RA	(LF) A situation where one got stuck, or can't move. Can't escape anymore. RA—ahh, I was right.	(NP) Guessing the meaning just from the words, since there's not picture...putting your back to the all, hmmm, you won't get attacked from behind. (shortened for space...)
4) Tie the knot	(LO) Make two things strong. Getting, get, someone get along with some other, especially between men and women. They'll get married. RA	(NP) Hmm, tie the knot. What does it mean, tying the knot. It's not like tying the string? Hmm, tie firmly? Detaining? Protect? RA—Oh! I see. Red string, and knot? Like emotional ties between people?	(LF) The picture is showing a newly wed couple. This means roughly bonding emotionally. This literally means being tied RA—ahh, I see. Exactly.
5) Go through hell	(LF) Overcome the most difficult experience for him. Experience some nasty reality about, against, a new situation. Be in dangerous and he almost die. RA	(LO) Not go to hell, but through? Going through hell? Going past hell and to heaven? You're supposed to go to hell, but you go somewhere worse? Anyhow, you did something wrong or bad. RA—no? Going through difficulties Ahhh, go through means experience. Right. Hell means difficulty. I got it	(NP) Overcome difficult situations. Experience difficulties I think. Also...let's see...I think that's what it is RA.
6) The end of the road	(NP) It almost finish. The end of the work or book or movie. It shows some positive meaning.	(LF)The end of the road? The end of the road? A dead end? Can't continue? Does it mean a dead end maybe? Not hopeful? Is it a more negative meaning? RA—Hmm, OK.	(LO) There's a forest in the picture. Uhh, guessing from that, it's an idiom that indicates finding an oasis. It's a positive meaning about accomplishing something. RA—totally different.
7) Have a skeleton in the closet	(LO) Some. There are too used clothes and clothes in the closet. Anyone, no one use the item, not interesting in that. Some dark or narrow place or dirty.	(NP) What? Having bones in the closet secretly? Having done something secretly. Does it mean not wanting to be seen by others? I think it's a negative meaning. RA—Skeleton means a secret from the past? Ahhh. Is it because of bones? You can see through bones? A past thing? Hmmm.	(LF) From the picture, while my friend is visiting me, I'm trying to hide a skeleton in the closet. It's a situation where I have a secret or try to hide something about myself. I have a secret or something to hide. RA—Trying to hide a secret from the past. A skeleton could be murder, for example. It's a thing in the past.
8) Turn heads	(NP) Look around, notice something. Notice something and find. They are surprised that something make noise or the news which surprise them.	(LO) Shaking their heads? Shaking their heads? It's difficult to tell from the facial expression. It's not a negative meaning, but they're just shaking their heads? Facial expressions? No, it's not facial expressions. It's not that they are saying anything. Are they playing dumb or pretending not to know? RA—Ahh, it's the opposite. To notice something and turn around. It's a positive meaning.	(LF) From the situation, two guys are looking back at an attractive lady. Consciousness of attractive things. Looking at them again. This idiom means, well, being attracted to something attractive. RA.
9) Be in the hot seat	(NP) Very uncomfortable and have a lot of problem. Get angry. He is excited. Hot seat. Sit, the seat is used, was used for a long time. It became hot.	(LF) Be nervous? A stressful interview? Burning. Nervous, being nervous. I wonder what? The blood pressure is rising? So nervous or stressed that you can't think what to do—is that not it? RA—Where is the difficult question coming from? The picture only has a hot seat. Where's the difficult question?	(LO) From the words and picture, sitting through a difficult situation, or trying to endure a difficult situation. Or I think being forced to face a difficult situation. RA—I see.

From Table 41, we can see that interpretations contained correct elements in mostly two, but sometimes all three picture conditions. All three participants appeared to correctly interpret the meaning of *recharge your batteries*, but this was expected, because as mentioned in Study 3, there is a rough equivalent to this idiom in the L1. In some cases, participants used very similar language, as we can see in the case of *have your back to the wall* when participant 1 and participant 2 both mentioned not being able to “escape”. In other cases, some participants were highly accurate in their interpretations, as with *tie the knot* as participant 1 guessed it meant to get married, while the other two participants conjectured that it related to emotional bonding. Since I have already discussed numerous examples in earlier parts of this chapter concerning the ways in which participants appeared to unpack metonymic associations from the input, here I will focus primarily on a very limited set of examples that illustrate points of interest (for the complete data set for the think-aloud, refer to Appendix K: Think-aloud data; for a side-by-side comparison of all pictures, see Appendix E: Treatment pictures). Specifically, we will look at participant data for *go through hell* and *be in the hot seat*. Please see Figure 23 below for the *literal + figurative* and *literal only* pictures for *go through hell*.

Figure 23: Picture conditions for *go through hell*



The data show that participants under the LF and NP conditions made accurate interpretations about the figurative meaning of this idiom, with both stating that it related to experiencing some difficulty. Despite the great similarity between the two pictures on page 160, participant 2, under the LO picture condition, was unable to produce a semi-correct response. This is significant because it adds to the growing body of evidence across this study that learners will extract meaning from seemingly small (yet not necessarily unimportant) pictorial details. In the case for the pictures used with this idiom, it was quite difficult to create two sufficiently distinct pictures for each condition. This is because, by virtue of being high transparency, a picture of someone literally walking through a hellscape might be enough to convey the figurative meaning of a difficult experience. Yet, by relying on emotive expressions and pictorial elements metonymically associated with hardships, such as sweat droplets and someone gingerly crossing a lava-filled chasm, the LF picture was thought to more fully highlight the notion of a difficult experience.

In the LO picture, we can observe a very similar scene, yet the man has a more neutral expression and appears to be walking unhindered, almost with purpose, across the same chasm. Given the explanation that participant 2 offered, it was perhaps the manner and gait of the man walking that helped to shape, though erroneously, her understanding of the meaning. Participant 2 appeared to be baffled by the word *through* in the idiom, perhaps because she was interpreting *through* in a literal sense and that hell was merely a place to traverse before arriving at a “worse” place. Though admittedly this is highly speculative, it could have been that given the man’s gait in the picture, she decomposed *through* in a literal sense, while the other participants in the LF and NP condition were not similarly misled. Interestingly, upon knowing the meaning, participant 2 correctly decomposed the meaning by connecting *go through* with experience and *hell* with difficulty. Though it is encouraging to know she was able to retrospectively connect the literal parts with the figurative meaning, it is possible her initial difficulty interpreting the meaning was actually hindered by the LO picture in this case. Next we will examine one more case in which the picture appeared to mislead participants and what implications these findings have for presenting pictures alongside idioms in the classroom. See Figure 24 on the next page for a picture comparison for the idiom *be in the hot seat*.

Figure 24: Picture conditions for *be in the hot seat*



The two pictures for *be in the hot seat* are similar to those of *go through hell* in that the pictures in the LF and LO condition are similar. In the case of *go through hell*, the scenes for both picture conditions were very alike, but the features and expressions in and surrounding the man were different. The pictures for *be in the hot seat*, however, differ in an important way. The pictorial elements representing the literal parts are exactly the same, but the LF picture has an additional and sizable component intended to convey the figurative meaning (the man sitting at the desk while looking at a document). Though all three participants appeared to gather that this idiom's figurative meaning related to discomfort, nervousness, and some difficulty, the LF picture condition appeared to include a narrower interpretation. Participant 2 (LF) mentioned the words "stressful interview" during her interpretation, which was likely influenced by the additional figurative pictorial elements present. This shows once again one of the many ways in which pictures influence interpretation.

5.2.4.3 Conclusion

Based on the findings from the think-aloud protocol, it appears that the pictures with figurative pictorial elements tended to promote more accurate interpretations about the figurative meaning of the idioms compared with those pictures that contained only literal elements or no pictures whatsoever. Collectively, there were 7 out of 24 possible cases in which the sole correct or semi-correct response was detected under the LF condition, yet the same could not be said for the LO or NP condition. In every case in which a participant under the LO or NP condition produced a correct or semi-correct

interpretation, the corresponding participant under the LF condition likewise produced such an interpretation. Although this was not unexpected, there were some other insights gathered by the qualitative data, suggesting that learners will draw upon whatever is at their disposal to make sense of the pictures, which can sometimes be pedagogically detrimental.

In the previous section, I purposefully juxtaposed the data from *go through hell* and *be in the hot seat* to illustrate a recurring finding in this thesis: pictures can help or hinder learners in ways that are often difficult to predict and control for. This appears to be the case for both interpreting the meaning of novel idioms and retaining the meaning of previously met idioms. Yet within this limited set of data, there does appear to be a pattern that suggests some types of pictures are more effective at elucidating the meaning for some types of idioms some of the time. In general, figurative pictorial elements represented by emotive expressions appeared to help participants predict the meaning more often than not, while the more complicated figurative pictorial elements, such as in the case with *be in the hot seat* elicited more mixed results.

This is not to say that the more complicated figurative pictorial elements cannot be an effective pedagogical tool to help learners at different stages of idiom acquisition. It might very well be that the complexity of the idioms, owing to either the broadness or narrowness in meaning is a more critical factor for a particular picture's pedagogical effectiveness. At issue is that some idioms have such broad applicability in usage that metonymic associations might necessarily constrict for the learner the meaning. In the case of *be in the hot seat*, a stressful interview is just one instantiation of being in an uncomfortable situation, yet there are many other situations where this idiom could be used. On the other hand, we have seen that with idioms whose meanings are highly specific, such as with *the birds and the bees*, the more complicated pictorial elements appear to push the learner in the right direction.

In summary, figurative pictorial elements can be effective for teaching idioms much of the time, particularly for correctly interpreting the meaning of lower transparency idioms. Still language educators should exercise caution when deciding on what kind of pictures to use with what kind of idioms. Idioms whose meaning have broad applicability and usage appear not to lend themselves as well to metonymic associations as do those with more restricted usage. However, figurative pictorial elements expressed via emotive expressions, where applicable, seem to be effective for elucidating the figurative meaning of idioms much of the time.

CHAPTER SIX: TEACHER PERCEPTIONS ON THE IMPORTANCE OF IDIOMS

6.1 Introduction

The final research question brings to the forefront a discussion on the possible factors that appear to inform and influence teacher beliefs about the role of idioms in the L2 classroom. Study 5 is different from the previous studies in this thesis in that it is meant to bring to light the connection (or disconnection) between research and practice by observing and reporting on discrepancies between teacher beliefs about the value of teaching idioms and the consensus reached by scholars in the literature. Furthermore, this study addresses possible explanations rooted in teachers' backgrounds that can help account for these beliefs when such discrepancies are observed. Teacher beliefs are an important area of inquiry because research has found that these beliefs are often very diverse (Breen et al., 2001) and strongly impact and influence classroom practices (M. Borg, 2001; S. Borg, 1998, 2003; Burns, 1992; Farrell & Bennis, 2013). Therefore, uninformed teacher beliefs about idioms could be to the detriment of the L2 learner. Before formulating this research question, I had anecdotal evidence of widely varying opinions on the pedagogical value of idioms specifically, and figurative and metaphorical language generally. As a result of wanting to more systematically investigate this surprising dichotomy, I integrated this last research question as a way to further explore teacher beliefs on this issue and draw attention to any gaps that appear, which leads to the research question for Study 5.

6.2 Study 5

To what extent do the views of EFL teachers converge with respect to their attitudes towards the pedagogical value of teaching idioms?

I hypothesized that the participant raters, as result of their diverse cultural and pedagogical backgrounds, would have a range of perceptions regarding the importance of idioms to second language learners. The data showed, both quantitatively and qualitatively, a considerable divide between participant raters on a number of measures in Study 5. Much of this divide was due to differences in the raters' emphasis on a top-down or bottom-up view of language learning, as well as the relative importance they placed on the perceived frequency of individual idioms.

6.2.1 Participants

15 native speaker English instructors participated in Study 5. They were the same participants that completed the transparency rater questionnaire in Study 2. For more detailed information on the background of these raters, please refer back to section 3.2.1.

6.2.2 Materials

The materials consisted of a simple 8-item paper-based survey to which participants responded via a 4-point Likert rating along with a qualitative justification for their ratings. More details on the rating scale and items follow in the next section.

6.2.3 Design and method

This survey was designed to elicit teacher beliefs and perceptions on the pedagogical and socio-cultural importance of idioms for L2 learners. Participants read a series of eight statements and rated based on a 4-point Likert scale to indicate the degree to which they agreed or disagreed, with 1 being *strongly disagree*, 2 *somewhat disagree*, 3, *somewhat agree*, and 4 *strongly agree*. Below each rating were empty spaces in which the rater could qualify their ratings. Although raters were encouraged to explain their ratings, it was not a requirement, and a few participants left some parts blank. The final question item was open-ended, which asked participants to describe the kind of context and methodology in which they had taught idioms in the past.

Two similar question items were purposefully reversed as a means to identify raters who were completing the section too hastily without carefully considering the question items. For example, question 2, "Learning idioms has no place in an EAP (English for Academic Purposes) setting", and question 6, "Idioms are important for understanding academic English" should elicit ratings at opposing ends of the scale. Any raters who either strongly agreed or disagreed to both of these could be flagged as potentially untrustworthy raters and call into question their previous ratings on other sections as well (fortunately, this did not turn out to be the case for any of the raters in this study). The scale and 8 items appearing in Study 5 can be found in Table 42 on the following page.

Table 42: Study 5 rating scale and statements

4-Point Likert Scale

1 strongly disagree 2 somewhat disagree 3 somewhat agree 4 strongly agree
 ←----->

1. Learning idioms is important for second language learners.
2. Learning idioms has no place in an EAP (English for Academic Purposes) setting.
3. Native speakers of English react positively when second language learners use idioms correctly.
4. Idioms are important for second language learners to understand the culture of the target language.
5. Idioms are important for understanding colloquial English in everyday life.
6. Idioms are important for understanding academic English.
7. Idioms, when used correctly, serve an important function of reducing social distance between a native speaker and a second language learner.
8. Commercial textbooks do a good job of integrating idioms into the materials.

6.2.4 Results and discussion

This last research question examines the uniformity (or lack thereof) of teacher perceptions on the pedagogical value of teaching and learning idioms among a sample of Japan-based EFL university instructors. Moreover, these perceptions are compared to what the literature says about idiom instruction to see how much overlap there is between perceptions about idiom instruction and findings in related pedagogically and socio-culturally focused idiom-related research (e.g. Andreou & Galantomos, 2009; Cooper, 1998; Drew & Holt, 1988; Koester, 2000; Lontas, 2002; McCarthy, 1998; Moon, 1992). If there is any mismatch between teacher beliefs and pedagogical implications from idiom-related studies, this could signal a disconnect between practice and research. Drawing attention to such a disconnect is important because awareness that such an issue might exist is necessary before any meaningful attempts can be made to address and bridge gaps between findings in the literature and classroom application.

6.2.4.1 Perceptions on idioms for L2 language use and comprehension

Excepting statement 8, the statements in Table 42 above broadly correspond to two different categories of perception: how important idioms are perceived for language use and comprehension and how important idioms are perceived for socio-cultural related factors. Before looking holistically for any patterns or contrasts that emerge between statements related to either of these two categories, however, it is first necessary to consider participant data at the individual item level. This will allow for a finer understanding of the within-item ratings and highlight any pertinent or insightful qualitative data to be mindful of. Such an approach should help to elucidate and inform the subsequent discussion at the categorical level. To this end, I will examine in turn data for each of the statements that can be said to correspond to the importance of idioms for language use and comprehension (statements 1, 2, 5, & 6). See Table 43 below for the means and standard deviations for each of the eight statements. For a complete listing of all teacher ratings and responses, refer to Appendix M: Teacher perception data.

Table 43: Descriptive statistics for teacher beliefs

(Range 1-4; cases where N is fewer than 15 indicate instances of raters not assigning a rating)

Statement	N	Mean	Std.
1. Learning idioms is important for second language learners.	15	2.7	.9
2. Learning idioms has no place in an EAP (English for Academic Purposes) setting.	14	2.2	1.1
3. Native speakers of English react positively when second language learners use idioms correctly.	15	2.7	.6
4. Idioms are important for second language learners to understand the culture of the target language.	15	2.4	.8
5. Idioms are important for understanding colloquial English in everyday life.	15	3.1	.8
6. Idioms are important for understanding academic English.	15	2.3	1.0
7. Idioms, when used correctly, serve an important function of reducing social distance between a native speaker and a second language learner.	15	2.4	.9
8. Commercial textbooks do a good job of integrating idioms into the materials.	11	2.1	.7

Before turning our attention to the details of each statement, a very brief analysis of some of the descriptive statistics in Table 43 will aid in interpreting much of the subsequent discussion of teacher responses to those statements. Firstly, given the small range of 3 (from 1 to 4) points, the standard deviation is surprisingly high for most statements, indicating a fairly substantial degree of disagreement among teachers. This is especially the case for statements 2 and 6, which focus on the appropriateness of idioms in an academic context. The least amount of disagreement between teachers appears to be for statement 3, for which the mean rating was 2.7, indicating teachers appeared not to feel very strongly one way or the other in regards to how native speakers react to non-native speakers' correct usage of idioms. Statement 5 generated the highest mean score (strongest overall agreement *to the statement*), which was in regards to the importance of idioms for understanding colloquial English in everyday life. This suggests that most teachers shared this view though the standard deviation (.8) here indicates a fair amount of dissent to this notion as well. Finally, and perhaps unsurprisingly, the lowest mean (strongest overall disagreement *to a statement*) was held for statement 8, indicating that teachers believed commercial textbooks to be ineffective at integrating idioms into the materials. The lower N size for this statement was due to the fact that several teachers had not used a commercial textbook in many years, and thus did not offer a rating.

6.2.4.1.1 The importance of idioms in general

The first statement, “**Learning idioms is important for second language learners**”, is the broadest in that it was meant to elicit raters' general perceptions about the importance of learning idioms. As a result of the scope of this statement, there were a wide array of responses, some of which referred to aspects of language competency while others identify cultural understanding, language awareness, and interest level as reasons for learning idioms. Also noteworthy is that while about half of the raters “somewhat agreed” with this statement (a rating of 3), there were also ratings at each end of the scale, indicating that there were teachers in Study 5 that disagreed strongly on the importance of idioms to second language learners.

In spite of these differences among raters, there were some recurring perceptions expressed. The relatively low frequency of idioms was cited among three raters as a concern relating to the teaching of idioms. These particular raters

assigned the lowest ratings or 1 or 2, which could indicate the importance they place on word frequency in L2 vocabulary learning. Yet it is not entirely clear if these raters were referencing frequency as it related to individual idioms or idioms as a class—a distinction that has considerable significance and will be addressed in more detail at the end of this chapter.

Other raters offered a more nuanced explanation on the importance of idioms by suggesting that idioms have little value in the earlier stages of acquiring a new language, but become more relevant as proficiency level increases. This seems to imply that, infrequent as many idioms can be, learners need not overly concern themselves with learning them until they have first established a solid foundation of high frequency core vocabulary. Such claims have some merit, as leading scholars in vocabulary acquisition have offered similar advice by recommending that explicit attention first be given to the 2,000 most frequent words and the words appearing in the academic word list (Nation, 2001). Alternatively, the raters might simply mean that as proficiency increases, the likelihood that learners will be exposed to authentic, non-simplified written and spoken input is greater, which would likely entail a greater need for idiomatic language. In either case, raters tended to agree that learning idioms is better suited to the later stages of language acquisition.

In light of this focus on frequency, it is important to clarify the teaching context of these teachers, as it might have influenced their perceptions. All 15 participants in Study 5 were mid or long-term residents living in Japan from anywhere between 4 and 24 years. As such, their classroom experience would appear to be exclusively in an EFL, not ESL context. Most students in these teachers' classes were taking required classes as part of their core curriculum and were thus likely to receive little to no exposure to the target language outside of the classroom, much less contact with native speakers. Given that idioms typically characterize native speaker discourse, students in these EFL contexts were unlikely to be exposed to idioms to the same degree as ESL students would. Moreover, the proficiency levels of students at the university in question tended to be fairly low evidenced by the fact that the great majority of students entering the English program had relatively low TOEFL scores. Therefore, any outside-of-class exposure to idioms through authentic materials would be inaccessible for most of these students. Some of the raters were perhaps mindful of this and based their ratings on their personal experiences.

Most important, however, is the need to identify and illuminate the sources of disagreement between the raters. It appears that a major point of disagreement between raters is related to extra-linguistic considerations or otherwise top-down views of language acquisition. Those raters that did not view idioms as important appeared to consider frequency or linguistic utility as the most important criteria, yet other raters who viewed idioms as important cited cultural understanding, inherent interest, and linguistic and metaphorical awareness. Regarding such awareness, raters 11 and 15 reasoned that “students must think beyond literal surface meanings” and “learning idioms gives students an opportunity to understand how language is used in unstructured ways”.

Such comments reflect a recognition that language is often used in highly abstract and metaphorical ways, and these raters seemed to think idioms could supply learners with instantiations of such uses of language, which will benefit the second language learner. If it is the case that idioms can provide learners with good models of how language is used in a less structured and more abstract manner, then it is reasonable to posit that learning idioms can contribute the developing learners’ conceptual fluency, which is an area of linguistic competence that is notably underdeveloped among second language learners (Danesi, 1995).

In sum, the responses from the raters on this statement diverge primarily between those that place more emphasis on perceived frequency and those that do not. It must be said, however, that some of the raters’ perceptions about the importance of frequency might arise out of their particular teaching context. In the introduction of this thesis, I noted how L2 idiomatic knowledge would probably be of most benefit to ESL as opposed to EFL learners. Broadly speaking, this is because ESL learners living in the culture where the target language is spoken are far more likely to encounter idioms in their daily lives. Given that all of the raters in Study 5 teach EFL to Japanese learners in a Japanese context, their perceptions on the importance of idioms to L2 learners might be viewed through the lens of their teaching contexts. Indeed, most of these raters had been living in Japan for many years (a range of 4 to 24), and their impressions of the general importance of idioms could very well differ from a similar sample of impressions coming from ESL instructors in other teaching contexts.

6.2.4.1.2 The importance of idioms in academia

We will now turn our attention to the data corresponding to statements 2 and 6, which are “**Learning idioms has no place in an EAP (English for Academic Purposes) setting**”, and “**Idioms are important for understanding academic English.**” These two statements are analyzed together because they are both related to the pedagogical value of idioms in a more formal register, namely, academic English. Though similar, these statements were intentionally framed inversely for methodological reasons, in order to check for rater consistency (e.g. if a rater assigned a high rating for statement 2, then we would expect a low rating for statement 6, and vice versa).

Here, once again, the ratings spanned both ends of the 4-point Likert scale, indicating sharp disagreement among some of the raters. Those raters that did not appear to value learning idioms for academic purposes cited both low frequency and inappropriate register as reasons. On the other hand, raters that did seem to advocate learning idioms for academic purposes contended that idioms could be commonplace in certain academic settings. Upon scrutinizing these responses more closely, it appears that the raters who were unimpressed by the need of idioms in an academic setting considered mainly academic writing while those raters who acknowledged a need for idioms in an academic setting cited the high frequency of idiomatic expressions and figurative language in academic lectures.

In other words, while most raters agreed that idiomatic expressions were discouraged and perhaps inappropriate in formal academic writing, some raters recognized the value of learning idioms for receptive purposes, especially for understanding lectures in an academic setting. There is, in fact, evidence that academic lecturers use a considerable amount of figurative language in their lecture discourse, and this can be problematic for second language learners (Littlemore, 2001). Though this seems to imply that idioms might be used quite often in academic discourse, it is important not to conflate metaphors with idioms. Idioms are a kind of figurative language, but metaphorical expressions are of course not by any means limited to metaphorical idioms.

6.2.4.1.3 *The importance of idioms in colloquial discourse*

Next we will address how important the raters perceive idioms to be for understanding English in more informal register. The data for the statement “**Idioms are important for understanding colloquial English in everyday life**” reflect the ratings and perceptions among raters regarding the utility of idioms for understanding casual, spoken English in everyday situations. Though no raters assigned a rating of 1 for this statement, the ratings were fairly evenly distributed across the remaining range of the scale, with four raters assigning a 2, six raters assigning a 3, and five raters assigning a 4. My initial interpretation of this finding was that the raters’ perceptions differed considerably for this statement, yet closer inspection of the justifications provided by the raters revealed that the disagreement found here might be due, in part, to the way in which the raters interpreted the statement itself.

I first analyzed those four raters that “somewhat disagreed” (rating of 2) with the statement. Both rater 1 and rater 2 appeared to cite the low frequency of individual idioms. Rater 1, for example stated, “I don’t think there is any idiom used often enough even to native speakers to justify teaching”. This is an important distinction because the raters that tended to assign higher ratings, such as rater 4, rater 14, and rater 15, appeared to attribute their agreement to the higher frequency of idioms as a class. In other words, some raters attached more importance to the word frequency at the individual item level, while other raters considered the frequency of idioms as a group. Interestingly, both of these viewpoints on the frequency of idioms are supported by corpus-driven research, which has shown that individual idioms tend to be low frequency (Grant, 2005; Grant, 2007; Liu, 2003), yet as a class, idioms occur quite often in many discourse registers (Simpson & Mendis, 2003) and literary genres (Boers & Lindstromberg, 2009; Herrera & White, 2010). This almost paradoxical phenomenon is perhaps one of the sources of disagreement among raters about the importance of idioms, and further implications of this will be addressed more fully at the end of this chapter.

In addition to frequency, raters also appeared to disagree due to differing perceptions about the mode of input and the interlocutors involved. Rater 10 stated, “Speakers can still get the meaning across without the use of idioms” to justify his rating of 2. This perception assumes that non-native speakers only need to

understand colloquial English in situations where they are directly involved in a conversation. Yet, as rater 15 mentioned, learners will frequently encounter idiomatic English while watching television. Obviously, the vast majority of television programs are intended for the native speaker population, and as such this mode of input will not provide non-native speakers with modified input, devoid of any idiomatic expressions. Moreover, rater 11 and rater 12 point out that native speakers often speak to each other using highly abstract and metaphorical expressions. Rater 11 referred to the lack of “literal statements” in discourse among native speakers, which leads to speech with “hidden meaning”. Furthermore, rater 12 went a step further by explaining that idioms “are the spice and color of language that native speakers will naturally gravitate to”.

These points are crucial because non-native speakers might not often be involved in a one-to-one conversation in which their interlocutor can modify their speech and negotiate meaning so that the non-native speaker can understand more clearly. In conversations in which multiple people are involved, it is not guaranteed, or perhaps even probable that native speakers will modify their speech to accommodate non-native speakers (as a personal anecdote, I have often reflected on my own comprehension difficulties when attempting to take part in an L2 conversation among multiple native speakers, in which there were fewer opportunities to negotiate meaning or listen to modified input).

6.2.4.2 Perceptions on idioms and socio-cultural factors

Thus far, I have analyzed rater responses related to perceptions about idioms for language use and comprehension. However, three of the remaining four statements are concerning how idioms are perceived for socio-cultural related factors. Statements 3 and 7 will be treated together, as both of these are connected to developing rapport and gaining membership status among discourse communities (for further discussion, please refer back to section 2.1.1.3 in Chapter 2). Statement 4, on the other hand, examines perceptions about idioms and how they inform non-native speakers about the target culture. We begin by examining the related data for statement 3, “**Native speakers of English react positively when second language learners use idioms correctly**” and then statement 7, “**Idioms, when used correctly, serve an important function of reducing social distance between a native speaker and a second language learner**”.

6.2.4.2.1 Idiom use and the native speaker

For statement 3, **“Native speakers of English react positively when second language learners use idioms correctly”**, nearly all of the raters, save one, assigned a rating of a 2 or 3, which indicates that the raters agreed to a stronger degree compared to the previously examined statements. Furthermore, given that only one rater assigned a rating from one of the extremes of the scale, it appears that raters did not seem to feel strongly either in agreement or disagreement for this particular statement. Three of the five raters that assigned a rating of 2 voiced concerns that idioms are often misused, which is somewhat surprising since the statement explicitly refers to cases in which idioms are used “correctly”. It is possible that these raters are simply unconvinced that learners will use idioms correctly and this has influenced their interpretation of and response to the statement. The raters that assigned a rating of 3 seemed to offer support for their agreement, but with caveats. These caveats tended to be related to context and register, suggesting that using idioms might sound “cute”, but “rarely natural”, and though it may help learners sound more fluent, this is only the case when idioms are used “sparingly and appropriately”. Concerning fluency, Rater 6 stated that correct idiom usage might lead native speakers to overestimate the proficiency of the non-native speakers. This is interesting because it highlights the notion that non-native speakers, by using idioms appropriately, might appear more fluent than they actually are.

6.2.4.2.2 Idiom use and social distance

The degree of divergence for statement 7, **“Idioms, when used correctly, serve an important function of reducing social distance between a native speaker and a second language learner”**, on the other hand, was somewhat more pronounced, with raters assigning ratings from the full range of the scale. In spite of this, responses from raters were generally similar in that multiple raters expressed concern about the misuse of idioms and how that might disrupt as opposed to facilitate communication. These concerns are not unwarranted, as it is well known that idioms can be difficult to use properly due to not only the issue of transparency and figurative meaning, but also restrictions related to register and syntactical fixedness as well. Moreover, rater responses were not limited to issues about language proficiency. Rater 2 pointed out that non-native speakers using idioms might draw attention to the fact that he or she is using an idiom and convey “an

unnecessary message – e.g. ‘I’m using an idiom now.’” This shows that these concerns about the productive use of idioms can extend beyond linguistic competence and also include pragmatics in discourse.

There were two raters, though, that offered a more indirect response to statements 3 and 7 by focusing on the extra-linguistic effect idioms can have at a more macro level of use. Rater 11, in response to statement 3 stated, “If an appropriate idiom is used, there is a lot of communicative value. It almost signals a sort of cultural solidarity as well”. Building upon this idea of cultural solidarity, rater 15 responded to statement 7 by saying, “The appropriateness of idioms demonstrates an affinity for the customs and habits of native speakers and can serve to reduce social distance”. These two raters have echoed what Moon (1992; 1998) has stated on how idioms reflect shared cultural values and knowledge, and such shared knowledge plays a role in building relationships (Planalp & Benson, 1992) and governing discourse (Clark, 1985). Furthermore, rater 14 responded to statement 3 by stating, “provided they are used correctly, idioms demonstrate not only a degree of confidence and competence, but also an enthusiasm for using English which native speakers often find appealing”.

Based on the overall responses for both statements 3 and 7, most raters appeared to remain skeptical to a degree about whether or not non-native speakers would in fact be able to use idioms correctly. The majority of raters that interpreted the statement as intended (i.e.—in cases where idioms are used correctly) did acknowledge that idioms would have some effect on reducing social distance between the native speakers and non-native speakers, with two of those raters citing extra-linguistic factors, such as shared cultural knowledge and enthusiasm for learning English as underlying reasons for contributing to this reduction in social distance. This issue of cultural knowledge brings us to the last statement I will analyze in the next section, which is related to idioms and cultural understanding.

6.2.4.2.3 Idioms and cultural understanding

The last statement, “**Idioms are important for second language learners to understand the culture of the target language**” was intended to measure the raters’ perceptions between idioms and culture. Though once again raters used the full range of the scales among their ratings, the responses appeared to converge more at the qualitative level. Many of the raters seemed to acknowledge a link

between idioms and culture, but were more dubious about idioms being necessary for understanding culture. Two raters surmised that idioms could provide insights about culture, but did not view idioms as a prerequisite for cultural understanding. Rater 1 and rater 7 further stated that slang might be more important than idioms for understanding culture, but did not provide any details about why they thought so. Rater 15 was the most specific in his response by pointing out particular areas of cultural knowledge idioms can convey on the macro level, such as with “degrees of deference to authority”, and on the micro level, such as with “appropriateness of behavior, social rituals, and taboos”.

On the whole, raters perceived that idioms could provide non-native speakers with cultural insights, but these insights were collectively viewed as being more peripheral than central to understanding the target culture. This perception is not an unreasonable one, as there is no evidence to suggest that idiomatic knowledge is a prerequisite to understand cultural knowledge. Yet, the crux of the issue is the relative importance idioms play in supplementing and enhancing cultural knowledge. This is a difficult question to answer because as rater 2 intimated, the word culture itself is abstract and vague, and as a result it can be difficult to pinpoint just what kind of and to what depth cultural knowledge can be relayed through learning idioms. Aside from rater 15, no other raters cited specific areas of cultural knowledge that can be transmitted through idioms, but more than one rater specifically urged the need to study idioms in context for cultural learning to take place. In sum, the majority of raters readily recognized the link between idioms and culture, but was less explicit about how important that link was or what kind of cultural knowledge could possibly spread through the study of idioms.

6.2.4.3 Conclusion

In Study 5, I have examined the degree to which teacher perceptions on the importance of idioms for second language learners converge. In the first half of this chapter, I analyzed the statements corresponding to beliefs about idioms and language use and comprehension. The overarching results from this analysis showed that the raters largely disagreed on the importance of idioms. The source of this disagreement appears to be partly due to the way raters approached the statements. Those raters that approached the statements from a more bottom-up perspective largely dismissed idioms as being unimportant on the grounds of the low

frequency of individual idioms. On the other hand, raters that adopted a more top-down perspective attached much more importance to how idioms could play a role in developing learners' awareness and understanding about the abstract and non-literal nature of natural discourse (i.e. via conceptual fluency and metaphorical awareness). Raters also disagreed based on statements related to language use due to focusing on either productive or receptive knowledge. For example, raters who disagreed that idioms were important in academic contexts cited the inappropriateness of using idioms in academic writing, while raters who perceived otherwise pointed out that academic lectures were often laden with figurative language.

In the second half of this chapter, which concentrated on idioms and socio-cultural factors, raters were again sharply divided on most of the statements. Interestingly, the same raters that appeared to apply a bottom-up or top-down approach for rating statements about idioms and language use tended to perceive the importance of idioms as they related to socio-cultural factors in the same fashion. Those raters adopting a bottom-up standpoint largely focused on individual linguistic transactions and how particular instances of misuse could disrupt the flow of conversation. This contrasted sharply with the more top-down raters who perceived the value in learners using idioms to reduce social distance and elicit positive reactions from native speakers. These raters focused on the positive effects general idiom use could have as an indication of both cultural solidarity and enthusiasm for the target language.

Based on the data in Study 5, it is clear that at least among this sample of EFL university teachers in Japan, the raters' perceptions about the pedagogical value of idioms do not converge to any meaningful measure. Yet after taking into account the qualitative data collected here, there appear to be a number of possible explanations to account for this finding. One possible reason could be linked to the relative emphasis raters placed on idioms as individual items as opposed to idiom use in general. Given the patterns uncovered between the top-down and bottom-up raters, is it not unlikely that these two types of raters were influenced along the lines of specific versus general, and that had an impact on their subsequent rating and rationale.

Another possible contributing factor could have been the raters' notions about what constituted an idiom. It is likely that a priming effect from the semantic transparency rating task could have affected the raters to varying degrees (as a

reminder to the reader, the participants who rated the semantic transparency of the 222 initial idioms for Study 1 and Study 2 were the same participants in Study 5). If the raters were considering the 222 idioms they had just rated, this might have impacted what they interpreted “idioms” to comprise. Further complicating this issue is that idioms as a class are difficult to define (see Moon 1998 for further discussion) and some raters might distinguish between metaphorical idioms, phraseological collocations, and proverbs (to name a few), while others might not. Moreover, the lines between idiomatic and non-idiomatic metaphorical language might be defined to greater or lesser degrees for different raters. In fact, the 222 idioms employed in the Study 1 and Study 2 were largely metaphorical idioms, yet as Moon (1998) notes, classifications for idioms often overlap and it can be challenging, from a typological perspective, to identify and strictly delimit one type of idiom. Given the complicated features of idioms specifically, and figurative expressions more generally, it is almost certain that different raters had dissimilar, however slight, conceptions about what an idiom constituted, which could have influenced their ratings and responses.

In summary, the evidence gathered in Study 5 could be an indication that idioms and their pedagogical value to second language learners are perceived in very different ways by second language educators. The data showed that bottom-up and top-down raters tended to place emphasis on distinct aspects of language learning, which likely influenced their ratings. The problem of priming and terminology described above might have further confounded the results, which might account for some of the divergence of agreement. Overall, however, the stark contrast in agreement among raters both at the quantitative and qualitative level suggests that second language teachers hold very different views on the usefulness of idioms to second language learners.

CHAPTER SEVEN: CONCLUSION

The purpose of this thesis has been to seek answers to questions relating to the learning and teaching of idioms for second language learners. Some of these questions (Study 1 and Study 2) were more theoretically oriented, with a focus on furthering the current understanding of semantic transparency and idioms. The more pedagogically centered studies (Study 3 and Study 4), were concerned with testing different types of picture conditions to uncover which fostered the most efficient way of correctly interpreting and recalling the meaning of newly met English idioms. Finally, the last study (Study 5) attempted to expose any gaps between research and practice by examining teacher beliefs about the importance of idioms for second language learners.

7.1 Summary of findings

Before discussing the overarching implications of the answers to the research questions in this thesis, I would like to briefly recap the sum of findings uncovered throughout these five studies. In this way, the reader can have a concise reference to the collective findings for each study before proceeding to consider the broader significance they have in informing Second Language Acquisition. Under each study's findings beginning on the following page, I have listed the findings in what I consider to be descending order of importance.

7.1.1 Study 1 findings

In Study 1, I examined to what degree semantic transparency ratings converged among native speaker English teachers. The data was collected by having 15 native English speaker teachers rate the semantic transparency of 222 English idioms using a 6-point Likert scale and justify their rating for a smaller subsample of 30 idioms. The following are the findings revealed from the data in the ratings:

- Transparency rater participants overall exhibited a high degree of agreement in their semantic transparency ratings
- Transparency rater participants often interpreted the relationship between the literal parts and figurative meaning in a highly similar way
- Native speakers with surprising frequency appear to hold differing perceptions about the connotations and nuances the figurative meaning of some idioms convey
- There were no idioms for which the highest or lowest rating was assigned by all 15 transparency rater participants
- Idioms perceived as being mid transparency tended to generate greater disagreement among raters compared to those perceived as being high and low transparency idioms

7.1.2 Study 2 findings

Study 2 attempted to build upon Study 1 by examining what factors might lead raters to rate idioms as being higher or lower semantic transparency. The findings that follow were derived from the triangulated analyses of quantitative and qualitative data of semantic transparency ratings and idiom dictionaries:

- Idioms that appear to be motivated by encyclopedic world knowledge on the whole elicit higher semantic transparency ratings compared to idioms whose motivational sources appear to be more culturally or historically delimited
- Among the sample of idiom dictionaries surveyed, etymological notes for the low transparency idioms were provided at a considerably higher rate compared to etymological notes provided for the high transparency idioms
- Among the sample of idiom dictionaries surveyed, disputed etymological origins of idioms occurred almost exclusively among the low transparency idioms
- Idiom dictionaries vary substantially in terms of the number of entries, selection of idioms, denotation of idioms, and the frequency and detail of etymological notes
- Categorizing idioms according to their motivational sources can be problematic as it is at times highly subjective

7.1.3 Study 3 findings

Study 3 examined how the different picture conditions and semantic transparency levels facilitated meaning recall of idioms in a 3X3 Latin square design. It was the largest of the five studies in that its design rested on the involvement of multiple sources of data and treatment instruments, including treatment pictures, the PPT treatment slides, the picture rating data, the semantic transparency rating data, and of course the actual meaning recall data produced by the student participants in the treatment. The study also involved far more participants than any of the other studies in this thesis, with dozens of student participants, 15 native English speaker raters, and a bilingual translator. Due to the relative size of this study, the time and effort that would be required to replicate such a research design, the pedagogical focus involved, and the wealth of data it produced, I consider Study 3 to be the most important study among the five studies in this thesis. The following are the findings from Study 3:

- Figurative pictorial elements generally aided learners in remembering the figurative meaning of high transparency idioms
- Pictures in both conditions appeared to mislead learners in a surprising number of cases and in unexpected ways
- At the individual item level, different picture conditions in many cases appeared to have a tremendous impact on recall rates on the delayed posttest
- In absolute terms the *literal + figurative* picture condition outperformed the *literal only* picture condition, and the *literal only* picture condition outperformed the *no picture* condition at all levels of semantic transparency
- Although as a group, the low transparency idioms were recalled less than the mid and high transparency idioms, some individual low transparency idioms were among the most frequently recalled idioms in the study

7.1.4 Study 4 findings

Although Study 4 was much smaller in scale than Study 3, it was an important pedagogical complement as it examined the degree to which the picture conditions aided participants in correctly interpreting the meaning of newly met idioms. The data collected from Study 4 offered richer qualitative data through the think-aloud protocol employed in the study, and some of the qualitative findings from Study 4 dovetailed nicely with the findings in Study 3. These findings are as follows:

- Figurative pictorial elements generally aided learners in correctly interpreting the meaning of newly met idioms, particularly for low transparency idioms
- Pictures in both conditions appeared to mislead learners in a surprising number of cases and in unexpected ways (as was the case in Study 3)
- Participants appeared to often draw from their encyclopedic world knowledge when interpreting the relationship between the literal parts and the figurative meaning of idioms

7.1.5 Study 5 findings

Study 5 sought to measure the extent to which native speaker teachers of English agree on the importance of idioms for second language learners. This data was measured by using both a 4-point Likert scale and qualitative support provided by the teacher raters. The findings derived from this data are presented below:

- Native speaker teacher participants sharply disagreed on the importance of idioms for second language learners
- In general, native speaker teacher participants who offered a more top-down perspective on language learning tended to view idioms as important for second language learners, while those who provided bottom-up explanations did not
- Disagreements among the native speaker teacher participants might be in part related to their teaching context, pedagogical background, or conception of what constitutes an idiom

The 21 findings outlined in this section represent the sum of noteworthy findings uncovered in this thesis. For the remainder of the conclusion, I will focus the discussion on how these findings more broadly relate to past and current research and contribute to the literature in Cognitive Linguistics and Second Language Acquisition. This will entail discussing the theoretical, pedagogical, and methodological implications, which will then be followed by commentary on the limitations of the studies in this thesis. Finally, I will offer suggestions for future research and provide a final comment to sum up the current state of affairs for idioms and pedagogy and what it means for the future direction of the field.

7.2 Theoretical implications

The motivation for this thesis was initially spurred by the assumption that theories in Cognitive Linguistics can provide language educators with the pedagogical tools to foster more efficient language learning. Both Dual Coding Theory (Paivio, 1986) and Levels of Processing Theory (Cermak & Craik, 1979) provided a tenable framework within which to situate the methodology that I chose for my investigations into the impact of figurative pictures on idiom learning. These two theories already enjoy considerable support from numerous studies spanning many years of research, and the findings relating to figurative pictures and language learning in this thesis add to this existing body of support.

7.2.1 Implications related to Dual Coding Theory

Many SLA studies to date have already shown that pictures facilitate recall of meaning (e.g. Boers et al., 2008, 2009; Chun & Plass, 1996; Farley et al., 2012; Jones, 2004; Jones & Plass, 2002; Liu, 2004; Shen, 2010; Szczepaniak & Lew, 2011), which was also the case in Study 3. However, what I consider to be even more convincing evidence for the relationship between visual information, the mental lexicon, and lexical retrieval can be found in the occasional incorrect responses among participants under the picture conditions. It was sometimes the case that incorrect responses provided powerful qualitative evidence that the participant was able to summon up and utilize (albeit erroneously in these cases) the visual information supplied to them during the treatment. This was true even in a surprising number of cases on the delayed posttest, which suggests that pictorial information can be stored and accessed for quite some time after initial exposure to the target

item and accompanying picture. This kind of evidence is useful because it offers a more direct and descriptive window into the mind of the language learner than does simply examining differences in recall rates. It also supports and reinforces the notion, posited under Dual Coding Theory, that there is a visual referent system able to store and retrieve visual information, which in turn aids in accessing the meaning of words.

This evidence could also potentially contribute to and expand our current understanding of the nature of the visual information that can be stored and retrieved in the mental lexicon. Dual Coding Theory assumes that visual information in the imagery system of the brain is comprised principally of concrete lexica. Yet one study (Farley et al., 2012) found that second language learners appear to be able to store and retrieve pictures related to abstract and metaphorical lexica as well. Indeed, Study 3 in this thesis uncovered a similar finding since the metaphorical representations and metonymical associations embedded within the pictures in the *literal + figurative* picture group appeared to elicit better recall, in absolute terms, than did either pictures with literal only elements or no pictures at all. These findings point to a visual referent system in the mental lexicon that is possibly more dynamic than originally assumed, and imply that pictorial elements might actually be able to form part of a learner's visual referent system.

7.2.2 Implications related to Levels of Processing Theory

Levels of Processing Theory, much like Dual Coding Theory, was one of the principal theoretical frameworks underpinning the rationale for multiple studies in this thesis. This framework essentially states that the degree and durability of learning that takes place is heavily influenced by how deeply the related information is processed. Stated in terms of the context of this thesis, the more deeply second language learners process the input, the more likely they are to learn and remember the input. If I extrapolate from this that the coupling of visual and verbal information together naturally stimulate deeper processing, then the finding that any picture in nearly all cases elicited better recall rates than no picture at all are consistent with what Levels of Processing Theory would predict. This is because, all else being equal, the cognitive resources that second language learners would have to shore up in order to understand the relationship between the pictures and figurative meaning would be greater than what would be required through verbal input alone, thereby promoting deeper processing.

In a much more fine-grained vein, however, I would like to briefly touch on how levels of processing relates to the findings between the two picture conditions: *literal + figurative* and *literal only*. Of interest is how Levels of Processing Theory can account for the results at both the transparency group and individual item level. At the transparency group level, the results showed that the *literal + figurative* picture condition only appeared to have an impact on meaning recall at the high transparency level. Yet at the individual item level, recall rates varied wildly in many cases. It could be that when the figurative meaning is clear enough already (i.e. higher transparency idioms), there is a sufficiently strong visual-verbal correspondence for deep processing to occur and allow learners to capitalize on the benefit of dually coded input. If learners, on the other hand, cannot make sense of the relationship between the figurative meaning and provided picture, then the opportunity to engage in deep processing might be forfeited. In sum, levels of processing can account for findings in this thesis both from a macro and micro analytical perspective.

7.2.3 Implications related to semantic transparency

A much narrower and contentious (and therefore important for this thesis to address) theoretical issue is related to semantic transparency. There has been no small degree of controversy on the nature of semantic transparency and whether or not L1 native speakers share similar intuitions about the metaphors present in and underlying idioms. Previous studies (Nunberg et al, 1994; Keysar and Bly 1995) have suggested that semantic transparency is primarily retrospective, meaning that native speakers tend to retroactively make sense of how an idiom's literal parts correspond to the figurative meaning. The implication these scholars put forth is that semantic transparency is largely subjective and arbitrary. Other scholars, though, have contended that conceptual metaphors underlie many idioms and perhaps because of this, native speakers tend to decompose idioms similarly (Gibbs et al., 1997; Skoufaki, 2009).

The data from the semantic transparency raters strongly support the Cognitive Linguistic view of semantic transparency, which is that semantic transparency is not entirely arbitrary. The findings in this thesis, in fact, suggest quite strongly that not only do raters agree, but also they tend to decompose idioms in highly similar ways. Furthermore, the cumulative data from Study 1, Study 2, and

Study 4 all suggest that encyclopedic world knowledge plays a significant role in shaping the way in which both native and non-native speakers of English decompose English idioms. It is important to draw attention to the potential influence of encyclopedic knowledge in shaping perceptions about the meaning of idioms, because this does not appear to be adequately represented in the literature aside from a small number of scholars (see Vega Moreno, 2007) despite the fact that such a finding could have important practical applications in the classroom (discussed further in 7.3).

7.3 Pedagogical implications

Every study in this thesis has, to varying degrees, been concerned with informing the discussion in SLA for the ultimate purpose of promoting sound pedagogical practices in the language classroom. In this section, I will relate how the findings in this thesis contribute to the literature on L2 learning and pedagogy. This discussion will be organized by focusing on the role of pictures and transparency as they relate to the learning of idioms. Where appropriate, I will also comment on how the findings inform vocabulary acquisition more broadly, as well.

7.3.1 Pictures, idioms, and pedagogy

The literature in SLA has found that pictures tend to aid learners recall the meaning of words in the L2 (see section 2.6.3). Though the data overall in this thesis support this notion, this support is by no means free of caveats. The most important caveat on which to caution language educators is related to the power of pictures to mislead learners in often subtle and unpredictable ways. In a surprising number of cases, incorrect responses from participants in Study 3 and Study 4 provide a compelling case for just how strongly pictures can influence and shape perceptions about the meaning of figurative expressions. In many cases, responses from participants suggested that they often over-specified the meaning of idioms for both recalling the meaning of previously learned idioms, and interpreting the meaning of newly met idioms. In other cases, participant responses were simply incorrect, a fact which may have been due to some aspect of the picture influencing their interpretation (for participants in the think-aloud treatment) or recollection (for participants in the meaning recall treatment). It is probable that the potential for pictures to mislead in the ways described in this

section might be in part due to the relative complexity of the pictures themselves—more complicated pictures tended to have more elements that could be misconstrued, misinterpreted, or overly focused on by learners. In particular, metonymical associations that were expressed pictorially seemed to have constrained the range of semantic meaning for some of the participants, leading to over-specified responses (though such constraint was beneficial in some cases). Furthermore, seemingly unimportant pictorial details often had unintended consequences in shaping the participants' understanding of the meaning, such as erroneously attributing agency or connotations to the figurative meaning of some idioms.

In spite of the caveats mentioned above, the overall effect of pictures for learning idioms should be reiterated and emphasized: Pictures tend to be effective for promoting the correct interpretation of newly met idioms and enhancing meaning recall for previously met idioms. With regards to correctly interpreting newly met idioms, the data showed that participants capitalized on the figurative elements in pictures leading them to correctly interpret the meaning of those idioms considerably more so than in cases of pictures consisting of only literal elements or no picture at all. Concerning meaning recall, the results are less clearly defined. Meaning recall of idioms associated with either picture condition elicited better recall rates than no picture at all in almost every case. However, the recall rates between the two picture conditions were much more ambiguous. Though the figurative elements appeared to enhance recall for the high transparency grouping of idioms, no such finding was found for the mid or low transparency grouping. This was because the recall rates between individual idioms varied considerably according to the picture condition in which they were met. Closer inspection of individual paraphrases showed that in many cases the figurative elements pictorially embedded in some idioms aided learners in recalling the meaning, but in others it led to partially correct or incorrect responses as a result of over-specifying the figurative meaning. Essentially, any cross-transparency overall positive effects for *literal + figurative* picture condition over the *literal only* picture condition were, in a sense, counterbalanced and neutralized by the accompanying negative effects brought on by figurative elements in some idioms in the study.

Ultimately, this should be taken to mean that pictures with figurative elements have pedagogical merit, but only when applied cautiously and carefully,

with particular attention to certain features of idioms. Idioms, as they contain multiple word parts and meanings, are inherently complex, and therefore, more often than not, require more pictorial detail in their depiction than do single word vocabulary. Overall, the idioms that seem to be the best candidates for pictures with figurative elements are those that 1) are composed of literal word parts that are concrete 2) have a figurative meaning that is reasonably easy to represent pictorially, and 3) have a figurative meaning that is not overly complex. Finally, it is worth mentioning that anthropomorphism and metonymy were very useful for pictorially expressing the figurative meaning of idioms in this study. Where metonymy is concerned, however, it might be best to supply learners with multiple and varying examples of a given idiom used in different situations (not only contextual differences, but differences related to the range of semantic meaning) so that the meaning is not construed in an overly constricted way.

7.3.2 Transparency, idioms, and pedagogy

Semantic transparency has long been viewed as an important consideration for language educators when selecting among potential idioms to teach to their students (e.g. Irujo, 1986a; Cooper, 1998). Based on the results in this thesis, however, I have come to disagree with the notion that semantic transparency should be an important criterion for informed idiom selection. While it is true that lower transparency idioms tend to be more difficult to interpret, they are not necessarily more difficult to learn. Overall, although the meaning recall rates were indeed highest for the high transparency grouping and lowest for the low transparency grouping, the raw difference in recall was not so great. Moreover, in some cases, idioms from the low transparency grouping were among the most recalled idioms on the delayed posttest. I suspect this is because semantic transparency is just one of many factors influencing how difficult it can be to learn a given idiom. Perhaps another factor, the complexity of the figurative meaning of idioms, plays a more significant role in affecting the relative difficulty L2 learners face—yet this aspect of idiom learning is usually not addressed in the literature. In sum, low transparency idioms can be suitable candidates for L2 learners provided that language educators supply the figurative meaning, pictorially or otherwise, to their students.

7.4 Methodological implications

The large majority of idiom-related studies in SLA that examine learning durability measure retention of the meaning of idioms through meaning recognition tasks. Such tasks can take many forms, but perhaps none are as ubiquitous as the multiple-choice format. Measuring meaning recognition through such a format is in many cases preferable, as it eliminates or at least reduces the amount of subjectivity by having only one indisputable answer. The disadvantage of measuring learning in this way, however, is that it does not lend itself well to producing data that have a qualitative aspect to it. In other words, it can be effective for showing what participants know, but not so much for why they know it (or perhaps more pertinent—why they don't know it). This is because a meaning recognition task, by its very name, only requires recognition and obviates the need for qualitative responses that sometimes provide glimpses, however slight, into the minds of the learners.

In response to this realization about this disadvantage of using meaning recognition, I instead decided on meaning recall as a means to measure how well participants could retain the meaning of the idioms in Study 3. Not only does meaning recall represent a stronger degree of learning compared to meaning recognition (Laufer & Goldstein, 2004), but in the context of this research design it also provided insightful qualitative data that buttressed the quantitative findings. In Study 3, participants often produced qualitatively rich responses in their attempts to reproduce the L1 paraphrases for the idioms they were exposed to in the treatment. In particular, and not without a touch of irony, it was the incorrect or partially correct participant paraphrases that yielded the strongest evidence in this thesis regarding the ways in which pictures influence participants' understanding of idioms. The prominence of this particular kind of evidence in informing the discussion in this thesis is a testament to the unique utility of meaning recall in L2 research design. As aforementioned, meaning recall appears to be underrepresented as a data collection tool in L2 studies involving idioms and durable learning. The results in this thesis, however, suggest that meaning recall, if carefully planned, can allow researchers alternative, and sometimes and in some ways optimal data collection methods for some research designs, and therefore should be employed in future studies looking at L2 idiom acquisition.

7.5 Limitations and suggestions for future research

Upon considering the methodologies and implementation of the five studies in this thesis, I have identified a number of limitations, which might help direct future research involving the L2 learning of idioms.

Firstly, one significant limitation of Study 3 was the subjectivity of the raters that categorized participant paraphrases. Among the thousands of participant paraphrases that were categorized, there were a few hundred for which at least one of the three raters disagreed. In the post-rating discussion intended to resolve these disagreements, there were some cases where the native speaker raters held differing views about the nuances and connotations of some idioms. The impact this had on categorization was that on more than a few occasions it was difficult to resolve whether a particular paraphrase was “correct” or “partially correct”. Though a consensus was eventually achieved for all the cases, some raters still maintained reservations about the final decision in a few instances. As the categorization of paraphrases was directly related to the quantitative analysis between the different transparency levels and picture conditions, this might have confounded the results in the data. Since native speakers of English appear to sometimes have different understandings of English idioms, it might be beneficial, in future studies, to either avoid idioms with overly complex figurative meanings or vet them first by having an open discussion with raters prior to finalizing the final pool of idioms to appear in the treatment.

Secondly, another limitation is related to the way in which the semantic transparency data was collected. Upon reviewing the methodologies of past studies and reflecting on the specific context and purpose of this thesis, it became apparent to me that there were a few options available. The semantic transparency raters could be instructed to assign ratings by 1) relying on whatever background knowledge they had of the literal parts of the idioms 2) ignoring this background knowledge, or 3) imagining they were second language learners meeting the idiom for the first time. It is clear, however, that each of the three options above could potentially introduce its own set of confounding variables. Ultimately, I concluded that for the particular research design in this thesis, the option allowing raters to utilize their background knowledge seemed to be the most methodologically sound approach. Yet, it is possible that this method could have inflated the semantic

transparency ratings for particular idioms since the background knowledge of some raters might have made the relationship between the literal parts and the figurative meaning clearer. This was most evident for the few idioms that had proper nouns as literal parts, such as *Achilles* in *an Achilles heel*, but it must be said that it might have impacted other idioms as well. In sum, researchers that carry out studies involving semantic transparency would benefit from careful consideration and deliberation about the way in which semantic transparency is gathered from raters, since it is highly probable that it will influence the semantic transparency ratings.

Finally, it is important to point out that the picture creation process was, in a sense, a highly subjective endeavor that was borne out of the collaboration between myself, some of my colleagues, and the illustrator in charge of drawing the pictures. Although picture raters vetted all of the pictures that ended up as part of the treatment, it was inevitable that some pictures in the *literal + figurative* treatment group were considered to represent better the figurative meaning than others. It therefore, cannot be discounted that some of the surprising variation between individual idiom recall rates is in part attributable to varying picture quality. Since creating pictures, as an art form, is an inexact and subjective process, it is difficult to conceive of a means to tightly control for this kind of variation other than subjecting the pictures to independent raters, as was done in this thesis. However, any future studies that examine the effect these kinds of pictures have on recall might consider adopting a stricter set of criteria for selecting idioms, including, for example, idioms which lend themselves especially well to figurative-visual representation.

7.6 Final comment

As I mentioned at the beginning of this last chapter, my primary interest, as both a researcher and a language teacher, has been to test, expose, and eventually implement teaching practices that will offer learners the most efficient pathway to language proficiency. Vocabulary learning is undeniably one of the most difficult aspects of language mastery, and vocabulary scholars have shown that vocabulary learning is slow, incremental, never guaranteed, yet almost always subject to attrition. This is especially true of idioms, as they have been shown to be difficult to understand and challenging to use appropriately (see Cornell, 1999 for an overview of these issues).

In the opening chapter of this thesis, I made a case for the importance of idioms by showing how receptive and productive knowledge of idioms can have an impact on social relationships and linguistic competence. This is not to say that idioms should be taught at all levels, or even at any level. It simply means that a working knowledge of idioms can be indispensable to a particular kind of L2 learner. Those L2 learners at the more advanced level of proficiency who exhibit a desire to work or study in a country where the target language is spoken stand to gain the most by learning idioms. Yet, even for L2 learners who do not leave their home country, knowledge of idioms in the L2 can be beneficial. For instance, it is not unreasonable to think that idioms can serve as useful instantiations of the unstructured and metaphorical ways in which language is used—which can in turn contribute to the development of L2 learners' conceptual fluency. Finally, affective factors should not be ignored, and research shows that students generally enjoy learning about idioms (Liontas, 2002). As one teacher rater in Study 5 noted, “idioms are the color and spice of language”, and it would be a disservice to many second language learners for language educators to dismiss an area of language that is inextricably linked with history, culture, and metaphor.

REFERENCES

- Adkins, P. G. (1968). Teaching idioms and figures of speech to non-native speakers of English. *The Modern Language Journal*, 52(3), 148-52.
- Altarriba, J., & Bauer, L. M. (2004). The distinctiveness of emotion concepts: A comparison between emotion, abstract, and concrete words. *American Journal of Psychology*, 117(3), 389-410.
- Altarriba, J., & Knickerbocker, H. (2011). Acquiring second language vocabulary through the use of images and words. In P. Trofimovich & K. McDonough (Eds.), *Applying priming methods to L2 learning, teaching, and research* (pp. 21-48). Amsterdam, Netherlands: John Benjamins.
- Arthur, B., Weiner, R., Culver, M., Lee, Y. J., & Thomas, D. (1980). The register of impersonal discourse to foreigners: Verbal adjustments to foreign accent. In D. Larsen-Freeman (Ed.), *Discourse analysis in second language acquisition* (pp. 111-124). Rowley, MA: Newbury House.
- Barcroft, J. (2002). Semantic and structural elaboration in L2 lexical acquisition. *Language Learning*, 52(2), 323-363.
- Barcroft, J. (2003). Effects of questions about word meaning during L2 Spanish lexical learning. *The Modern Language Learning Journal*, 87(4), 546-561.
- Barcroft, J., Sommers, M. S., & Sunderman, G. (2011). Some costs of fooling Mother Nature: A priming study on the keyword method and quality of developing L2 representations. In P. Trofimovich & K. McDonough (Eds.), *Applying priming methods to L2 learning, teaching, and research* (pp. 49-72). Amsterdam, Netherlands: John Benjamins.
- Barcroft, J., & Sunderman, G. (2008). Learning new words for objects and nonobjects. *The Mental Lexicon*, 3(3), 325-48.
- Bell, R. A., Buerkel-Rothfuss, N. L., & Gore, K. E. (1987). Did you bring the yarmulke for the cabbage patch kid? The idiomatic communication of young lovers. *Human Communication Research*, 14(1), 47-67.
- Bell, R. A., & Healey, J. G. (1992). Idiomatic communication and interpersonal solidarity in friends' relational cultures. *Human Communication Research*, 18(3), 307-35.

- Biber, D. and Conrad, S. (2001). Quantitative corpus-based research: Much more than bean counting. *TESOL Quarterly*, 35(2), 331-36.
- Boers, F. (2000). Metaphor awareness and vocabulary retention. *Applied Linguistics*, 21(4), 553-71.
- Boers, F. (2001). Remembering figurative idioms by hypothesizing about their origins. *Prospect*, 16(3), 35-43.
- Boers, F. (2013). Cognitive linguistic approaches to teaching vocabulary: Assessment and integration. *Language Teaching*, 46(2), 208-24.
- Boers, F. & Demecheleer, M. (2001). Measuring the impact of cross-cultural differences on learners' comprehension of imageable idioms. *ELT Journal* 55(3), 255-262.
- Boers, F., Demecheleer, M., & Eyckmans, J. (2004). Etymological elaboration as a strategy for learning idioms. In P. Bogaards & B. Laufer (Eds.), *Vocabulary in a second language: Selection, acquisition, and testing* (pp. 53-78). Amsterdam, Netherlands: John Benjamins.
- Boers, F., Eyckmans, J., & Stengers, H. (2007). Presenting figurative idioms with a touch of etymology: More than mere mnemonics? *Language Teaching Research*, 11(1), 43-62.
- Boers, F. & Lindstromberg, S. (2008). How cognitive linguistics can foster effective vocabulary teaching. In F. Boers & S. Lindstromberg (Eds.), *Cognitive linguistic approaches to teaching vocabulary and phraseology* (pp. 189-216). Berlin, Germany: Mouton de Gruyter.
- Boers, F., Lindstromberg, S., & Eyckmans, J. (2014). Is alliteration mnemonic without awareness-raising? *Language Awareness*, 23(4), 291-303.
- Boers, F., Lindstromberg, S., Littlemore, J., Stengers, H., & Eyckmans, J., (2008). Variables in the mnemonic effectiveness of pictorial elucidation. In F. Boers & S. Lindstromberg (Eds.), *Cognitive linguistic approaches to teaching vocabulary and phraseology* (pp. 189-216). Berlin, Germany: Mouton de Gruyter.
- Boers, F., & Lindstromberg, S. (2009). *Optimizing a lexical approach to instructed second language acquisition*. Basingstoke, UK: Palgrave Macmillan.

- Boers, F., Piriz, A. M. P., Stengers, H., & Eyckmans, J. (2009). Does pictorial elucidation foster recollection of idioms? *Language Teaching Research*, 13(4), 367-82.
- Bolinger, D. (1975). *Aspects of language* (2nd ed.). New York, NY: Harcourt Brace Jovanovich.
- Borg, M. (2001). Teachers' beliefs. *ELT Journal*, 55(2), 186-8.
- Borg, S. (1998). Teachers' pedagogical systems and grammar teaching: A qualitative study. *TESOL Quarterly*, 32(1), 9-38.
- Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching*, 36(2), 81-109.
- Bortfeld, H. (2002). What native and non-native speakers' images for idioms tell us about figurative language. In R. Heredia & J. Altarriba (Eds.), *Advances in psychology: Bilingual sentence processing* (pp. 275-295). Amsterdam, Netherlands: Elsevier Press.
- Breen, M. P., Hird, B., Milton, M., Oliver, R., & Thwaite, A. (2001). Making sense of language teaching: Teachers' principles and classroom practices. *Applied Linguistics*, 22(4), 470-501.
- Bruess, C. J. S., & Pearson, J. C. (1997). Interpersonal rituals in marriage and adult friendship. *Communications Monographs*, 64(1), 25-46.
- Burns, A. (1992). Teacher beliefs and their influence on classroom practice. *Prospect*, 7(3), 56-66.
- Carrol, G., & Conklin, K. (2014a). Eye-tracking multi-word units: Some methodological questions. *Journal of Eye Movement Research*, 7(5), 1-11.
- Carrol, G., & Conklin, K. (2014b). Getting your wires crossed: Evidence for fast processing of L1 idioms in an L2. *Bilingualism: Language and Cognition*, 17(4), 784-97.
- Cermak, L. S., & Craik, F. I. M. (1979). *Levels of processing in human memory*. Hillsdale, NJ: Lawrence Erlbaum.
- Chun, D. M., & Plass, J. L. (1996). Effects of multimedia annotations on vocabulary acquisition. *The Modern Language Journal*, 80(2), 183-98.

- Clark, H. H. (1985). Language use and language users. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (Vol. 2, pp. 179-231). New York, NY: Random House.
- Cooper, T. C. (1998). Teaching idioms. *Foreign Language Annals*, 31(2), 255-66.
- Cornell, A. (1999). Idioms: An approach to identifying major pitfalls for learners. *International Review of Applied Linguistics*, 37, 1-22.
- Costa, A., Santesteban, M., & Cano, A. (2005). On the facilitatory effects of cognate words in bilingual speech production. *Brain and Language*, 94(1), 94-103.
- Cowie, A. P., Mackin, R. & McCaig, I.R. (1993). *Oxford Dictionary of English Idioms*. Oxford, UK: Oxford University Press.
- Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 11(6), 671-84.
- Craik, F. I. M., & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology*, 104(3), 268-94.
- Crossley, S., Salsbury, T., & McNamara, D. (2010). The development of polysemy and frequency use in English second language speakers. *Language Learning*, 60(3), 573-605.
- Danesi, M. (1995). Learning and teaching languages: The role of “conceptual fluency”. *International Journal of Applied Linguistics*, 5(1), 3-20.
- de Groot, A. M. B. (1992). Determinants of word translation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18(5), 1001-18.
- de Groot, A. M. B., Dannenburg, L., & Van Hell, J. G. (1994). Forward and backward word translations by bilinguals. *Journal of Memory and Language*, 33(5), 600-29.
- Deignan, A., Gabrys, D., & Solska, A. (1997). Teaching English metaphors using cross-linguistic awareness-raising activities. *ELT Journal*, 51(4), 352-60.
- DeVellis, R. F. (2012). *Scale development: Theory and applications* (3rd ed.). Thousand Oaks, CA: Sage.
- Drew, P., & Holt, E. (1988). Complainable matters: The use of idiomatic expressions in making complaints. *Social Problems*, 35(4), 398-417.

- Drew, P., & Holt, E. (1998). Figures of speech. Figurative expressions and the management of topic transition in conversation. *Language in Society*, 27(4), 495-522.
- Duthie, J. K., Nippold, M. A., Billow, J. L., & Mansfield, T. C. (2008). Mental imagery of concrete proverbs: A developmental study of children, adolescents, and adults. *Applied Psycholinguistics*, 29(1), 151-73.
- Farley, A., Pahom, O., & Ramonda, K. (2014). Is a picture worth a thousand words? Using images to create a concreteness effect for abstract words: Evidence from beginning L2 learners of Spanish. *Hispania*, 97(4), 434-50.
- Farley, A., Ramonda, K., & Liu, X. (2012). The concreteness effect and the bilingual lexicon: The impact of visual stimuli attachment on meaning recall of abstract L2 words. *Language Teaching Research*, 16(4), 449-66.
- Farrell, T. S. C., & Bennis, K. (2013). Reflecting on ESL teacher beliefs and classroom practices: A case study. *RELC Journal*, 44(2), 163-76.
- Fernando, C. (1996). *Idioms and idiomaticity*. Oxford, UK: Oxford University Press.
- Fernando, C. & Flavell, R. (1981). *On idiom: Critical views and perspectives*. Exeter, UK: University of Exeter Press.
- Fillmore, C. J. (1982). Frame semantics. In the linguistic society of Korea (Ed.), *Linguistics in the Morning Calm* (pp. 111-137). Seoul, South Korea: Hanshin.
- Fodor, J. A. (1981). Imagistic representation. In N. Block (Ed.), *Imagery* (pp. 63-86). Cambridge, MA: MIT Press.
- Gao, L.-Q. & Meng, G.-H. (2010) A study on the effect of metaphor awareness raising on Chinese EFL learners' vocabulary acquisition and retention. *Canadian Social Science*, 6(2), 110-24.
- Geraci, L., McDaniel, M. A., Miller, T. M., & Hughes, M. L. (2013). The bizarreness effect: Evidence for the critical influence of retrieval processes. *Memory & Cognition*, 41(8), 1228-37.
- Gibbs, R. W. (1994). *The poetics of mind: Figurative thought, language and understanding*. Cambridge, UK: Cambridge University Press.
- Gibbs, R. W., Bogdanovich, J. M., Sykes, J. R. & Barr, D. J. (1997). Metaphor in idiom comprehension. *Journal of Memory and Language*, 37(2), 141-54.

- Gibbs, R. W., & Nayak, N. P. (1989). Psycholinguistic studies on the syntactic behavior of idioms. *Cognitive Psychology*, 21(1) 100-38.
- Gibbs, R. W., Nayak, N. P., & Cutting, C. (1989). How to kick the bucket and not decompose: Analyzability and idiom processing. *Journal of Memory and Language*, 28(5), 576-93.
- Grant, L. E. (2005). Frequency of 'core idioms' in the British National Corpus (BNC). *International Journal of Corpus Linguistics*, 10(4), 429-51.
- Grant, L. E. (2007). In a manner of speaking: Assessing frequent spoken figurative idioms to assist ESL/EFL teachers. *System*, 35, 169-81.
- Grant, L. E. & Bauer, L. (2004). Criteria for re-defining idioms: Are we barking up the wrong tree? *Applied Linguistics*, 25(1), 38-61.
- Griffin, G., & Harley, T. A. (1996). List learning of second language vocabulary. *Applied psycholinguistics*, 17(4), 443-60.
- Gu, Y. (2014). To code or not to code: Dilemmas in analysing think-aloud protocols in learning strategies research. *System*, 43, 74-81.
- Guo, S.-F. (2007). Is idiom comprehension influenced by metaphor awareness of the learners? *The Linguistics Journal*, 3(3), 148-66.
- Hagiwara, A. (2015). Effect of visual support on the processing of multiclausal sentences. *Language Teaching Research*, 19(4), 455-72.
- Henzl, V. M. (1979). Foreign talk in the classroom. *International Review of Applied Linguistics*, 17(2), 159-67.
- Herrera, H., & White, M. (2010). Canonicity and variation in idiomatic expressions: Evidence from business press headlines. In S. De Knop, F. Boers, & A. De Rycker (Eds.), *Fostering language teaching efficiency through cognitive linguistics* (pp. 167-87). Berlin, Germany: Mouton de Gruyter.
- Hoang, H. (2014). Metaphor and second language learning: The state of the field. *TESL-EJ*, 18(2), 1-27.
- Howarth, P. (1998). Phraseology and second language proficiency. *Applied Linguistics*, 19(1), 24-44.
- Howe, J. (2008). Argument is argument: An essay on conceptual metaphor and verbal dispute. *Metaphor and Symbol*, 23(1), 1-23.

- Hudson, T., & Llosa, L. (2015). Design issues and inference in experimental L2 research. *Language Learning*, 65(S1), 76-96.
- Hupka, W. (1989). *Wort und bild*. Lexicographica. Series, Maior, 22. Tübingen, Germany: Max Niemeyer.
- Irujo, S. (1986a). A piece of cake: Learning and teaching idioms. *ELT Journal*, 40(3), 236-42.
- Irujo, S. (1986b). Don't put your leg in your mouth: Transfer in the acquisition of idioms in a second language. *TESOL Quarterly*, 20(2), 287-304.
- Irujo, S. (1993). Steering clear: Avoidance in the production of idioms. *International Review of Applied Linguistics*, 31, 205-19.
- Jones, L. (2004) Testing L2 vocabulary recognition and recall using pictorial and written test items. *Language Learning & Technology*, 8(3), 122-43.
- Jones, L. C., & Plass, J. L. (2002). Supporting listening comprehension and vocabulary acquisition in French with multimedia annotations. *The Modern Language Journal*, 86(4), 546-61.
- Jones, W. K. (1943). Must we use idioms? *Hispania*, 26(1), 65-68.
- Kecskes, I. (2006). On my mind: Thoughts about salience, context and figurative language from a second language perspective. *Second Language Research*, 22(2), 219-37.
- Keysar, B. & Bly, B. M. (1995). Intuitions of the transparency of idioms: Can one keep a secret by spilling the beans? *Journal of Memory and Language*, 34(1), 89-109.
- Keysar, B. & Bly, B. M. (1999). Swimming against the current: Do idioms reflect conceptual structure? *Journal of Pragmatics*, 31(12), 1559-78.
- Kjellmer, G. (1991). A mint of phrases. In K. Aijmer & B. Altenberg (Eds.), *English corpus linguistics* (pp. 111-27). London, UK: Longman.
- Koester, A. (2000). The role of idioms in negotiating workplace encounters. In H. Trappes-Lomax (Ed.), *Change and continuity in applied linguistics* (pp.169-83). Clevedon, UK: Multilingual Matters.
- Kovecses, Z. (2005). *Metaphor in culture: Universality and variation*. Cambridge, UK: Cambridge University Press.

- Kovecses, Z. (2015). *Where metaphors come from: Reconsidering context in metaphor*. Oxford, UK: Oxford University Press.
- Kovecses, Z. & Szabo, P. 1996. Idioms: A view from cognitive semantics. *Applied Linguistics* 17(3), 326-355.
- Lakoff, G. (1987). *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago, IL: University of Chicago Press.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: Chicago Press University.
- Lakoff, G. & Kovecses, Z. (1987). The cognitive model of anger inherent in American English. In D. Holland & N. Quinn (Eds.), *Cultural models in language and thought* (pp. 195-221). Cambridge, UK: Cambridge University Press.
- Langacker, R. W. (1987). *Foundations of cognitive grammar: Theoretical prerequisites* (Vol. 1). Stanford, CA: Stanford University Press.
- Langacker, R. W. (2008). *Cognitive grammar: A basic introduction*. Oxford, UK: Oxford University Press.
- Langlotz, A. (2006). *Idiomatic creativity: A cognitive-linguistic model of idiom-representation and idiom-variation in English*. Amsterdam, Netherlands: John Benjamins.
- Laufer, B. (2005). Focus on Form in second language vocabulary acquisition. In S. Foster-Cohen, M. P. Garcia-Mayo, & J. Cenoz (Eds.), *EUROSLA Yearbook 5* (pp. 223-250). Amsterdam, Netherlands: John Benjamins.
- Laufer, B. & Goldstein, Z. (2004). Testing vocabulary knowledge: Size, strength, and computer adaptiveness. *Language Learning*, 54(3), 399-436.
- Laufer, B., & Hulstijn, J. (2001). Incidental vocabulary acquisition in a second language: The construct of task-induced involvement. *Applied Linguistics*, 22(1), 1-26.
- Lazar, G. (1996). Using figurative language to expand students' vocabulary. *ELT Journal*, 50(1), 43-51.
- Lennon, P. (1998). Approaches to the teaching of idiomatic language. *International Review of Applied Linguistics*, 36, 11-30.

- Lindstromberg, S., & Boers, F. (2008). The mnemonic effect of noticing alliteration in lexical chunks. *Applied Linguistics*, 29(2), 200-22.
- Liontas, J. I. (2002). Exploring second language learners' notions of idiomaticity. *System*, 30(3), 289-313.
- Lipka, L. (2002). *English lexicology: Lexical structure, word semantics and word-formation*. Tübingen, Germany: Gunter Narr Verlag.
- Littlemore, J. (2001). The use of metaphor in university lectures and the problems that it causes for overseas students. *Teaching in Higher Education*, 6(3), 333-49.
- Littlemore, J. (2009). *Applying cognitive linguistics to second language learning and teaching*. Basingstoke, UK: Palgrave Macmillan.
- Littlemore, J., Chen, P. T., Koester, A., & Barnden, J. (2011). Difficulties in metaphor comprehension faced by international students whose first language is not English. *Applied Linguistics*, 32(4), 408-29.
- Littlemore, J., & Low, G. (2006). Metaphoric competence, second language learning, and communicative language ability. *Applied Linguistics*, 27(2), 268-94.
- Liu, D. (2003). The most frequently used spoken American English idioms: A corpus analysis and its implications. *TESOL Quarterly*, 37(4), 671-700.
- Liu, D. (2008). *Idioms: Description, comprehension, acquisition, and pedagogy*. London, UK: Routledge.
- Liu, J. (2004). Effects of comic strips on L2 learners' reading comprehension. *TESOL Quarterly*, 38(2), 225-43.
- Lotto, L. & de Groot, A. M. B. (1998). Effects of learning method and word type on acquiring vocabulary in an unfamiliar language, *Language Learning*, 48(1), 31-69.
- Low, G. D. (1988). On teaching metaphor. *Applied Linguistics*, 9(2), 125-47.
- MacArthur, F. (2010). Metaphorical competence in EFL: Where are we and where should we be going? A view from the language classroom. *AILA Review*, 23, 155-73.

- MacArthur, F. & Littlemore, J. (2008). A discovery approach to figurative language learning with the use of corpora. In F. Boers & S. Lindstromberg (Eds.), *Cognitive linguistic approaches to teaching vocabulary and phraseology* (pp. 159-88). Berlin, Germany: Mouton de Gruyter.
- MacLellan, C. G. H. (1994). Metaphors and prototypes in the teaching and learning of grammar and vocabulary. *International Review of Applied Linguistics*, 32, 97-110.
- Makkai, A. (1972). *Idiom Structure in English*. The Hague, Netherlands: Mouton.
- McCarthy, M. J. (1998). *Spoken language and applied linguistics*. Cambridge, UK: Cambridge University Press.
- McDaniel, M. A., & Einstein, G. O. (1986). Bizarre imagery as an effective memory aid: The importance of distinctiveness. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12(1), 54-65.
- McDaniel, M. A., Einstein, G. O., DeLosh, E. L., May, C. P., & Brady, P. (1995). The bizarreness effect: It's not surprising, it's complex. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 21(2), 422-35.
- McDaniel, M. A. & Kearney, E. M. (1984). Optimal learning strategies and their spontaneous use: The importance of task-appropriate processing. *Memory & Cognition*, 12(4), 361-73.
- McGlone, M. S. (2007). What is the explanatory value of a conceptual metaphor? *Language & Communication*, 27(2), 109-26.
- Meara, P. (1980). Vocabulary acquisition: A neglected aspect of language learning. *Language Teaching and Linguistics: Abstracts*, 13, 221-46.
- Meara, P., Lightbown, P. M., & Halter, R. H. (1997). Classrooms as lexical environments. *Language Teaching Research*, 1(1), 28-47.
- Moon, R. (1992). Textual aspects of fixed expressions in learners' dictionaries. In P. J. Arnaud & H. Bejoint (Eds.), *Vocabulary and applied linguistics* (pp. 13-27). Basingstoke, UK: Macmillan.
- Moon, R. (1997). Vocabulary connections: multi-word items in English. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 40-63). Cambridge, UK: Cambridge University Press.

- Moon, R. (1998). *Fixed expressions and idioms in English. A corpus-based approach*. Oxford, UK: Clarendon Press.
- Morris, C. D., Bransford, J. D. & Franks, J. J. (1977). Levels of processing versus transfer appropriate processing. *Journal of Verbal Learning and Verbal Behavior*, 16(5), 519-33.
- Murphy, G. L. (1997). Reasons to doubt the present evidence for metaphoric representation. *Cognition*, 62(1), 99-108.
- Nassaji, H. (2003). L2 vocabulary learning from context: Strategies, knowledge sources, and their relationship with success in L2 lexical inferencing. *TESOL Quarterly*, 37(4), 645-70.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge, UK: Cambridge University Press.
- Nation, I. S. P. (2006). How large a vocabulary is needed for reading and listening? *The Canadian Modern Language Review*, 63(1), 59-82.
- Nation, I. S. P., & Waring, R. (1997). Vocabulary size, text coverage, and word lists. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 6-19). Cambridge, UK: Cambridge University Press.
- Nelson, D. L., & Schreiber, T. A. (1992). Word concreteness and word structure as independent determinants of recall. *Journal of Memory and Language*, 31(2), 237-60.
- Nicolas, S., & Marchal, A. (1998). Implicit memory, explicit memory and the picture bizarreness effect. *Acta Psychologica*, 99(1), 43-58.
- Nippold, M. A., & Martin, S. T. (1989). Idiom interpretation in isolation versus context: A developmental study with adolescents. *Journal of Speech and Hearing Research*, 32(1), 59-66.
- Nunberg, G., Sag, I. A., & Wasow T. (1994). Idioms. *Language*, 70(3), 491-538.
- O'Loughlin, R. (2012). Tuning in to vocabulary frequency in coursebooks. *RELC Journal*, 43(2), 255-69.
- Paivio, A. (1986). *Mental representations*. Oxford, UK: Oxford University Press.
- Paivio, A. & Desrochers, A. (1980). A dual-coding approach to bilingual memory. *Canadian Journal of Psychology*, 34(4), 388-99.

- Paivio, A. & Lambert, W. E. (1981). Dual coding and bilingual memory. *Journal of Verbal Behavior and Verbal Learning*, 20(5), 532-39.
- Pallant, J. (2013). *SPSS survival manual: a step by step guide to data analysis using IBM SPSS* (5th ed.). Maidenhead, UK: McGraw Hill Education.
- Picken, J. D. (2007). *Literature, Metaphor and the Foreign Language Learner*. Basingstoke, UK: Palgrave Macmillan.
- Planalp, S., & Benson, A. (1992). Friends' and acquaintances' conversations I: Perceived differences. *Journal of Social and Personal Relationships*, 9(4), 483-506.
- Plass, J. L., Chun, D. M., Mayer, R. E., & Leutner, D. (2003). Cognitive load in reading a foreign language text with multimedia aids and the influence of verbal and spatial abilities. *Computers in Human Behavior*, 19(2), 221-43.
- Qian, D. D. (2002). Investigating the relationship between vocabulary knowledge and academic reading performance: An assessment perspective. *Language Learning*, 52(3), 513-36.
- Rakova, M. (2002). The philosophy of embodied realism: A high price to pay? *Cognitive Linguistics*, 13(3), 215-44.
- Richardson, A. (1994). *Individual differences in imaging: Their measurement, origins, and consequences*. Amityville, NY: Baywood.
- Sadoski, M. (2005). A dual coding view of vocabulary learning. *Reading & Writing Quarterly*, 21(3), 221-38.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge, UK: Cambridge University Press.
- Schmitt, N. (1998). Tracking the incremental acquisition of second language vocabulary: A longitudinal study. *Language Learning*, 48(2), 281-317.
- Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research*, 12(3), 329-63.
- Schneider, V. I., Healy, A. F., & Bourne, L. E. (2002). What is learned under difficult conditions is hard to forget: Contextual interference effects in foreign vocabulary acquisition, retention, and transfer. *Journal of Memory and Language*, 46(2), 419-40.

- Schwanenflugel, P. J., Akin, C., & Luh, W.-M. (1992). Context availability and the recall of abstract and concrete words. *Memory & Cognition*, 20(1), 96-104.
- Shen, H. H. (2010). Imagery and verbal coding approaches in Chinese vocabulary instruction. *Language Teaching Research*, 14(4), 485-99.
- Simpson, R. & Mendis, D. (2003). A corpus-based study of idioms in academic speech. *TESOL Quarterly*, 37(3), 419-441.
- Skoufaki, S. (2006). *Investigating L2 idiom instruction methods*. (Unpublished doctoral dissertation). University of Cambridge, UK.
- Skoufaki, S. (2009). Investigating the source of idiom transparency intuitions. *Metaphor and Symbol*, 24(1), 20-41.
- Steen, G. (2008). The paradox of metaphor: Why we need a three-dimensional model of metaphor. *Metaphor and Symbol*, 23(4), 213-41.
- Steen, G. (2011). The contemporary theory of metaphor—Now new and improved! *Review of Cognitive Linguistics*, 9(1), 26-64.
- Steen, G. (2014). The cognitive-linguistics revolution in metaphor studies. In J. Littlemore & J. R. Taylor (Eds.), *The Bloomsbury companion to cognitive linguistics* (pp. 117-42). London, UK: Bloomsbury.
- Steinel, M. P., Hulstijn, J. H., & Steinel, W. (2007). Second language idiom learning in a paired-associate paradigm: Effects of direction of learning, direction of testing, idiom imageability, and idiom transparency. *Studies in Second Language Acquisition*, 29(3), 449-84.
- Strassler, J. (1982). *Idioms in English: A Pragmatic Analysis*. Tübingen, Germany: Gunter Narr Verlag.
- Szczepaniak, R., & Lew, R. (2011). The role of imagery in dictionaries of idioms. *Applied Linguistics*, 32(3), 323-47.
- Tabossi, P., Fanari, R., & Wolf, K. (2009). Why are idioms recognized fast? *Memory & Cognition*, 37(4), 529-40.
- ter Doest, L. & Semin, G. R. (2005). Retrieval contexts and the concreteness effect: Dissociations in memory for concrete and abstract words. *The European Journal of Cognitive Psychology*, 17(6), 859-81.

- Tonzar, C., Lotto, L. & Job, R. (2009). L2 vocabulary acquisition in children: Effects of learning method and cognate status. *Learning Learning*, 59(3), 623-46.
- Toyota, H. (2002). The bizarreness effect and individual differences in imaging ability. *Perceptual and Motor Skills*, 94(2), 533-40.
- Tseng, W.-T. & Schmitt, N. (2008). Toward a model of motivated vocabulary learning: A structural equation modeling approach. *Language Learning*, 58(2), 357-400.
- Tulving, E. & Madigan, S. A. (1970). Memory and verbal learning. *Annual Review of Psychology*, 21, 437-84.
- VanPatten, B. (2004). Input processing in SLA. In B. VanPatten (Ed.), *Processing instruction: Theory, research, and commentary* (pp. 5-31). Mahwah, NJ: Erlbaum.
- VanPatten, B., & Cadierno, T. (1993). Explicit instruction and input processing. *Studies in Second Language Acquisition*, 15(2), 225-43.
- Vega Moreno, R. (2005) Idioms, transparency and pragmatic inference. *UCL Working Papers in Linguistics*, 17, 389-426.
- Vega Moreno, R. (2007). Creativity and convention: The pragmatics of everyday figurative speech. Amsterdam, Netherlands: John Benjamins.
- Waring, R. & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15(2), 130-63.
- Wilkins, D. A. (1972). *Linguistics in Language Teaching*. London: Arnold.
- Wolf, H.-G., & Polzenhagen, F. (2007). Fixed expressions as manifestations of cultural conceptualisations: Examples from African varieties of English. In P. Skandera (Ed.), *Topics in English Linguistics* (pp. 399-435). Berlin, Germany: Mouton de Gruyter.
- Worthen, J. B., & Loveland, J. M. (2001). Imagery nonvividness and the mnemonic advantage of bizarreness. *Imagination, cognition, and personality*, 20(4), 373-81.
- Yorio, C. A. (1980). Conventionalized language forms and the development of communicative competence. *TESOL Quarterly*, 14(4), 433-42.

Yorio, C. A. (1989) Idiomaticity as an indicator of second language proficiency. In K. Hyltenstam and L. K. Obler (Eds.), *Bilingualism across the lifespan* (pp. 55-72). Cambridge, UK: Cambridge University Press.

Idiom Dictionaries

Ammer, C. (2003). *The American Heritage dictionary of idioms*. Boston, MA: Houghton Mifflin.

Ayto, J. (2010). *Oxford dictionary of English idioms*. Oxford, UK: Oxford University Press.

Brenner, G. (2003). *Webster's new world American idioms handbook*. Indianapolis, IN: Wiley.

Flavell, L., & Flavell, R. (2006). *Dictionary of idioms and their origins*. London, UK: Kyle Cathie.

Hunter, J. D. (2014). *Dictionary of American English idioms and Slang: A bridge to successful communication*. Charleston, SC: CreateSpace.

Makkai, A. (2015). *A dictionary of American idioms* (5th ed.)

Sinclair, J. (2012). *Collins COBUILD idioms dictionary* (3rd ed.). London, UK: Collins COBUILD.

Spears, R. A. (2007). *American idioms dictionary* (4th ed.). Chicago, IL: McGraw Hill.

APPENDIX A: ETHICS FORMS

A.1 Consent form for Study 3

Classroom Development of Metaphorical Awareness

Kris Ramonda, Associate Lecturer of English
School of Policy Studies, Kwansei Gakuin University (Kobe Sanda Campus)

This study involves classroom research. The purpose of the research is to examine how you understand and interpret metaphor and how you apply that knowledge to understand idiomatic expressions in English. To do this, the researcher would like to use results from some of the planned course activities and tests for further analysis. **What it means to participate in this research is to allow your data to be used in the study. What it means not to participate is to not to allow your data to be used in the study.**

What you should know about this research study:

- Someone will explain this research study to you.
- You volunteer to be in a research study.
- Whether you choose to participate is up to you.
- You can choose not to participate in the research study.
- You can agree to participate now and later change your mind.
- Whatever you decide, it will not be held against you in any way.
- Feel free to ask all the questions you want before and after you decide.
- ***By signing this consent form, you are not waiving any of the legal rights that you otherwise would have as a participant in a research study.***

The estimated duration of your study participation is approximately 60 minutes—50 minutes today and 5-10 minutes two weeks later.

The study procedures consist of taking a vocabulary pre-test to determine what words you already know, viewing a PowerPoint presentation about idioms in English, and taking a short quiz on what you learned. Two weeks later, there will be another short quiz to see how well you remember after an extended period of time. Participant TOEFL scores will also be collected. All student information will be kept confidential, and students will remain anonymous within the study.

The reasonably foreseeable risks or discomforts are minimal. Your participation will only involve allowing for your data from the study and TOEFL score to be used.

Please sign your name here _____ to give permission to the SPS office to allow your complete TOEFL scores from the December 14, 2013 Exam to be used for this research.

The benefit you will obtain by participating in this study is knowing that you have contributed to the understanding of this topic and to the improvement of future instructional materials and methods used for teaching idioms and metaphor.

This will in no way affect your Special Topics course grade (by participating or by choosing not to participate).

Please contact the researcher with questions, concerns, or complaints about the research and any research-related injuries by calling Kris Ramonda at the EEO office [REDACTED] or e-mailing him at [REDACTED]

Confidentiality: Efforts will be made to limit the disclosure of your personal information, including research study records, to people who have a need to review this information. The data resulting from this research is intended to inform vocabulary instruction, and will be disseminated through conference presentations and academic journal publications. At the end of the research period, all information that is associated with any participants will be erased.

The data collection points for the semester will occur during the following weeks:

**Pre-test, treatment & post-test – Wk2 (approximately 50 minutes)*

**Delayed post-test – Wk4 (approximately 5-10 minutes)*

This information is being collected as part of a research project concerned with second language vocabulary acquisition by the Department of English Language & Applied Linguistics in the University of Birmingham in collaboration with the School of Policy Studies English Language Program at Kwansai Gakuin University. The information which you supply and that which may be collected as part of the research project will be entered into a filing system or database and will only be accessed by authorized personnel involved in the project. The information will be retained by the University of Birmingham and will only be used for the purpose of research, and statistical and audit purposes. By supplying this information you are consenting to the University storing your information for the purposes stated above. The information will be processed by the University of Birmingham in accordance with the provisions of the Data Protection Act 1998. No identifiable personal data will be published.

- I confirm that I have read and understand the participant information leaflet for this study. I have had the opportunity to ask questions if necessary and have had these answered satisfactorily.
- I understand that my participation is voluntary and that I am free to withdraw at any
- time without giving any reason. If I withdraw my data will be removed from the study and will be destroyed.
- I understand that my personal data will be processed for the purposes detailed above, in accordance with the Data Protection Act 1998.
- Based upon the above, I agree to participate in this study.

Your signature documents your permission to take part in this research.

Name of participant.....Date.....Signature.....

Name of researcher..... Date.....Signature.....

比喩的な認識の学級での進展

英語常勤講師 クリス・ラモンダ
関西学院大学 政策学部 三田キャンパス

この研究は学級調査を対象とします。この研究の目的はあなたがどのように比喩を理解、解釈するか、英語での慣用的表現を理解する知識をどのように適用するかを調査するためです。これを行うにあたり、研究者は今後の分析のために計画されたコースのアクティビティーやテストからの結果を使用したいと考えています。参加するという事は、研究にあなたのデータを使用する事を許可するという意味です。参加しないという事は、あなたのデータを研究に使用する事を許可しないという意味です。

<この研究調査について知っておくべき事項>

- ・あなたはこの研究について説明を受けます。
- ・この研究には自分の意志で参加します。
- ・参加するしないはあなたの意思によります。
- ・この研究に参加しない事を選択する事も出来ます。
- ・今の時点で参加する事にし、後で変える事もできます。
- ・参加する参加しないのどちらの選択をしても、決してそれがあなたに不利に働く事はありません。
- ・参加の決定前後において、どのような質問でも遠慮せずに聞いてください。
- ・この参加同意書にサインをすることで この研究への参加者としてのいかなる法律上の権利を放棄する事にはなりません。

予定されている研究参加の時間は、およそ60分です。(本日 50 分、2 週間後に 5-10 分です。)

研究の手順は、既に知っている単語を測定する語彙の事前テストを受け、英語での慣用句についてのパワーポイントを使ったプレゼンを見て、学んだ事についても小テストを受ける事です。2 週間後に、暫く経った後にどれぐらい覚えているかを図るための小テストがあります。参加者の TOEFL スコアも収集します。すべての生徒の個人情報機密を保たれ匿名扱いとなります。

ある程度予見できるリスク又は不快を与えるであろう事は最小限と考えられます。何故なら参加者にして頂きたい事は研究のデータと TOEFL スコアの使用を許可する事だからです。

私、_____は、この研究のために 2013 年 12 月 14 日の TOEFL スコアを使用する事を SPS office へ許可します。

この研究に参加する事で、あなたが得るであろう利点は このトピックの理解と今後の教材の改良、そして慣用句と比喩を教えるメソッドへの貢献が出来る事です。

この研究への不参加は Special Topic コースの成績に影響する事は決してありません。(参加する又は参加しないという選択によって)

研究に関する質問、心配事、不満やこの研究に関係する怪我については EEO オフィス (079-565-7621)クリス・ラモンダ宛に電話、又はメール _____ でお願ひします。

機密事項：この情報を審査する人々への研究の記録を含む参加者の個人情報公開を制限するため、最善をつくします。この研究からの結果は、語彙説明の情報提供を意図とし、カンファレンスでの発表や専門の論文執筆を通して広められます。研究の最後に、いかなる参加者に関する全ての情報は消去されます。

データ収集は、以下の週に行う予定です。

*Pre-test, treatment & post-test – Wk2 (約 50 分)

*Delayed post-test – Wk4 (約 5-10 分)

比喩的な認識の学級での進展についての承諾書

この情報は、バーミンガム大学の英語と応用言語学部と関西学院大学の政策部英語プログラムの共同による第二言語語彙習得に関心を持つ研究プロジェクトの一部として収集されます。あなたの提供する情報は、プロジェクトに関与する関係者だけによってアクセス出来る保管システムやデータベースに入力される研究プロジェクトの一部として収集されます。情報はバーミンガム大学によって保有され、研究目的と統計や監査目的のためだけに使用されます。この情報を提供する事によって、上記に述べた目的のためにあなたの情報を大学が保管する事を承諾する事になります。情報は 1998 年データ保護法の規定に従って、大学によって処理されます。特定の人物と認識出来るデータは公表されません。

-私は確かにこの研究の参加情報説明を読み、理解しました。必要であった場合、質問する機会があり、満足のいく回答を得ました。

-私の参加は自分の意思であり、いかなる理由なしでいつでも抜ける事が出来る事を理解しました。もし参加をやめた場合、私のデータは研究から除去され、破棄される事を理解しました。

-1998 年データ保護法によって、上記詳細の目的のために私の個人データは処理される事を理解しました。

-上記に基づき、この研究に参加する事に同意します。

参加者の氏名 日付サイン

研究者の氏名 日付サイン

Language Research—Think-Aloud Task

A.2 Consent form for Study 4

*Kris Ramonda, Lecturer of English
Tokyo University of Science, Division 1*

For this research project, I am examining different ways of learning English idioms. Your participation in this study will be very useful and will contribute to the current body of knowledge on language research. As compensation for your participation, you will be paid 2,000 yen per hour (e.g. 30 minutes = 1,000 yen, 45 minutes = 1,500 yen, 60 minutes = 2,000 yen). You can take as long as you need to finish the task, but I estimate it will take between 30-60 minutes to complete.

Confidentiality: Efforts will be made to limit the disclosure of your personal information, including research study records, to people who have a need to review this information. The data resulting from this research is intended to inform language instruction, and will be disseminated through conference presentations and academic journal publications. At the end of the research period, all information that is associated with any participants will be erased.

Please contact the researcher with any questions or concerns by contacting Kris Ramonda at [REDACTED]

This information is being collected as part of a research project concerned with second language vocabulary acquisition by the Department of English Language & Applied Linguistics in the University of Birmingham in collaboration with the Tokyo University of Science. The information which you supply and that which may be collected as part of the research project will be entered into a filing system or database and will only be accessed by authorized personnel involved in the project. The information will be retained by the University of Birmingham and will only be used for the purpose of research, and statistical and audit purposes. By supplying this information you are consenting to the University storing your information for the purposes stated above. The information will be processed by the University of Birmingham in accordance with the provisions of the Data Protection Act 1998. No identifiable personal data will be published.

- I confirm that I have read and understand the participant information leaflet for this study. I have had the opportunity to ask questions if necessary and have had these answered satisfactorily.
- I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. If I withdraw my data will be removed from the study and will be destroyed.
- I understand that my personal data will be processed for the purposes detailed above, in accordance with the Data Protection Act 1998.
- Based upon the above, I agree to participate in this study.

Your signature documents your permission to take part in this research.

Name of participant.....Date.....Signature.....

Name of researcher..... Date.....Signature.....


言語研究一発語課題

クリス・ラモンダ、英語教諭
東京理科大第一部

この研究プロジェクトにおいて、英語の慣用句の様々な学習法を分析しています。あなたの参加はこの研究に役立ち、言語研究における知識の現在の柱に貢献します。あなたの参加への報酬は1時間 2000 円です（30 分=1000 円、45 分=1500 円、60 分=2000 円）

課題には必要なだけ時間を掛けて頂いて構いませんが、大体 30～60 分ぐらいと推定します。

機密事項：この情報を審査する人々への研究の記録を含む参加者の個人情報公開を制限するため、最善を尽くします。この研究からの結果は、語彙説明の情報提供を意図とし、カンファレンスでの発表や専門の論文執筆を通して広められます。研究の最後に、いかなる参加者に関する全ての情報は消去されます。

質問や心配事については、クリス・ラモンダ宛にメール（）にてご連絡下さい。

この情報はバーミンガム大学の英語と応用言語学部と東京理科大学の共同による第二言語語彙習得に関心を持つ研究プロジェクトの一部として収集されます。あなたの提供する情報は、プロジェクトに関与する関係者だけによってアクセス出来る保管システムやデータベースに入力される研究プロジェクトの一部として収集されます。情報はバーミンガム大学によって保有され、研究目的と統計や監査目的のためだけに使用されます。この情報を提供する事によって、上記に述べた目的のためにあなたの情報を大学が保管する事を承諾する事になります。情報は 1998 年データ保護法の規定に従って、大学によって処理されます。特定の人物と認識出来るデータは公表されません。

- 私は確かにこの研究の参加情報説明を読み、理解しました。必要であった場合、質問する機会があり、満足のいく回答を得ました。

- 私の参加は自分の意思であり、いかなる理由なしでいつでも抜ける事が出来る事を理解しました。もし参加をやめた場合、私のデータは研究から除去され、破棄される事を理解しました。

- 1998 年データ保護法によって、上記詳細の目的のために私の個人データは処理される事を理解しました。

- 上記に基づき、この研究に参加する事に同意します。

あなたのサインはこの研究への参加承諾を立証します。

参加者氏名..... 日付.....サイン.....

研究者氏名..... 日付.....サイン.....

A.3 Consent form for pilot study for Study 3

Please read the following consent form. If you agree to participate in the research, you will be asked to sign at the bottom of the form prior to participating. The researchers will keep a copy of the consent form and you will be given a copy of the consent form for your records.

Researcher:

Kris Ramonda

Affiliation and position:

School of Policy Studies at Kwansei Gakuin University, Associate Lecturer of English

What you will be asked to do: If you agree to participate, I will schedule you to meet with me two times in a classroom where you will learn English idioms through a PowerPoint presentation. This will happen outside of class time. The first meeting will take about an hour. The second meeting will take about 15 minutes.

Compensation: You will be paid in cash a total of 3,000 yen in exchange for your time. You will be paid after you come the second time. It is very important that you come on the appointed day for the second time (exactly two weeks after the first time). If you do not come on the appointed day, you will not receive any payment.

Voluntary participation: Your participation in the study is completely voluntary. The study is not connected to your course work in any way. If you choose not to participate in the study, it will not affect your grade in any way.

Withdrawal: You can stop participating in the study at any time, for any reason, if you so decide. Please feel free to contact Kris Ramonda if you wish to stop participating.

Confidentiality: All information you supply in the interview will be held in confidence and your name will not appear in any report or publication of the research. Only the researcher will have access to your information.

Professionalism: You are being paid for your participation in this research. You are expected to have a positive attitude, take the project seriously, and try your best during the lesson and quizzes.

Questions? If you have questions about the research please contact Kris Ramonda at 

I _____, consent to participate in this study. I have understood the nature of this project and wish to participate. My signature below indicates my consent.

Signature _____ **Date** _____
Participant

Signature _____ **Date** _____
Researcher

次の同意書を読んで下さい。 リサーチに参加する場合、当同意書の下部にサインして頂く必要があります。リサーチャーが控え1部を保管し、もう1部をあなたにお渡しします。

リサーチャー：
クリス・ラモンダ

所属及び役職：
関西学院大学 英語常勤講師

参加概要：参加する場合、**2回**教室にてパワーポイントを使って英語の慣用句を学んで頂きます。これは授業外に行われます。1回目は1時間程度、2回目は15分程度要します。

報酬：現金で合計3,000円をお支払します。2回目のミーティング後にお支払します。1回目から丁度2週間後の約束した日時に来るという事が重要だという事を認識して下さい。もし約束した日時に来なければ、報酬は得られません。

任意参加：リサーチへの参加は完全に任意であり、いつでも辞める事が出来ます。当リサーチは大学課程とは全く関係ありません。リサーチへの参加を辞める場合、成績への影響は一切ありません。

参加を辞める場合：いかなる理由であれ、いつでもリサーチへの参加を辞める事が出来ます。参加を辞める場合は、私クリス・ラモンダまで遠慮なくご連絡下さい。

守秘義務：あなたの提供する全ての情報は極秘扱いされ、あなたの名前はこのリサーチのいかなる報告書や出版物へ掲載されません。あなたに関する情報は当リサーチャーのみにアクセス権があります。

プロ意識：報酬はこのリサーチへの参加に対して支払われます。参加中は前向きな姿勢で、真剣に受け止め、全力を尽す事を求められています。

質問：当リサーチについて質問がある場合、下記アドレスへクリス・ラモンダ宛にメールでお問い合わせください。 [REDACTED]

私 _____ は、このリサーチへの参加に同意します。このプロジェクトの本質を理解し、参加する事を希望します。下記の署名は私の同意を示します。

サイン _____ 日付 _____
参加者

サイン _____ 日付 _____
リサーチャー

APPENDIX B TRANSPARENCY RATER INSTRUMENTS

B.1 Rater Questionnaire

Section 1—Background

Name: _____

Nationality: _____

Number of years living in Japan: _____

Mother tongue: _____

If you speak any second languages, please circle your proficiency level in each below:

Language:	Language:	Language:
Near native-like fluency	Near native-like fluency	Near native-like fluency
Advanced	Advanced	Advanced
Intermediate	Intermediate	Intermediate
Beginner	Beginner	Beginner

Section 2: Background and rating instructions

Instructions: Please read the background explanation carefully before proceeding to do the rating. If you have any questions, please contact Kris either in person or at

Background explanation

Previous research on idioms has shown that the meaning of some idioms is more semantically transparent than others. For example, consider the two idioms below and make a guess about which is clearer about the meaning of the idiom:

- (a) to be a drop in the bucket
- (b) to kick the bucket

As for (a), you might think that *to be a drop in the bucket* is clearer because you can visualize the drop and relate it to a small amount in a large bucket, which is reflected in its meaning (an insignificant amount). Conversely, you may think that the meaning of (b), *to kick the bucket*, is less clear because it might be difficult to relate the action of kicking a bucket with dying in any discernible way.

That being said, it is important to realize that the transparency-opacity of idioms exist on a continuum. That is, it is not always a clear-cut case of being either transparent or opaque. Take, for example, the case of the idiom “an old flame” (a previous romantic relationship). While in this case, “old” can be easily related to “previous”, flame is more subtle in that it is a metaphoric extension of a romantic relationship. When one considers how romantic relationships are often associated with passion and warmth, then the connection of “flame” as a metaphoric extension of romantic relationship become more apparent.

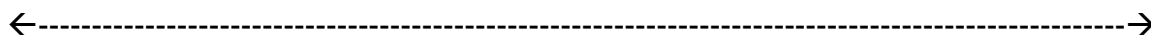
As a further example, “flame” might also be thought of as a metaphoric extension of a bad situation, since flames are often associated with disasters. In the idiom “fan the flames”, which means to make a bad situation worse, one might see a connection or relationship between the act of fanning flames, which would cause the flames to spread, and a bad situation worsening.

For a few idioms, you might need to rely on your cultural background knowledge of the individual parts of the idiom, and this is fine. For example, to “open a Pandora’s box” means to do something that unintentionally causes a lot of problems, which were not known about before. If you are familiar with the story of Pandora, then the meaning will probably be clearer than if you had no background knowledge of this. As a rater, you may rely on your cultural background knowledge of the individual words in the idiom when considering your rating.

As a rater, your task is to evaluate each idiom’s degree of semantic transparency- opacity. Below is the 6-point scale you will use with verbal descriptors for your reference.

Highly opaque

Highly transparent



1	2	3	4	5	6
The words that make up the idiom have no apparent semantic relationship at all to its figurative meaning	The words that make up the idiom have only a very vague semantic relationship to its figurative meaning	The words that make up the idiom have only a vague semantic relationship to its figurative meaning	The words that make up the idiom have a somewhat clear semantic relationship to its figurative meaning	The words that make up the idiom have a clear semantic relationship to its figurative meaning	The words that make up the idiom have a very clear semantic relationship to its figurative meaning

Section 3: Semantic transparency-opacity quantitative and qualitative rating of idioms

Instructions: Below are 10 idioms that you are to rate and describe. Please follow the indicated steps for rating the idiom:

Step 1—Read the idiom and decide whether or not you are familiar with it. If you don’t know the meaning of the idiom, simply write “unknown” in the box and skip the rating for this idiom.

Step 2—If you know the meaning of the idiom, circle the appropriate letter choice for the perceived frequency of the idiom (example choices below).

- a. I often hear this idiom when speaking with native speakers of English.
- b. I occasionally hear this idiom when speaking with native speakers of English.
- c. I rarely hear this idiom when speaking with native speakers of English.
- d. I’ve never heard this idiom before.

Step 3—Proceed to rate the idiom using scale described above. Then, in the explanation box, provide a justification for your rating (for example, if you rated something as more transparent, explain the connection of the words to the figurative meaning as best you can; if you rated something as more opaque, explain how the either the connection of the words to the figurative meaning is only very subtle or non-existent).

If you do not know the meaning of the idiom, do not rate the idiom.

Idioms

1) Hit the sack

- a. I often hear this idiom when speaking with native speakers of English.
- b. I occasionally hear this idiom when speaking with native speakers of English.
- c. I rarely hear this idiom when speaking with native speakers of English.
- d. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

2) Ruffle feathers

- a. I often hear this idiom when speaking with native speakers of English.
- b. I occasionally hear this idiom when speaking with native speakers of English.
- c. I rarely hear this idiom when speaking with native speakers of English.
- d. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

3) A piece of cake

- a. I often hear this idiom when speaking with native speakers of English.
- b. I occasionally hear this idiom when speaking with native speakers of English.
- c. I rarely hear this idiom when speaking with native speakers of English.
- d. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

4) A recipe for disaster

- a. I often hear this idiom when speaking with native speakers of English.
- b. I occasionally hear this idiom when speaking with native speakers of English.
- c. I rarely hear this idiom when speaking with native speakers of English.
- d. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

5) Come out of your shell

- e. I often hear this idiom when speaking with native speakers of English.
- f. I occasionally hear this idiom when speaking with native speakers of English.
- g. I rarely hear this idiom when speaking with native speakers of English.
- h. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

6) Stick to your guns

- e. I often hear this idiom when speaking with native speakers of English.
- f. I occasionally hear this idiom when speaking with native speakers of English.
- g. I rarely hear this idiom when speaking with native speakers of English.
- h. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

7) Smell a rat

- e. I often hear this idiom when speaking with native speakers of English.
- f. I occasionally hear this idiom when speaking with native speakers of English.
- g. I rarely hear this idiom when speaking with native speakers of English.
- h. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

8) Learn the ropes

- i. I often hear this idiom when speaking with native speakers of English.
- j. I occasionally hear this idiom when speaking with native speakers of English.
- k. I rarely hear this idiom when speaking with native speakers of English.
- l. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

9) Get a kick out of something

- i. I often hear this idiom when speaking with native speakers of English.
- j. I occasionally hear this idiom when speaking with native speakers of English.
- k. I rarely hear this idiom when speaking with native speakers of English.
- l. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

10) Play Devil's advocate

- i. I often hear this idiom when speaking with native speakers of English.
- j. I occasionally hear this idiom when speaking with native speakers of English.
- k. I rarely hear this idiom when speaking with native speakers of English.
- l. I've never heard this idiom before.

Semantic Rating: 1 2 3 4 5 6

Explanation for rating:

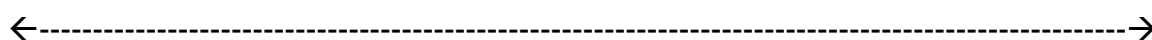
Section 4—Semantic transparency-opacity quantitative rating of idioms

Instructions:

Below there is an expanded list of 222 more idioms. This should be much quicker, however, because there is no need for written descriptions for this part. Simply rate the semantic transparency of the idiom using the same scale (presented here again for your reference). If you do not know the idiom, circle “unknown” and do not rate the idiom.

Highly opaque

Highly transparent



1	2	3	4	5	6
The words that make up the idiom have no apparent semantic relationship at all to its figurative meaning	The words that make up the idiom have only a very vague semantic relationship to its figurative meaning	The words that make up the idiom have only a vague semantic relationship to its figurative meaning	The words that make up the idiom have a somewhat clear semantic relationship to its figurative meaning	The words that make up the idiom have a clear semantic relationship to its figurative meaning	The words that make up the idiom have a very clear semantic relationship to its figurative meaning

Idiom	Unknown?	Semantic Rating					
1. An accident waiting to happen	Unknown	1	2	3	4	5	6
2. An Achilles heel	Unknown	1	2	3	4	5	6
3. Be caught in the act	Unknown	1	2	3	4	5	6
4. A hidden agenda	Unknown	1	2	3	4	5	6
5. Be walking on air	Unknown	1	2	3	4	5	6

6. Be alive and kicking	Unknown	1	2	3	4	5	6
7. Eat someone alive	Unknown	1	2	3	4	5	6
8. Like comparing apples and oranges	Unknown	1	2	3	4	5	6
9. A grey area	Unknown	1	2	3	4	5	6
10. Cost an arm and a leg	Unknown	1	2	3	4	5	6
11. A rude awakening	Unknown	1	2	3	4	5	6
12. Get the axe	Unknown	1	2	3	4	5	6
13. Throw the baby out with the bath water	Unknown	1	2	3	4	5	6
14. Have your back to the wall	Unknown	1	2	3	4	5	6
15. Stab someone in the back	Unknown	1	2	3	4	5	6
16. Turn your back on someone	Unknown	1	2	3	4	5	6
17. Bend over backwards	Unknown	1	2	3	4	5	6
18. A mixed bag	Unknown	1	2	3	4	5	6
19. Go bananas	Unknown	1	2	3	4	5	6
20. Jump on the bandwagon	Unknown	1	2	3	4	5	6
21. Recharge your batteries	Unknown	1	2	3	4	5	6
22. Spill the beans	Unknown	1	2	3	4	5	6
23. Below the belt	Unknown	1	2	3	4	5	6
24. Like a bat out of hell	Unknown	1	2	3	4	5	6
25. Win the battle but lose the war	Unknown	1	2	3	4	5	6
26. Get out of bed on the wrong side	Unknown	1	2	3	4	5	6
27. Saved by the bell	Unknown	1	2	3	4	5	6
28. Have all of the bells and whistles	Unknown	1	2	3	4	5	6
29. Tighten your belt	Unknown	1	2	3	4	5	6
30. Have something under your belt	Unknown	1	2	3	4	5	6
31. Kill two birds with one stone	Unknown	1	2	3	4	5	6
32. A little bird told me	Unknown	1	2	3	4	5	6
33. The birds and the bees	Unknown	1	2	3	4	5	6
34. A blessing in disguise	Unknown	1	2	3	4	5	6
35. Bleed someone dry	Unknown	1	2	3	4	5	6
36. Blood is thicker than water	Unknown	1	2	3	4	5	6
37. Blood, sweat, and tears	Unknown	1	2	3	4	5	6
38. Make your blood boil	Unknown	1	2	3	4	5	6
39. Out for blood	Unknown	1	2	3	4	5	6
40. Out of the blue	Unknown	1	2	3	4	5	6
41. Back to the drawing board	Unknown	1	2	3	4	5	6
42. Rock the boat	Unknown	1	2	3	4	5	6
43. Boil down to something	Unknown	1	2	3	4	5	6
44. Drop a bombshell	Unknown	1	2	3	4	5	6
45. Do something by the book	Unknown	1	2	3	4	5	6
46. Get to the bottom of something	Unknown	1	2	3	4	5	6
47. Think outside of the box	Unknown	1	2	3	4	5	6

48. Eat someone for breakfast	Unknown	1	2	3	4	5	6
49. Cross that bridge when you come to it	Unknown	1	2	3	4	5	6
50. Kick the bucket	Unknown	1	2	3	4	5	6
51. Not beat around the bush	Unknown	1	2	3	4	5	6
52. Have butterflies in your stomach	Unknown	1	2	3	4	5	6
53. A loose cannon	Unknown	1	2	3	4	5	6
54. A catch 22	Unknown	1	2	3	4	5	6
55. A lost cause	Unknown	1	2	3	4	5	6
56. Stand a chance	Unknown	1	2	3	4	5	6
57. A change of heart	Unknown	1	2	3	4	5	6
58. A blank check	Unknown	1	2	3	4	5	6
59. Get something off your chest	Unknown	1	2	3	4	5	6
60. A close call	Unknown	1	2	3	4	5	6
61. Show your true colors	Unknown	1	2	3	4	5	6
62. Be pushing up daisies	Unknown	1	2	3	4	5	6
63. Sign someone's death warrant	Unknown	1	2	3	4	5	6
64. Make a dent in something	Unknown	1	2	3	4	5	6
65. Play devil's advocate	Unknown	1	2	3	4	5	6
66. Treat someone like dirt	Unknown	1	2	3	4	5	6
67. A domino effect	Unknown	1	2	3	4	5	6
68. Drag someone kicking and screaming	Unknown	1	2	3	4	5	6
69. A drop in the bucket	Unknown	1	2	3	4	5	6
70. A sitting duck	Unknown	1	2	3	4	5	6
71. Bite the dust	Unknown	1	2	3	4	5	6
72. Put all your eggs in one basket	Unknown	1	2	3	4	5	6
73. The end of the road	Unknown	1	2	3	4	5	6
74. A necessary evil	Unknown	1	2	3	4	5	6
75. Raise eyebrows	Unknown	1	2	3	4	5	6
76. Blow up in your face	Unknown	1	2	3	4	5	6
77. Ruffle feathers	Unknown	1	2	3	4	5	6
78. Get your feet wet	Unknown	1	2	3	4	5	6
79. Stand on your own two feet	Unknown	1	2	3	4	5	6
80. Sit on the fence	Unknown	1	2	3	4	5	6
81. Be playing with fire	Unknown	1	2	3	4	5	6
82. Be a big fish in a small pond	Unknown	1	2	3	4	5	6
83. Drink like a fish	Unknown	1	2	3	4	5	6
84. An old flame	Unknown	1	2	3	4	5	6
85. Fan the flames	Unknown	1	2	3	4	5	6
86. Open the floodgates	Unknown	1	2	3	4	5	6
87. A fly on the wall	Unknown	1	2	3	4	5	6
88. Get a foot in the door	Unknown	1	2	3	4	5	6
89. Free as a bird	Unknown	1	2	3	4	5	6
90. Add fuel to the fire	Unknown	1	2	3	4	5	6

91. Throw down the gauntlet	Unknown	1	2	3	4	5	6
92. The gloves are off	Unknown	1	2	3	4	5	6
93. God's gift to women	Unknown	1	2	3	4	5	6
94. Kill the golden goose	Unknown	1	2	3	4	5	6
95. A wild goose chase	Unknown	1	2	3	4	5	6
96. Be someone's guinea pig	Unknown	1	2	3	4	5	6
97. Stick to your guns	Unknown	1	2	3	4	5	6
98. A gut feeling	Unknown	1	2	3	4	5	6
99. Let your hair down	Unknown	1	2	3	4	5	6
100. Hang in there	Unknown	1	2	3	4	5	6
101. Bury the hatchet	Unknown	1	2	3	4	5	6
102. Lose your head	Unknown	1	2	3	4	5	6
103. Turn heads	Unknown	1	2	3	4	5	6
104. A heart of gold	Unknown	1	2	3	4	5	6
105. For the hell of it	Unknown	1	2	3	4	5	6
106. Go through hell	Unknown	1	2	3	4	5	6
107. Raise hell	Unknown	1	2	3	4	5	6
108. Be over the hill	Unknown	1	2	3	4	5	6
109. Be hit or miss	Unknown	1	2	3	4	5	6
110. Be skating on thin ice	Unknown	1	2	3	4	5	6
111. Break the ice	Unknown	1	2	3	4	5	6
112. Put something on ice	Unknown	1	2	3	4	5	6
113. Be the icing on the cake	Unknown	1	2	3	4	5	6
114. Add insult to injury	Unknown	1	2	3	4	5	6
115. Strike while the iron is hot	Unknown	1	2	3	4	5	6
116. The jury is still out	Unknown	1	2	3	4	5	6
117. Get a kick out of something	Unknown	1	2	3	4	5	6
118. Tie the knot	Unknown	1	2	3	4	5	6
119. Have the last laugh	Unknown	1	2	3	4	5	6
120. Lay down the law	Unknown	1	2	3	4	5	6
121. Turn over a new leaf	Unknown	1	2	3	4	5	6
122. Give someone the green light	Unknown	1	2	3	4	5	6
123. The light at the end of the tunnel	Unknown	1	2	3	4	5	6
124. See the light	Unknown	1	2	3	4	5	6
125. Cross the line	Unknown	1	2	3	4	5	6
126. Walk into the lion's den	Unknown	1	2	3	4	5	6
127. Cut your losses	Unknown	1	2	3	4	5	6
128. Burn the midnight oil	Unknown	1	2	3	4	5	6
129. Blow your mind	Unknown	1	2	3	4	5	6
130. Cross your mind	Unknown	1	2	3	4	5	6
131. Lose your mojo	Unknown	1	2	3	4	5	6
132. Money talks	Unknown	1	2	3	4	5	6
133. Put your money where your mouth is	Unknown	1	2	3	4	5	6
134. Throw money at something		1	2	3	4	5	6
135. Monkey business	Unknown	1	2	3	4	5	6

136. Face the music	Unknown	1	2	3	4	5	6
137. Not cut the mustard	Unknown	1	2	3	4	5	6
138. Have nerves of steel	Unknown	1	2	3	4	5	6
139. Be on the same page	Unknown	1	2	3	4	5	6
140. Open a Pandora's box	Unknown	1	2	3	4	5	6
141. Be caught with your pants down	Unknown	1	2	3	4	5	6
142. To look good on paper	Unknown	1	2	3	4	5	6
143. Rain on someone's parade	Unknown	1	2	3	4	5	6
144. A piece of cake	Unknown	1	2	3	4	5	6
145. Get the picture	Unknown	1	2	3	4	5	6
146. A bitter pill to swallow	Unknown	1	2	3	4	5	6
147. Be on autopilot	Unknown	1	2	3	4	5	6
148. Be in the pipeline	Unknown	1	2	3	4	5	6
149. Put someone in their place	Unknown	1	2	3	4	5	6
150. Have a lot on your plate	Unknown	1	2	3	4	5	6
151. Reach a boiling point	Unknown	1	2	3	4	5	6
152. Pull the plug on something	Unknown	1	2	3	4	5	6
153. Have deep pockets	Unknown	1	2	3	4	5	6
154. Have your pound of flesh	Unknown	1	2	3	4	5	6
155. Keep a low profile	Unknown	1	2	3	4	5	6
156. Not pull your punches	Unknown	1	2	3	4	5	6
157. Roll with the punches	Unknown	1	2	3	4	5	6
158. Puppy love	Unknown	1	2	3	4	5	6
159. A pencil pusher	Unknown	1	2	3	4	5	6
160. A race against time	Unknown	1	2	3	4	5	6
161. Go off the rails	Unknown	1	2	3	4	5	6
162. The rat race	Unknown	1	2	3	4	5	6
163. Smell a rat	Unknown	1	2	3	4	5	6
164. A reality check	Unknown	1	2	3	4	5	6
165. A recipe for disaster	Unknown	1	2	3	4	5	6
166. See red	Unknown	1	2	3	4	5	6
167. Catch someone red-handed	Unknown	1	2	3	4	5	6
168. A free ride	Unknown	1	2	3	4	5	6
169. Down the road	Unknown	1	2	3	4	5	6
170. Hit the road	Unknown	1	2	3	4	5	6
171. Sell someone down the river	Unknown	1	2	3	4	5	6
172. Take the high road	Unknown	1	2	3	4	5	6
173. Between a rock and a hard place	Unknown	1	2	3	4	5	6
174. Hit rock bottom	Unknown	1	2	3	4	5	6
175. Not be rocket science	Unknown	1	2	3	4	5	6
176. Learn the ropes	Unknown	1	2	3	4	5	6
177. On the ropes	Unknown	1	2	3	4	5	6
178. Rub it in	Unknown	1	2	3	4	5	6
179. Give someone a run for their money	Unknown	1	2	3	4	5	6
180. Hit the sack	Unknown	1	2	3	4	5	6

181. Smooth sailing	Unknown	1	2	3	4	5	6
182. Packed like sardines	Unknown	1	2	3	4	5	6
183. Be in the hot seat	Unknown	1	2	3	4	5	6
184. The black sheep	Unknown	1	2	3	4	5	6
185. Come out of your shell	Unknown	1	2	3	4	5	6
186. One sandwich short of a picnic	Unknown	1	2	3	4	5	6
187. Call the shots	Unknown	1	2	3	4	5	6
188. Give someone the cold shoulder	Unknown	1	2	3	4	5	6
189. Look on the bright side		1	2	3	4	5	6
190. Have a skeleton in your closet	Unknown	1	2	3	4	5	6
191. Be skin and bones	Unknown	1	2	3	4	5	6
192. A slippery slope	Unknown	1	2	3	4	5	6
193. Sell your soul	Unknown	1	2	3	4	5	6
194. Spread yourself too thin	Unknown	1	2	3	4	5	6
195. Be back to square one	Unknown	1	2	3	4	5	6
196. A stab in the dark							
197. Leave no stone unturned	Unknown	1	2	3	4	5	6
198. Pull strings	Unknown	1	2	3	4	5	6
199. Only scratch the surface	Unknown	1	2	3	4	5	6
200. A double-edged sword	Unknown	1	2	3	4	5	6
201. Red tape	Unknown	1	2	3	4	5	6
202. Make up for lost time	Unknown	1	2	3	4	5	6
203. Time on your hands	Unknown	1	2	3	4	5	6
204. The tip of the iceberg	Unknown	1	2	3	4	5	6
205. Bite your tongue	Unknown	1	2	3	4	5	6
206. Give someone a tongue-lashing	Unknown	1	2	3	4	5	6
207. Throw in the towel	Unknown	1	2	3	4	5	6
208. Cover your tracks	Unknown	1	2	3	4	5	6
209. Tongue in cheek	Unknown	1	2	3	4	5	6
210. Be on top of something	Unknown	1	2	3	4	5	6
211. Be over the top	Unknown	1	2	3	4	5	6
212. Go cold turkey	Unknown	1	2	3	4	5	6
213. Change your tune	Unknown	1	2	3	4	5	6
214. Take a hike	Unknown	1	2	3	4	5	6
215. Be banging your head against the wall	Unknown	1	2	3	4	5	6
216. Test the waters	Unknown	1	2	3	4	5	6
217. Make waves	Unknown	1	2	3	4	5	6
218. Be under the weather	Unknown	1	2	3	4	5	6
219. Pull your weight	Unknown	1	2	3	4	5	6
220. Crack the whip	Unknown	1	2	3	4	5	6
221. Not be out of the woods	Unknown	1	2	3	4	5	6
222. Not be born yesterday	Unknown	1	2	3	4	5	6

APPENDIX C TRANSPARENCY RATER DATA

C.1 Transparency rater quantitative data

6 Point Likert Rating Scale

Highly opaque

Highly transparent

←----->

1	2	3	4	5	6
The words that make up the idiom have no apparent semantic relationship at all to its figurative meaning	The words that make up the idiom have only a very vague semantic relationship to its figurative meaning	The words that make up the idiom have only a vague semantic relationship to its figurative meaning	The words that make up the idiom have a somewhat clear semantic relationship to its figurative meaning	The words that make up the idiom have a clear semantic relationship to its figurative meaning	The words that make up the idiom have a very clear semantic relationship to its figurative meaning

Semantic Transparency Ratings Sorted from Low to High

(Green cells with "x" indicate that the rater was unfamiliar with this idiom and did not assign a rating. In these cases, the average score was used as the value.)

Idiom	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Ave	Std.
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5			
Go cold turkey	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1.1	0.3	
Not cut the mustard	1	1	1	1	1	1	2	3	1	1	1	x	1	1	1	1.2	0.6	
Kick the bucket	1	1	1	1	1	2	1	4	1	1	1	2	1	1	1	1.3	0.8	
A catch 22	1	1	1	1	1	1	1	1	1	1	1	1	3	1	5	1.4	1.1	
A piece of cake	1	1	2	1	1	1	2	2	1	1	4	1	1	1	1	1.4	0.8	
For the hell of it	1	2	2	1	1	2	2	2	2	1	2	1	1	1	1	1.5	0.5	
Not beat around the bush	1	2	2	4	2	1	2	2	1	1	2	1	1	1	1	1.6	0.8	
Tongue in cheek	1	4	1	2	1	1	2	2	3	1	1	1	1	1	3	1.7	0.9	
Sell someone down the river	3	1	2	1	2	1	x	1	1	2	x	2	1	1	4	1.7	0.9	
Get a kick out of something	2	1	1	4	2	3	2	3	1	1	2	1	2	1	1	1.8	0.9	
Spill the beans	3	3	1	3	1	2	2	2	3	1	1	2	2	1	1	1.9	0.8	
Face the music	1	1	2	2	1	1	2	3	2	1	3	4	1	2	2	1.9	0.9	
Give someone a run for their money	2	1	2	1	2	1	2	4	2	1	4	2	1	2	1	1.9	1.0	
Turn over a new leaf	1	3	2	2	2	1	3	1	1	1	3	4	1	1	3	1.9	1.0	
Catch someone red-handed	3	2	2	1	1	1	3	2	1	1	4	2	3	2	1	1.9	0.9	
Red tape	1	1	2	2	2	2	2	4	1	1	3	1	1	1	5	1.9	1.2	
Be under the weather	1	1	2	2	2	2	4	2	1	1	2	4	1	2	2	1.9	0.9	
Go bananas	1	3	1	2	1	2	2	2	1	1	2	5	4	1	2	2.0	1.2	
The birds and the bees	1	3	1	2	1	2	2	2	4	1	2	5	2	1	1	2.0	1.2	
Tie the knot	2	4	3	1	1	1	2	2	2	1	2	2	4	3	2	2.1	1.0	

Have something under your belt	2	x	2	2	1	2	x	3	3	2	4	3	1	2	1	2.2	0.9
One sandwich short of a picnic	1	x	2	2	1	1	3	2	x	1	3	x	3	2	5	2.2	1.1
The rat race	2	4	2	2	2	2	3	3	3	1	3	1	2	2	1	2.2	0.8
Stick to your guns	2	4	2	2	3	2	2	2	2	1	2	1	5	1	3	2.3	1.1
Kill the golden goose	2	1	4	4	1	3	3	3	2	1	x	x	x	3	1	2.3	1.1
A wild goose chase	3	4	2	3	2	x	2	2	2	1	3	2	4	1	2	2.4	0.9
Take the high road	1	3	2	1	3	2	3	1	3	1	2	x	5	2	4	2.4	1.2
Eat someone for breakfast	1	x	2	5	2	4	2	1	2	1	4	x	2	4	1	2.4	1.3
Lose your mojo	4	1	4	1	6	2	2	1	1	1	4	1	4	2	2	2.4	1.5
Give someone the cold shoulder	2	4	2	3	3	3	2	2	2	1	3	1	4	2	2	2.4	0.9
Be over the top	3	3	2	3	2	2	4	3	3	1	4	2	1	1	2	2.4	1.0
Bury the hatchet	2	2	2	1	1	1	2	3	2	1	4	5	3	5	3	2.5	1.3
Be pushing up daisies	2	1	4	1	1	1	x	4	4	1	2	5	6	2	1	2.5	1.7
Be over the hill	3	x	2	3	1	1	2	3	2	1	5	4	5	2	1	2.5	1.3
Hang in there	2	3	2	3	3	2	2	4	4	2	2	1	2	4	2	2.5	0.9
Blow your mind	1	4	2	2	4	3	3	3	1	1	4	2	1	3	4	2.5	1.1
Jump on the bandwagon	2	4	4	3	1	2	2	3	4	2	2	3	4	2	1	2.6	1.0
A little bird told me	2	3	4	3	2	3	2	3	3	1	3	2	3	4	1	2.6	0.9
A close call	3	4	3	4	4	1	5	2	2	1	3	2	1	2	2	2.6	1.2
Bite the dust	1	5	2	2	5	2	2	2	1	1	4	5	3	3	1	2.6	1.5
Throw down the gauntlet	1	2	3	1	1	1	2	5	2	3	5	5	3	1	4	2.6	1.5
Call the shots	4	1	4	2	2	2	3	2	4	1	4	2	1	1	6	2.6	1.5
Get out of the bed on the wrong side	4	2	2	5	1	3	2	3	3	3	3	4	2	2	1	2.7	1.1
A pencil pusher	2	4	4	2	3	1	x	2	2	1	5	1	5	4	2	2.7	1.4
Cross your mind	2	3	3	2	4	4	3	3	1	1	2	2	3	3	5	2.7	1.1
Learn the ropes	3	2	5	4	2	1	3	2	4	1	2	4	2	2	4	2.7	1.2
Spread yourself too thin	4	3	3	3	2	3	2	3	1	1	4	2	2	4	4	2.7	1.0
A loose cannon	3	3	2	5	1	3	3	3	1	2	2	5	4	2	3	2.8	1.2
Break the ice	2	4	3	3	3	4	2	2	5	1	4	2	1	2	4	2.8	1.2
Lay down the law	3	5	3	3	2	2	4	2	4	1	3	4	1	1	4	2.8	1.2
Keep a low profile	3	6	3	4	2	3	3	2	2	1	3	2	1	3	4	2.8	1.2
Bells and whistles	4	5	3	2	2	2	3	3	2	1	4	4	4	3	1	2.9	1.1
Out of the blue	2	5	3	1	2	3	2	4	2	1	3	5	4	3	3	2.9	1.2
Pull the strings	5	4	3	2	1	2	2	3	2	1	4	5	2	3	4	2.9	1.3
Eat someone alive	3	x	2	4	x	4	2	3	2	1	2	5	4	4	2	2.9	1.1
Get your feet wet	2	4	2	4	1	2	4	4	2	1	5	5	4	2	2	2.9	1.3
Lose your head	2	5	1	3	2	3	4	3	3	3	4	4	2	3	2	2.9	1.0
Monkey business	2	3	2	2	1	2	4	4	4	2	5	4	5	2	2	2.9	1.2
Time on your hands	2	4	4	5	4	2	3	2	1	3	4	2	2	3	3	2.9	1.1
Like a bat out of hell	2	5	2	3	1	1	4	3	4	2	2	5	5	5	1	3.0	1.5
Blood is thicker than water	5	6	3	3	2	1	3	3	5	4	1	2	1	4	2	3.0	1.5
Get something off your chest	2	3	3	4	4	2	2	2	2	2	3	5	6	2	3	3.0	1.2
Make a dent in something	2	4	3	4	3	3	4	2	2	2	2	5	1	4	4	3.0	1.1

The gloves are off	3	4	2	3	2	3	2	4	2	1	4	5	4	1	5	3.0	1.3
Get the picture	2	3	5	2	5	1	3	4	2	1	5	2	4	4	2	3.0	1.4
Smell a rat	3	5	2	3	3	5	2	2	4	1	2	2	5	2	4	3.0	1.3
Rub it in	3	4	3	3	2	2	4	2	5	1	4	4	5	1	2	3.0	1.3
Bend over backwards	3	5	3	3	3	4	3	5	3	1	3	5	2	2	1	3.1	1.2
Put something on ice	4	2	4	4	2	3	3	3	2	2	5	3	3	3	3	3.1	0.9
Cut your losses	3	6	4	5	3	2	3	3	2	1	3	2	2	3	4	3.1	1.2
Have skeleton in the closet	3	3	3	3	3	2	2	3	1	2	5	6	5	2	3	3.1	1.3
Give someone a tongue-lashing	2	2	5	2	4	4	3	2	2	1	x	3	5	3	5	3.1	1.3
Have your pound of flesh	3	4	2	3	x	x	3	3	1	1	x	4	4	3	6	3.1	1.3
Get the axe	4	5	3	3	4	2	3	4	2	1	3	4	4	3	2	3.1	1.0
Stand a chance	3	5	5	4	3	2	5	2	2	1	5	1	2	5	2	3.1	1.5
Play devil's advocate	4	1	5	6	1	1	2	2	5	1	4	5	5	3	2	3.1	1.7
An old flame	3	3	3	3	4	3	3	2	3	1	4	3	6	3	3	3.1	1.0
A fly on the wall	3	4	5	2	3	2	4	3	3	1	5	4	5	1	2	3.1	1.3
Burn the midnight oil	3	4	4	4	4	2	4	4	4	1	3	1	3	3	3	3.1	1.0
be in the hot seat	2	4	4	3	2	3	4	4	2	1	4	3	4	3	4	3.1	1.0
Tighten your belt	4	3	4	3	2	2	x	3	5	1	4	3	6	3	1	3.1	1.4
Boil down to something	3	4	3	4	4	3	3	3	5	2	3	3	3	4	1	3.2	0.9
Get to the bottom of something	2	5	4	4	4	4	2	4	3	2	3	3	4	3	1	3.2	1.0
Ruffle feathers	2	3	3	5	3	3	4	3	3	1	4	5	5	2	2	3.2	1.2
Be back to square one	5	4	4	5	5	2	3	2	1	1	3	3	1	3	6	3.2	1.6
Change your tune	4	4	2	5	3	4	3	1	1	2	3	4	5	3	4	3.2	1.2
Not be out of the woods	4	5	2	3	2	3	3	2	x	4	5	6	2	2	2	3.2	1.3
Show your true colors	5	2	3	4	3	2	4	3	3	2	2	4	4	3	5	3.3	1.0
A sitting duck	5	5	3	5	5	4	2	2	2	1	4	5	2	2	2	3.3	
Raise hell	4	4	2	3	2	3	3	2	4	4	4	1	5	5	3	3.3	1.1
Money talks	5	5	5	5	4	1	3	1	2	2	4	5	1	2	4	3.3	1.6
Have deep pockets	4	4	4	2	3	1	2	4	2	1	4	4	5	4	5	3.3	1.3
See red	4	3	5	2	2	2	3	5	2	2	5	3	5	2	4	3.3	1.2
Hit the road	3	4	3	2	4	5	4	2	2	3	5	3	4	3	2	3.3	1.0
Throw the baby out with the bath water	4	4	3	3	4	2	x	3	5	1	3	5	5	2	2	3.3	1.2
Sit on the fence	4	5	3	4	2	3	3	3	4	1	5	6	4	1	2	3.3	1.4
Put someone in their place	5	4	4	5	3	2	3	3	4	1	3	3	5	2	3	3.3	1.1
Not pull your punches	5	5	4	4	3	1	4	2	5	2	3	3	2	5	2	3.3	1.3
Puppy love	2	3	5	4	2	4	4	3	3	1	5	5	6	2	1	3.3	1.5
Hit the sack	1	5	2	4	2	4	3	3	6	1	4	4	4	1	6	3.3	1.6
Pull your weight	3	4	4	2	5	3	4	3	1	2	4	2	5	4	4	3.3	1.1
Think outside of the box	5	4	4	4	5	2	2	3	3	3	4	4	3	4	1	3.4	1.1
Have butterflies in your stomach	4	3	5	5	2	3	5	3	1	1	4	5	5	3	2	3.4	1.4
Be someone's a guinea pig	4	5	5	5	3	2	3	3	5	1	4	4	5	1	1	3.4	1.5
Let your hair down	2	5	4	4	1	4	2	3	4	2	4	3	6	3	4	3.4	1.3
Cross the line	5	5	3	4	2	3	2	2	4	2	4	4	6	1	4	3.4	1.4

Roll with the punches	4	5	4	2	4	2	4	2	3	2	4	4	4	3	4	3.4	1.0
Hit rock bottom	3	6	3	4	4	2	4	1	3	1	2	4	5	5	4	3.4	1.4
A stab in the dark	5	3	3	3	5	1	4	3	1	1	5	5	3	4	5	3.4	1.5
Be on top of something	2	4	4	4	2	5	4	4	4	1	4	1	4	4	4	3.4	1.2
Below the belt	3	4	4	3	2	5	2	3	4	2	4	5	5	3	3	3.5	1.0
A lost cause	3	6	4	5	2	3	4	1	4	1	3	2	4	5	5	3.5	1.5
The black sheep	2	5	1	1	2	2	4	4	6	4	6	3	5	2	5	3.5	1.7
An Achilles heel	2	3	x	4	5	2	2	1	6	1	1	6	4	6	6	3.5	2.0
Cost an arm and a leg	4	5	4	4	3	2	4	4	4	2	4	6	3	3	1	3.5	1.2
A heart of gold	4	4	3	3	5	5	3	4	2	1	4	3	6	2	4	3.5	1.3
Strike while the iron is hot	4	5	2	1	1	1	5	3	5	2	4	5	5	4	6	3.5	1.7
See the light	2	5	4	3	2	1	4	4	4	3	4	4	5	4	4	3.5	1.1
A reality check	5	6	4	6	2	3	4	2	2	1	5	2	3	4	4	3.5	1.5
On the ropes	3	5	4	1	3	3	4	4	5	1	4	5	6	2	3	3.5	1.4
Be in the pipeline	6	5	4	3	3	2	x	4	3	2	4	3	4	4	3	3.6	1.0
Bleed someone dry	3	6	3	3	3	3	3	2	5	1	4	3	5	5	5	3.6	1.3
Put your money where your mouth is	5	6	5	4	4	2	3	3	3	2	4	3	2	3	5	3.6	1.2
Sell your soul	2	3	4	3	4	4	3	4	2	2	4	5	4	4	6	3.6	1.1
Take a hike	3	6	3	4	5	4	4	2	4	1	3	4	3	3	5	3.6	1.2
Make your blood boil	3	4	x	3	2	4	4	3	5	3	5	4	5	3	3	3.6	0.9
A rude awakening	3	5	4	6	4	2	4	3	6	1	3	5	6	2	1	3.7	1.7
Between a rock and a hard place	4	6	4	3	5	3	4	1	5	1	5	4	5	4	1	3.7	1.5
Saved by the bell	4	5	3	5	3	3	5	3	5	2	4	3	5	3	3	3.7	1.0
Leave no stone unturned	5	6	3	2	5	2	4	2	1	2	4	5	5	4	6	3.7	1.6
Bite your tongue	3	4	5	3	2	4	4	3	4	1	2	5	6	4	6	3.7	1.4
Be banging your head against the wall	3	6	2	4	4	6	5	4	2	1	4	4	4	3	4	3.7	1.3
Be walking on air	1	5	4	6	3	3	3	5	2	4	5	6	5	3	2	3.8	1.5
Drop a bombshell	4	5	2	5	2	5	5	5	3	2	3	4	4	5	3	3.8	1.2
Do something by the book	4	4	4	3	3	4	4	4	5	1	4	5	5	3	4	3.8	1.0
Get a foot in the door	4	4	3	5	3	3	2	5	6	1	3	5	5	5	3	3.8	1.3
Have a lot on your plate	5	3	3	2	5	5	4	5	5	2	4	4	5	2	3	3.8	1.2
Cross that bridge when you come to it	5	6	4	5	4	3	3	5	6	1	4	3	5	2	2	3.9	1.5
Be on the same page	4	6	4	3	3	4	4	3	1	2	5	5	4	4	6	3.9	1.3
Reach a boiling point	5	x	4	3	4	5	4	4	3	2	3	5	5	4	4	3.9	0.9
Have your back to the wall	4	4	4	4	5	2	3	4	5	1	4	5	6	6	2	3.9	1.4
Out for blood	5	6	3	1	4	5	5	2	4	2	4	4	5	5	4	3.9	1.3
Stand on your own two feet	3	5	5	4	4	4	5	4	3	2	5	5	3	5	2	3.9	1.1
God's gift to women	3	5	5	4	4	1	4	4	5	1	5	2	6	5	5	3.9	1.5
A gut feeling	2	6	5	4	3	4	3	3	3	3	4	5	6	3	5	3.9	1.2
Have nerves of steel	5	5	5	5	5	4	3	2	1	2	3	5	5	4	5	3.9	1.3
Open a Pandora's box	4	6	4	3	4	2	4	4	3	4	3	4	5	4	5	3.9	0.9
Rain on someone's parade	4	4	3	2	5	4	5	3	4	4	4	6	5	3	3	3.9	1.0
Only scratch the surface	5	4	3	4	5	4	4	4	4	1	3	5	4	4	5	3.9	1.0

A double-edged sword	4	4	4	2	6	2	4	3	3	4	3	6	5	3	6	3.9	1.3
Throw in the towel	2	6	2	2	2	2	4	4	6	1	5	6	5	6	6	3.9	1.8
Drink like a fish	2	1	5	2	5	4	6	5	5	2	6	4	5	2	6	4.0	1.7
Be the icing on the cake	4	5	4	4	5	2	3	5	4	3	5	4	4	3	5	4.0	0.9
Down the road	5	5	4	3	5	4	4	2	4	1	5	4	5	5	4	4.0	1.2
A change of heart	4	6	4	5	5	3	4	4	5	2	3	4	5	3	4	4.1	1.0
Put all your eggs in one basket	5	5	5	4	4	2	3	5	5	3	3	5	4	3	5	4.1	1.0
A slippery slope	4	3	4	4	4	2	4	5	5	1	5	5	5	4	6	4.1	1.2
Make waves	5	5	3	5	4	5	3	3	4	2	4	5	4	4	5	4.1	0.9
A grey area	5	6	5	4	2	3	4	4	5	2	5	5	5	4	3	4.1	1.1
A mixed bag	5	6	4	5	3	3	5	3	3	3	2	4	6	5	5	4.1	1.2
Blow up in your face	4	5	3	6	4	5	5	4	2	2	4	5	5	5	3	4.1	1.1
Have the last laugh	3	4	5	5	3	3	5	2	4	1	5	5	6	6	5	4.1	1.4
Throw money at something	4	6	6	3	4	4	4	3	5	2	5	3	5	4	4	4.1	1.1
Test the waters	5	5	3	5	3	3	4	4	4	2	3	6	4	5	6	4.1	1.1
Sign someone's death warrant	5	6	4	5	2	4	5	2	4	4	3	5	6	5	3	4.2	1.2
Fan the flames	5	5	3	5	5	4	4	4	5	1	5	4	6	4	3	4.2	1.2
Go off the rails	5	6	3	5	4	5	4	4	5	2	5	5	2	4	4	4.2	1.1
Look on the bright side	5	5	5	5	5	4	4	4	2	1	4	4	5	5	5	4.2	1.2
Back to the drawing board	5	6	4	5	5	3	4	3	5	3	4	5	5	5	2	4.3	1.1
To look good on paper	3	4	5	3	6	2	4	4	5	4	4	5	6	3	6	4.3	1.2
Make up for lost time	3	6	5	6	4	5	4	4	1	3	5	2	5	5	6	4.3	1.4
Rock the boat	4	5	4	5	5	4	4	5	5	3	4	5	5	5	2	4.3	0.9
Be hit or miss	5	6	5	5	4	2	4	3	5	2	5	3	5	5	6	4.3	1.2
Not be born yesterday	2	6	5	3	5	5	4	2	4	2	5	6	6	5	5	4.3	1.4
A blank check	5	4	4	4	5	4	5	3	5	2	4	5	5	6	5	4.4	1.0
Be playing with fire	5	6	4	5	4	5	4	4	4	3	4	6	5	5	2	4.4	1.0
Turn heads	3	6	5	5	3	5	5	3	4	1	5	5	6	4	6	4.4	1.4
A bitter pill to swallow	5	5	4	4	4	5	4	4	5	2	4	6	5	4	5	4.4	0.9
The jury is still out	4	6	4	4	4	5	4	4	6	3	4	5	5	5	4	4.5	0.8
Pull the plug on something	5	6	4	5	4	5	3	4	4	2	4	5	6	4	6	4.5	1.1
A race against time	6	6	5	5	5	5	5	2	4	1	5	4	4	6	4	4.5	1.4
A free ride	5	6	5	4	4	4	5	4	3	1	5	5	5	5	6	4.5	1.2
Come out of your shell	5	6	4	5	5	4	4	5	4	4	4	6	5	3	3	4.5	0.9
Like comparing apples and oranges	5	6	5	4	5	2	4	3	4	5	5	5	5	5	5	4.5	1.0
Turn your back on someone	5	5	5	3	6	5	4	4	6	2	4	5	6	5	3	4.5	1.1
Go through hell	5	6	2	4	5	5	4	4	5	4	5	5	5	5	4	4.5	0.9
Add insult to injury	5	6	4	4	6	2	3	4	5	3	4	4	6	6	6	4.5	1.3
Crack the whip	4	5	4	4	5	4	5	3	5	2	5	6	6	5	5	4.5	1.0
Blood, sweat, and tears	4	6	x	5	4	5	4	3	5	4	5	4	5	5	5	4.6	0.7
A blessing in disguise	5	6	4	6	5	2	5	3	5	4	5	4	6	6	3	4.6	1.2
Be a a big fish in a small pond	4	5	4	5	6	5	5	5	4	3	4	5	5	4	5	4.6	0.7
Open the floodgates	5	6	3	5	6	5	5	5	5	2	5	5	5	5	2	4.6	1.2

Not be rocket science	5	5	4	5	6	4	4	4	4	3	5	5	6	4	5	4.6	0.8
Treat someone like dirt	5	6	4	6	5	5	4	4	5	1	5	4	5	6	5	4.7	1.2
Raise eyebrows	4	5	4	6	5	5	4	5	5	2	5	5	6	5	4	4.7	0.9
Walk into the lion's den	5	6	3	5	5	5	4	4	5	3	5	5	5	5	5	4.7	0.8
A recipe for disaster	6	6	4	6	6	4	5	4	5	3	5	2	6	5	3	4.7	1.2
Cover your tracks	5	6	5	4	5	4	4	2	5	3	4	6	5	6	6	4.7	1.1
A domino effect	5	6	4	5	5	5	4	5	5	4	5	6	5	5	2	4.7	0.9
Packed like sardines	4	6	5	5	3	4	5	5	4	4	5	5	6	4	6	4.7	0.9
Be alive and kicking	4	6	4	6	5	4	5	5	5	5	5	6	6	4	2	4.8	1.0
Drag someone kicking and screaming	5	6	5	6	5	4	5	5	3	3	5	5	6	6	3	4.8	1.0
The Light at the end of the tunnel	5	6	5	5	5	2	5	5	5	3	4	6	5	6	5	4.8	1.0
Be caught with your pants down	3	6	5	5	5	5	5	2	5	4	6	5	5	5	6	4.8	1.0
Smooth sailing	5	6	4	5	5	5	5	4	5	3	5	5	5	4	6	4.8	0.7
A hidden agenda	6	4	6	5	4	4	4	3	6	5	3	6	6	6	5	4.9	1.1
Give someone the green light	5	6	5	x	5	5	5	1	5	5	5	6	6	5	5	4.9	1.2
A drop in the bucket	5	6	4	5	6	5	5	3	6	4	5	5	5	5	5	4.9	0.8
An accident waiting to happen	5	6	5	6	5	5	5	3	5	3	6	5	6	6	4	5.0	1.0
Stab someone in the back	5	6	5	5	6	4	5	5	6	3	4	6	6	6	3	5.0	1.0
Kill two birds with one stone	5	6	3	5	5	4	5	5	6	4	5	5	6	5	6	5.0	0.8
The end of the road	5	5	4	6	5	5	5	5	6	3	6	5	6	5	4	5.0	0.8
Be on autopilot	6	6	5	6	5	5	4	4	5	3	5	5	6	6	4	5.0	0.9
Be skin and bones	5	6	5	5	5	4	4	4	5	5	6	6	6	4	5	5.0	0.7
Be caught in the act	4	6	6	6	4	5	6	3	6	3	5	6	6	6	4	5.1	1.1
A necessary evil	5	6	5	6	5	6	5	3	5	1	5	6	6	6	6	5.1	1.3
Free as a bird	5	6	4	5	5	5	5	5	6	4	5	4	6	6	6	5.1	0.7
Recharge your batteries	6	6	5	6	3	4	5	4	5	5	5	6	6	6	6	5.2	0.9
The tip of the iceberg	5	6	5	5	5	4	6	5	6	3	5	6	6	5	6	5.2	0.8
Win the battle, but lose the war	5	6	5	6	6	2	6	4	6	5	5	6	6	6	5	5.3	1.1
Add fuel to the fire	6	6	5	5	6	6	5	6	6	4	6	5	6	6	3	5.4	0.9
Be skating on thin ice	6	6	4	5	6	5	5	6	6	6	6	6	5	4	6	5.5	0.7

C.2 Transparency rater qualitative data

Transparency raters' justifications for ratings on subsample of idioms

Idiom	Comment 1	Comment 2	Comment 3	Comment 4
Hit the sack	I always figured this idiom was connected to the days when pillows and mattresses filled with hay. Sometimes you have to kit it to make it comfortable.	Sack means bed such as "in the sack", "sack out", etc.	It's possible to picture "the sack" as an old form of bedding--a sack filled with straw, feathers, etc. but otherwise it sounds more like boxing than sleeping.	A sack reminds me of a sleeping bag. I can also imagine the head falling down as you go to sleep.
Ruffle feathers	This compares dissatisfied acquaintances to birds, who, through insensitive handling, have had their feathers disjointed.	I can visualize feathers out of place on a bird (or something) as that animal was disturbed by something	This is possibly more clear depending on how the listener knows birds/can picture how a bird might feel if its feathers were ruffled.	I can clearly imagine an animal/bird being unhappy/disgruntled when you move its feathers just like we don't like people touching our hair.
A piece of cake	I hear this idiom all the time, but I've never understood the connection between easy tasks and dessert pastries	Cake relates to easy --> how?	I can't imagine any way that a first-time encounter with this idiom could be interpreted as easy.	I think this would be easily confused with eating. It is not connected to being easy.
A recipe for disaster	Following a recipe will lead you to a desired outcome. Generally this outcome is culinary, but this idiom expands the context.	Easy to understand various elements coming together in a certain way (like a recipe) to form something bad.	Seems fairly clear to me --> a recipe being a list of ingredients/steps to create something and disaster being the result of those steps.	This brings a clear image into my mind of a recipe showing how to make a disaster.
Come out of one's shell	The comparison here is between shy people and timid turtles.	Turtle like --> coming out from a safe place but difficult to link to personal actions.	Picturing oneself in a shell (not too many outgoing creatures in shells) and then coming out of it--possibly a process towards being more outgoing.	The image of a hermit crab hiding from danger is easy to imagine, although this is actually referring to a more emotional fear.

Stick to your guns	This idiom harkens to instances in human history when soldiers had to choose between retreating and bravely continuing to fight.	Stick as in stay & don't retreat. Stay w/ your guns & fight military reference?	Sounds more like something that happens to the bad guy in a cartoon (glue on your gun handle) but it could also be interpreted correctly if the reader takes guns as something strong and powerful and interprets "stick" as stick-to-something rather than gluey.	The word stick implies not moving or doing something, but 'guns' would be confusing.
Smell a rat	When humans are likened to rats, the implication (in English) is that the person is a sly, treacherous traitor. To "smell" one is to become perceptive to its existence.	A rat has long been a symbol of evil or treachery so smelling a rat hints of something suspicious.	Could be interpreted correctly with the cultural knowledge that a rat is considered shifty. If your culture doesn't have that, you might be less inclined to correctly interpret that.	The smell of a rat must be something bad, but it is not clear that it just means something is wrong. In a way, having a rat smell is expected.
Learn the ropes	I can't tell if this idiom refers to novice sailors learning to work a ship, or novice boxers unfamiliar with the dimensions of a boxing ring.	Another military (naval) reference to a new person learning to sail a ship.	I'm not sure. I have no cultural image in my head when I hear this. I can't really imagine that 'ropes' has enough of a tie to 'basics' that a NNS would get it. Perhaps if they have a naval background?	The word learn is very clear. The ropes could be imagined to be something connected to sailing, so it might be confusing.
Get a kick out of something	This aging idiom is rather vague. I also thought it referred to a jolt of pleasure that makes one's leg jerk and spasm.	Not sure how to connect something kicking w/ enjoyment.	Sounds negative rather than positive.	A kick often sounds pleasant, but could mean a shot of excitement.
Play devil's advocate	The implication here is that the opposing point-of-view is clearly wrong (and possibly evil) but is adopted for the sake of argumentation.	The devil (evil). Someone suggesting the worst possible outcome.	You'd have to know that 'play' can be act, have an idiom of who the Devil is, and understand that acting the part of his advocate would just be taking the other side of an argument and not being a devil worshipper.	If you know the word 'advocate' the meaning of this idiom is very clear.
Be skating on thin ice	Skating on thin ice is dangerous, so clearly refers to any dangerous activity.	It's easy to imagine ice breaking from heavy weight.	Not entirely transparent, since skating on ice is something only done in some parts of the world.	My feeling is that this fairly clearly suggests something dangerous.
Lose your head	When you get angry, it puts pressure on your head. Like shaking a Coke bottle, pressure leads to explosions.	Can imagine not being able to think clearly without head.	Lose = quite transparent, but "head" isn't.	The head is generally associated with rationality. To lose it implies some loss of reason/rationality,

Show your true colors	I don't really understand how colors relate to character. "True" refers to the "inner" traits of a person. Don't see the connection here with colors.	Images of nations and colors at war.	Show = reveal --> kind of transparent True colours = real self --> very opaque	Colours are associated in some sense with tribalism (war, sport, etc.) "True" is a fairly big hint.
Bury the hatchet	Burying a hatchet maybe is related to covering up a crime--hiding crimes of the past. In other words, putting these things out of sight so relationships can be repaired.	I know the history of this idiom, but there is no way to understand the meaning semantically.	Bury = forget - opaque; hatchet = problem - opaque	Difficult to rate because my cultural knowledge stems from what I know of the etymology of the idiom itself (although that could be apocryphal). It implies violence, but with cultural knowledge it becomes obvious.
Like comparing apples and oranges	Two different fruits = two different objects. Fairly clear connection.	The use of "comparing" in the idiom helps to explain the image and to imagine the shape and texture of apples/oranges.	Somewhat opaque, since the idiom is referring specifically to a fallacy.	Fairly obvious that these are 2 different things, although I suppose that would be clearer if they weren't both fruit.
Be caught with your pants down	I think of George from Seinfeld being caught masterbating. Being caught doing something embarrassing.	Can imagine being embarrassed in a state of undress.	Most sane adults would be able to imagine this feeling. "Caught" is a little tricky, though.	Clearly an embarrassing/vulnerable situation in any language. The only question is whether it refers to discomfort or vulnerability.
Have a skeleton in your closet	Hiding a body is a dark secret.	Can imagine something scary, but no context or connection to the past.	Skeleton = opaque; in the closet = opaque. A thick metaphor	Skeletons are more readily associated with frights or scares, I would think, than secrets.
Face the music	The only connection is the opening music before a show, maybe. If you hear the music, your performance starts.	No negative connotations in the idiom.	The metaphorical meaning here is very distant to literal meaning. Very opaque.	The only semantic link here is face, which implies a negative situation.
Not be out of the woods	The woods is a dangerous place. You need to run to get out.	Can imagine danger in the woods and also boundaries.	Often used in medical situations, so "be out of the woods" = "100% cured" - quite opaque.	As with most of these, context would make this much clearer. Without context, 'woods' can have both positive and negative connotations.

An Achilles heel	This really is difficult to explain. I guess this is based on the story of "Achilles" but I don't think semantically the relationship is clear. It requires cultural knowledge.	You would need to know the history of this phrase to know its meaning.	No verb to help reveal the meaning, requires some knowledge of ancient history.	Cultural knowledge is everything here. This is utterly opaque without it.
Go bananas	I associate bananas with monkeys, thus acting foolishly, actively, with a lot of vigor.	Don't see how going/becoming bananas signifies a literal sense of madness...?	The connection (vague) is via the understanding that a monkey, which likes bananas, is going crazy.	The connection between bananas and the meaning of this idiom is very tenuous and would rely on the listener making the connection between bananas and monkeys, etc.
Drink like a fish	While not technically drinking-one can imagine this idiomatic expression to be used with those who drink a lot.	Seems like an obvious suggestion that consumption is vast...?	Fish live in water as a heavy drinker 'lives' in alcohol.	It is fairly simple for most listeners to make the connection between the fact that a fish has water moving through its mouth more or less constantly and a person who drinks heavily.
Get something off your chest	The only clue that indicated this or something troublesome, worrisome, etc. is that there might be something stuck to your body. It could consume your thoughts until you pick it off. (Or reveal what's on your mind). A loose connection.	Don't see how removing and "bad" from a chest in anyway literally or figuratively implies relief	When preoccupied, there can actually be a discernible weight on one's chest. The act of expressing one's concerns or whatever relaxes the speaker in a way to alleviate that weight or pressure.	Many people report tightness in the chest as a physical symptom of stress so it is not unreasonable that people might make the connection between speaking your mind and relief of those symptoms.
Turn over a new leaf	The only thing clear about this expression is the word "new". Turning over a leaf does not seem to equate with changing behavior, habits, etc.	Difficult to see how 'leaf turning' implies a fresh start!	Not sure why 'leaf' is used in this idiom but turning something over is akin to starting something new, perhaps an extension of turning a page.	Both the action of turning over and the concept of a new leaf might lead a person to infer the idea of a novel situation or behavior. However, it would not be immediately apparent.
Spill the beans	If you spill something, one could discern that the contents are being revealed, but this is not explicit. Spilling beans and revealing a secret could both cause problems.	...again, bean spilling does not suggest in any way divulging....	Spill = unintentionally; beans = ?	There is very little obvious connection between the meaning of this idiom and its constituent parts.

Be under the weather	Not explicit, but enough clues to discern meaning. "Under" and "weather" elicits rain, feeling 'down', etc. When flying, you're 'over' the weather and it's always beautiful and sunny.	Cannot see how this implies sickness/illness.	The image is of a person under a cloud and rain, thus dampening his spirits and making him atypical in terms of health or mood.	The only part of this idiom that might lead a person to infer its meaning is "under". Therefore it would be quite difficult to infer the correct meaning.
Recharge your batteries	While people don't require batteries, the relationship is pretty clear between this and doing something that will give us more energy (relaxation, rest, etc.)	Quite an easy cross over to imagine batteries being recharged as relating to a resurgence of energy.	Direct metaphor for refreshing one's energy source.	Most people would be familiar with the concept of recharging and would be able to transfer the idea to humans.
Money talks	While money doesn't actually talk, I think it's clear that money can help to persuade or negotiate terms.	Can't see how, outside of the metaphor, that this would imply what the idiomatic usage conveys.	It's not money that actually 'talks', rather talks is a euphemism for being attractive or enticing, therefore once money is suggested a certain proposition becomes attractive.	This idiom would be somewhat easy to comprehend provided the listener could make the semantic link between "talk" and the concept of expressing power and influence.
Strike while the iron is hot	In shaping iron, the ideal time to shape it is when it's hot so this is clear that one should seize opportunity when it presents itself.	...at a stretch-might be able to infer that this implies the need to act quickly.	When hot, the iron does its job properly (brand something). Allowing it to cool down (take time) diminishes its branding capability. I consider it a figurative reference to the branding of cattle, which is important work for farmers or cowboys.	Most people would be familiar with the connection between the temperature of metal and its ease of working.
Have your pound of flesh	Flesh has me think of butchered meat, so this word related well to the insisting nature of the idiom.	...as above, similar. Possible to imagine that being given an amount of flesh/meat might imply sharing what should be even...possibly.	A lawful but outrageous loan that must be repaid, from Merchant of Venice (Shakespeare).	If the listener is familiar with "The Merchant of Venice", the meaning of this idiom would be readily apparent. If not, this would be quite difficult to decipher.

APPENDIX D PICTURE COLLABORATION NOTES

D.1 Samples of notes

Literal Plus Figurative picture	Meaning of idiom	Suggestions for design from researcher	Illustrator's intended course of action	Follow up from researcher
Give someone the green light	If someone in authority gives someone or something the green light, they allow someone to do something.	Due to the international usage of green lights for permission to proceed in traffic signals, I think we can exploit this effectively here. What I imagine is maybe like a traffic guard actually holding and offering traffic light with the green very evidently bright with one hand. Maybe with his other hand, he's showing the OK sign and the person in the car has one hand out of the window also holding an OK sign.	View from the back of the car, with Drive coming out from side window, taking the light from traffic controller. Both of them showing OK sign with one hand. I would replace 2 OK signs with only traffic controller showing with one hand welcoming sign (like please pass through. Not sure if I explained properly).	Yes, I like your idea, let's try it. Just be sure the green light is very big. It can be exaggerated a bit if needed for foregrounding purposes.
Turn heads	If someone or something turns heads, they are so beautiful, unusual, or impressive that people notice them and admire them.	There could be two or three heads turning because there is an incredibly attractive women	As described. On the left beautiful woman head, front view and on the right 3 men heads turning and looking at her	Great. If it's possible, add in some motion marks so that "turn" is more emphasized
Walk into the lion's den	If you walk into the lion's den, you deliberately place yourself in a dangerous or difficult situation.	There could be a man walking into a lion's den (there could be a warning sign or something that indicates dangerous lions are inside). The man could have a thought bubble with him imagining himself willingly facing the lions).	As described. Side view... I think "bubble" explains situation very well even without any additional sign at the entrance.	Sounds good. In that case make lions look threatening/aggressive in the "bubble"
Go cold turkey	If someone goes cold turkey, they suddenly quit a bad habit such as smoking or drinking a lot of alcohol.	A cold turkey (maybe his feathers are plucked and he is blue and shivering). The turkey has indicated he will quit his bad habits by throwing all his cigarettes and alcohol in the trashcan. The shivering could also be a sign of withdrawal from using the drugs, which would reinforce the idea of quitting a bad habit too.	Shivering turkey near the trash bin, throwing stuff out.	OK

An accident waiting to happen	If you describe a situation or activity as an accident waiting to happen, you mean that they are likely to be a cause of danger in the future.	The most prototypical example of a random ridiculous accident that I can think of is the classic "piano falls on someone's head" accident, which I think could work in this case. I imagine a man about to unknowingly walk under a piano suspended in the air by a very thin piece of rope. There could be a bird pecking at the rope, or a cat playing with the rope above, indicating the piano could fall at any moment. To encode "waiting" maybe have the piano have arms and a face and it's looking impatiently at its wristwatch.	As described, but I would skip the cat or bird and leave only the rope, which is breaking apart. Only one string left and the piano will fall. Piano is looking at that weak spot. Let me know what you think.	Perfect!
Do something by the book	If you do something by the book, you do it strictly according to the rules.	I don't have any really good ideas for this one at the moment except for maybe having a big book of instructions and someone is assembling something very closely those instructions.	I can draw a person doing weird yoga exercise, while holding a book in one hand called "Yoga, for beginners" and reading it.	Very creative--I like it! Make sure to make the book big enough
Money talks	If you say that money talks, you mean that people with a lot of money have power and influence.	Maybe have one really rich looking man holding a wad of money to another man's ear. The money is big and has a big mouth. It's talking into the other mans ear who is listening intently. Have the men shaking hands to indicate some kind of agreement as a result of the influence of the money.	as described... two people shaking hands, one is holding talking money in the other hand, while another person listens to what it says.	Good
Go bananas	If someone goes bananas, they become very angry, upset, or excited.	To convey the sense of "excited", I imagine a bunch of bananas watching their favorite sports team win a big game. How you represent the bananas is up to you, but they need to seem very high energy. They could be fist pumping or cheering/yelling, jumping, or whatever you think would convey a high level of excitement.	Side view, 3 bananas on the sofa in front of TV. All 3 in different poses, seem very excited. There will be football on the floor indicating that they are watching football game (is it American football or normal one (soccer) :)?)	Good. Since soccer is more popular around the world (including here in Japan), let's make it soccer :)

Recharge your batteries	If you recharge your batteries, you stop working for a short period in order to rest, so that you have more energy when you start working again.	Maybe have a person, and they have a battery inside their stomach (transparent stomach maybe?). A chord runs from their body to the wall where it is plugged in and recharging. You could even have a floating charging meter showing the charge going up and the expression of the person should seem like he is being revitalized or reenergized.	Will have a person (with batteries in a stomach) sitting in a relaxed position in a chair, connected to plug in the wall. Face expression relaxed. Alternative: a man with satisfied face expression, holding his two fingers in a wall plug.	I like both. As long as the alternative's perspective won't interfere with meaning, we can try that one. Otherwise, go with the original.
A drop in the bucket	If something, especially an amount of money, is a drop in the bucket, it is very small in comparison with the amount which is needed or expected.	I don't have many good ideas on this one. The only thing I can think of is have a bucket which has a single, but very clearly visible and typical drop (with drop-shape) in a bucket. The person holding the bucket is very thirsty although I'm not sure how you might convey that. Perspective might be challenging with this one.	Upset man holding the bucket under the water tap. There is only one drop falling from the tap to the bucket.	I like this.
God's gift to women	If a man thinks he is God's gift to women, he behaves as if all women find him very attractive.	This one might be challenging. Maybe have God in a cloud offering a present (a man in a gift box) to on looking women. The trick here is in the nuance. This idiom always has a negative connotation, such as in "He thinks he's God's gift to women" reflecting conceit and vanity. Maybe this could be reflected in the facial expression of the man. The women could look unimpressed.	There will be God, laughing in the clouds; self confident, naked, funny looking guy with the ribbon covering certain parts of his body; and unimpressed woman looking to his direction.	Good!
Have a lot on your plate	If you have a lot on your plate, you have a lot of work to do or a lot of things to deal with.	Maybe have a person with a big plate in front of him or her. On the plate there are so many different tasks to do, this could be represented by books, PC, notebook, calendar, or any other things that could represent work. Person's face should look overwhelmed and/or stressed	As described.	OK

APPENDIX E TREATMENT PICTURES

E.1 Comparison of literal + figurative and literal only picture conditions

Literal + Figurative

Literal Only

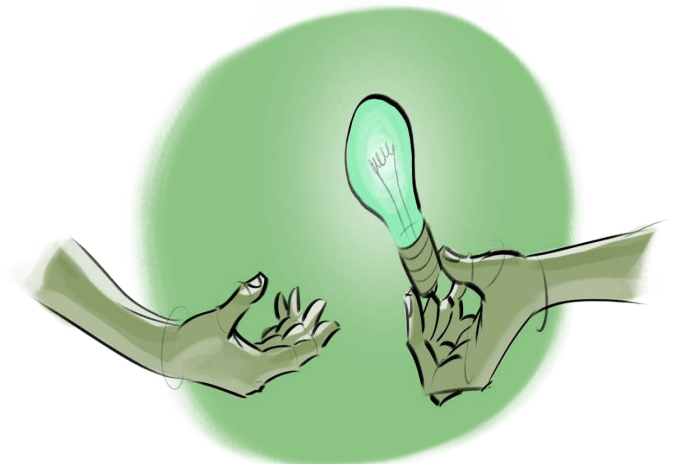
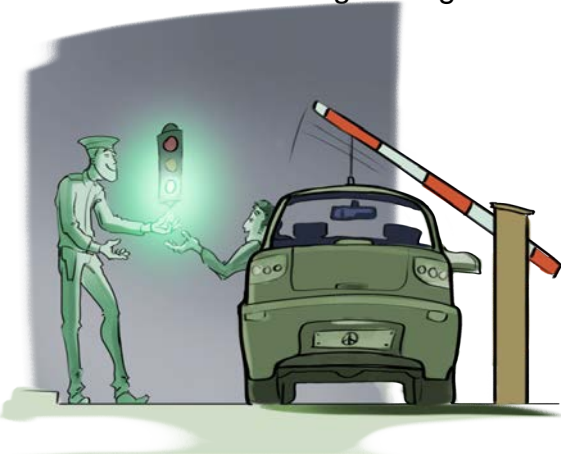
A drop in the bucket



Come out of your shell



Give someone the green light



Literal + Figurative

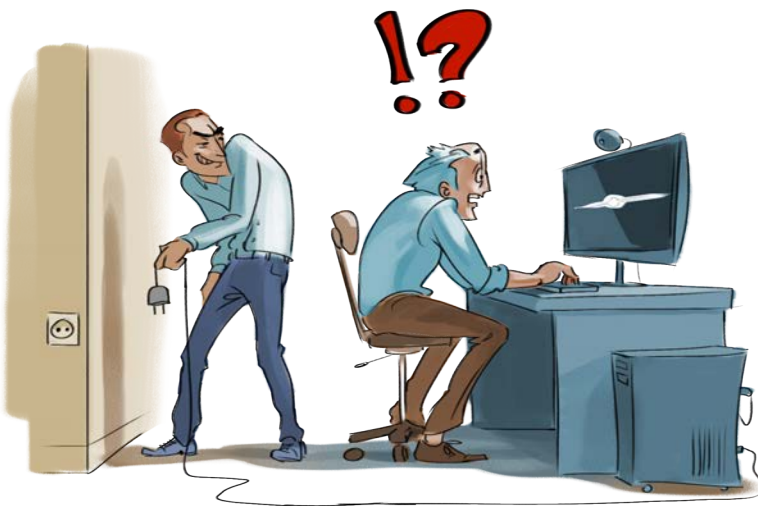
Go through hell



Literal Only



Pull the plug



Raise eyebrows



Literal + Figurative

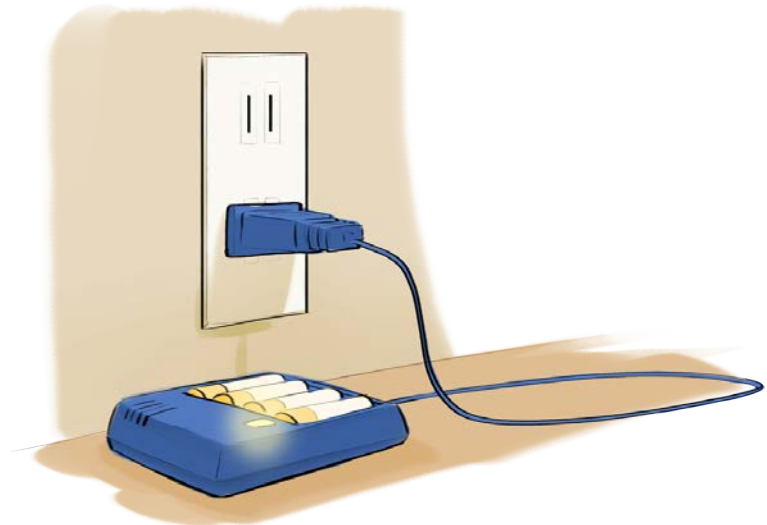
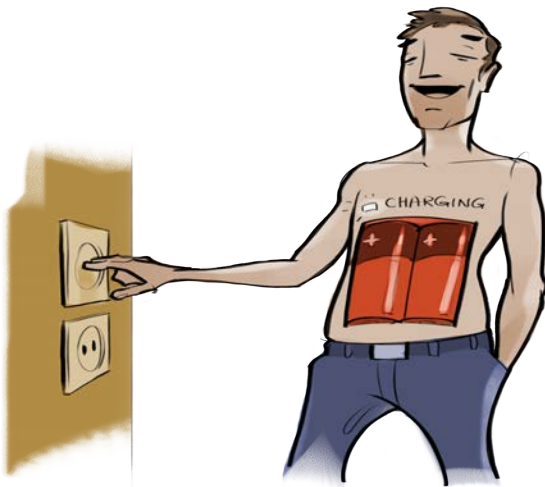
Turn heads



Literal Only



Recharge your batteries



The end of the road

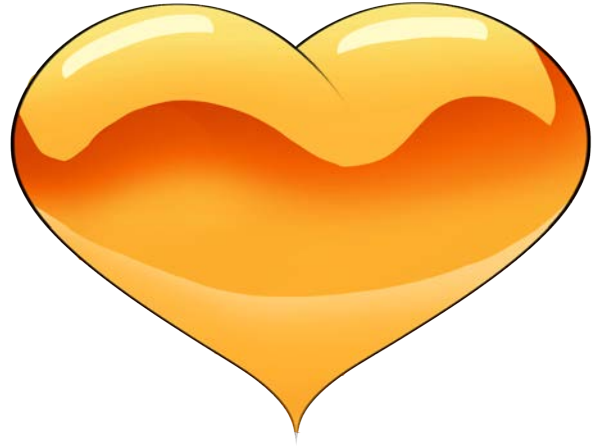


Literal + Figurative

Have a heart of gold



Literal Only



Have a skeleton in the closet



Have your back to the wall



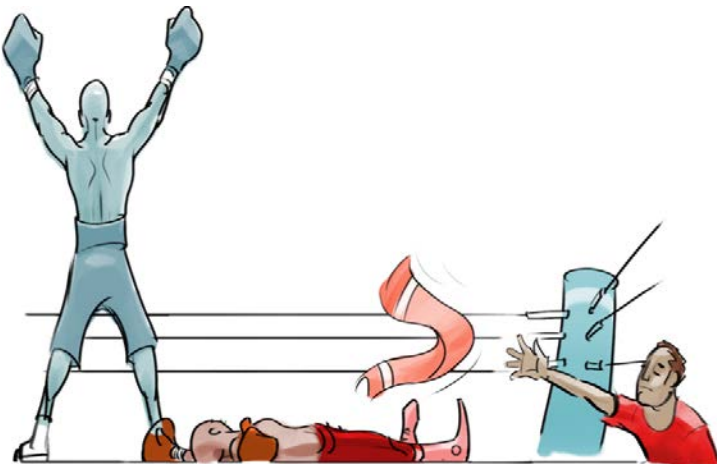
Literal + Figurative
God's gift to women



Literal Only



Throw in the towel



Have a lot on your plate



Literal + Figurative

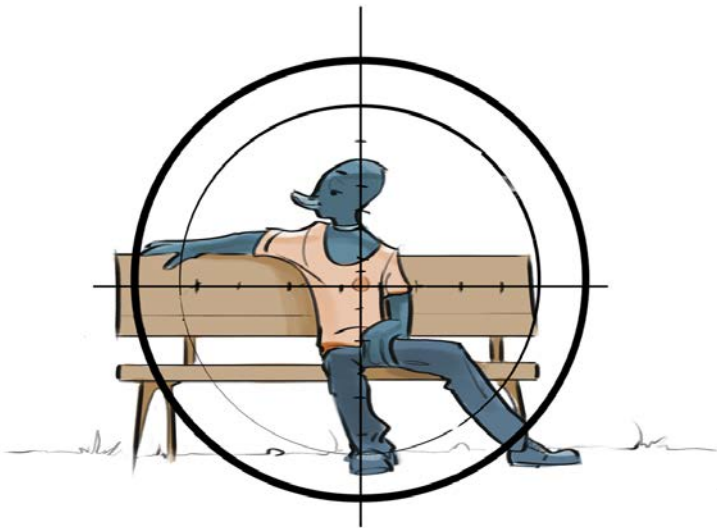
Sit on the fence



Literal Only



A sitting duck



Be in the hot seat

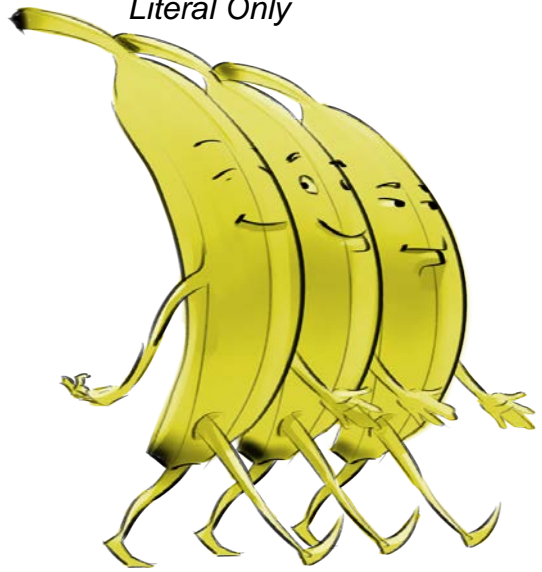


Literal + Figurative

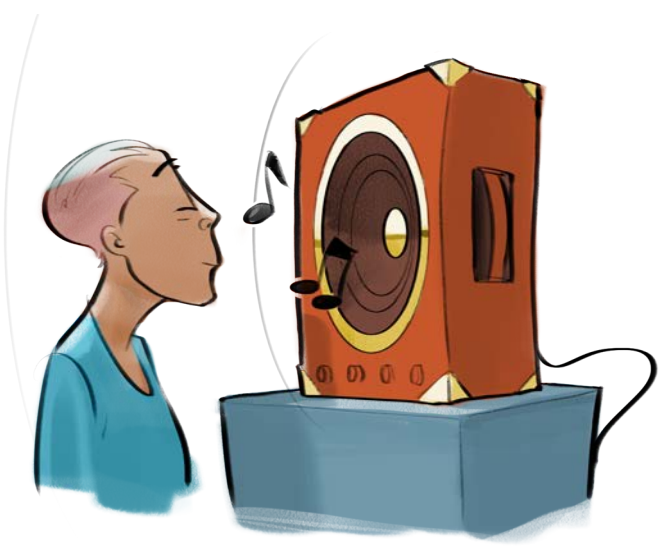
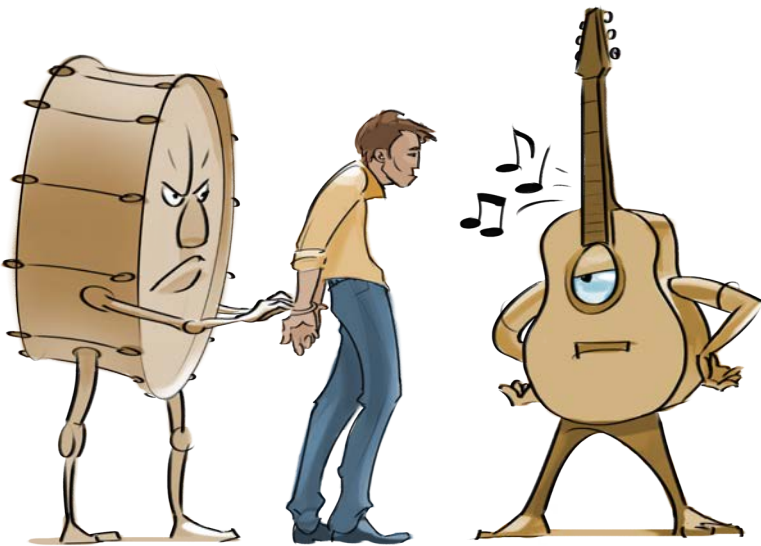
Go bananas



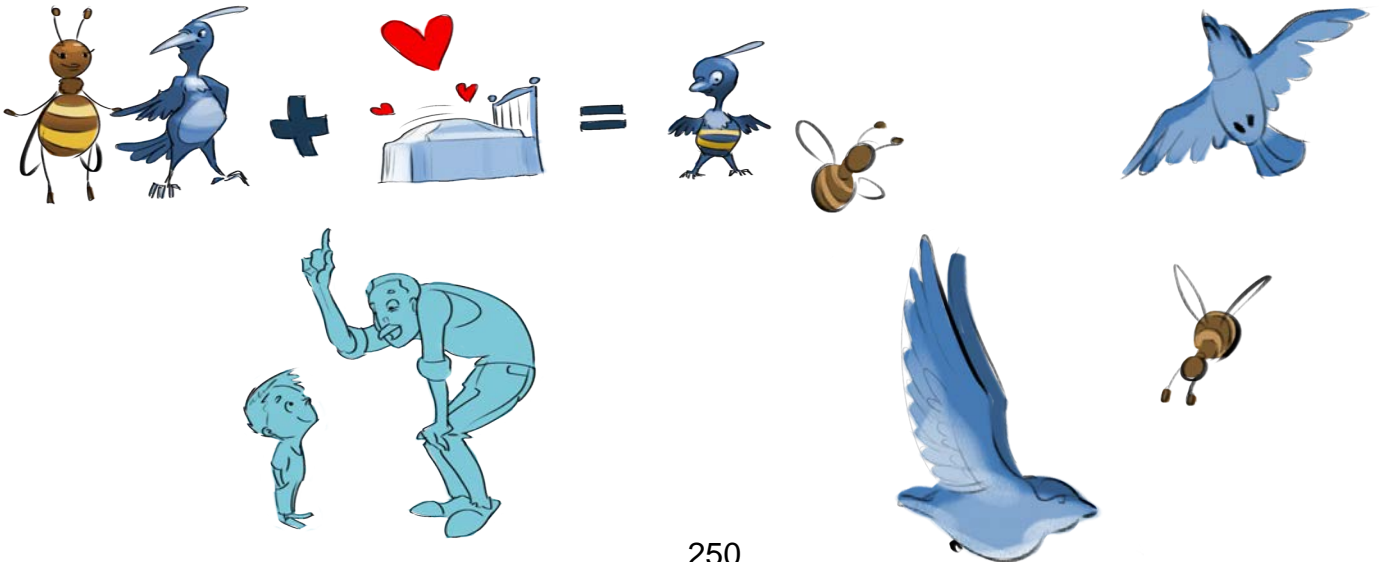
Literal Only



Face the music



The birds and the bees

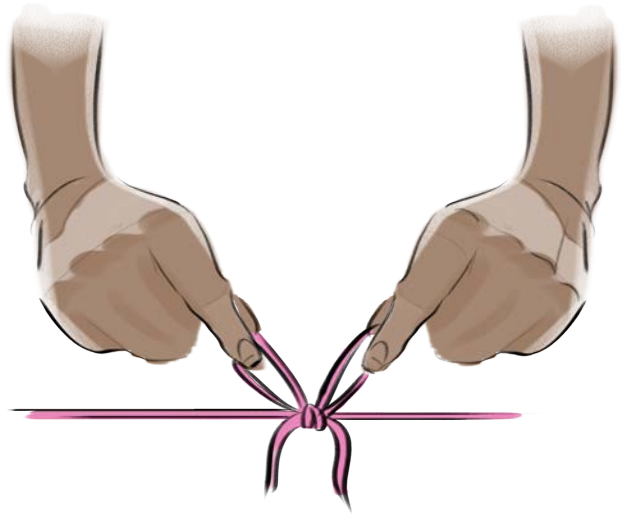


Literal + Figurative

Tie the knot



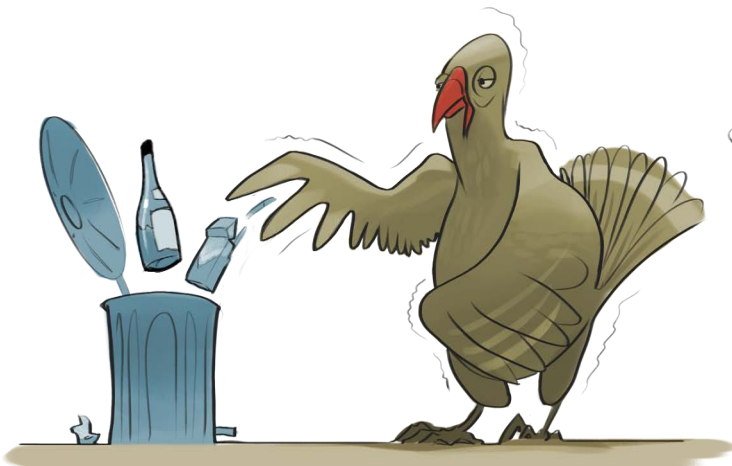
Literal Only



Be under the weather

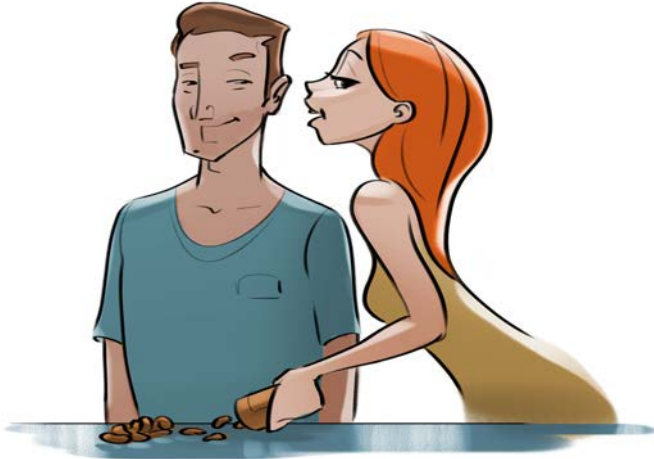


Go cold turkey



Literal + Figurative

Spill the beans



Literal Only



Bury the hatchet



Red tape



APPENDIX F PICTURE RATING INSTRUMENTS

F.1 Picture rating scales

Scale for Literal-Visual Representation

not well represented

well represented

←----->

1 Poor	2 Inadequate	3 Adequate	4 Good
The literal parts are not well represented . Some of the literal noun objects are not in the image.	The literal parts of the idiom are represented to a degree , but there are too many unnecessary items that do not contribute to the figurative meaning or the literal parts are too small or difficult to identify.	The literal parts of the idiom are adequately represented . Their presence is obvious . Most of the non-literal items contribute in some way to the figurative meaning. Some literal action verb parts might be represented in the resultative state.	The literal parts of the idiom are well represented . Their presence is very obvious . Almost all non-literal items contribute in some way to the figurative meaning. Some literal action verb parts might be represented in the resultative state.

Scale for Figurative-Visual Connectedness

weak relationship

strong relationship

←----->

1 Poor	2 Inadequate	3 Adequate	4 Good
Even if the learner already knows the figurative meaning of the idiom, he or she will have great difficulty understanding the relationship between the figurative meaning and the image.	Even if the learner already knows the figurative meaning of the idiom, he or she might have some difficulty understanding the relationship between the figurative meaning and the image.	Once a learner knows the figurative meaning of the idiom, he or she can somewhat easily understand the relationship between the figurative meaning and the image.	Once a learner knows the figurative meaning of the idiom, he or she can easily understand the relationship between the figurative meaning and the image.

Scale for Bizarreness

less bizarre

more bizarre

←----->

1 Very Unremarkable	2 Somewhat Unremarkable	3 Somewhat Bizarre	4 Very Bizarre
This image is very unremarkable.	This image is somewhat unremarkable.	The image is somewhat bizarre.	The image is very bizarre.

APPENDIX G PICTURE RATER DATA

G.1 Picture rating data

Idioms highlighted in yellow indicate they were removed from the final treatment pool due to insufficient representation for literal parts (highlighted in red) for either literal + figurative or literal only pictorials. Likewise, insufficient representation for figurative parts for the literal + figurative pictorials or excessive representation for figurative elements in the literal only pictorials were also excluded (highlighted in purple)

#	Idiom	1 L	2 L	3 L	Ave	2 F	2 F	3 F	Ave	1 B	2 B	3 B	Ave
1	A sitting duck 1	4	4	4	4.0	4	4	4	4.0	3	3	3	3.0
2	A sitting duck 2	4	4	4	4.0	2	3	1	2.0	2	3	2	2.3
3	A drop in the bucket 1	4	4	4	4.0	3	3	2	2.7	1	2	1	1.3
4	a drop in the bucket 2	3	3	3	3.0	4	4	3	3.7	2	2	2	2.0
5	A heart of gold 1	4	4	4	4.0	4	4	4	4.0	2	2	3	2.3
6	A heart of gold 2	4	4	3	3.7	2	2	1	1.7	1	2	2	1.7
7	A piece of cake 1	4	4	4	4.0	1	2	1	1.3	1	2	1	1.3
8	A piece of cake 2	3	4	4	3.7	4	3	4	3.7	4	3	3	3.3
9	An accident waiting to happen 1	2	3	3	2.7	3	3	3	3.0	3	3	3	3.0
10	An accident waiting to happen 2	3	4	4	3.7	4	4	4	4.0	4	3	3	3.3
11	An old flame 1	2	2	3	2.3	4	3	4	3.7	3	3	3	3.0
12	An old flame 2	3	3	4	3.3	1	2	1	1.3	2	3	3	2.7
13	Be in the hot seat 1	4	4	4	4.0	2	3	2	2.3	4	3	3	3.3
14	Be in the hot seat 2	3	4	4	3.7	4	4	3	3.7	3	3	3	3.0
15	Be on the fence 1	4	4	4	4.0	1	2	2	1.7	3	3	3	3.0
16	Be on the fence 2	3	4	4	3.7	4	4	4	4.0	3	3	3	3.0
17	Be on the same page 1	4	3	4	3.7	3	2	2	2.3	1	2	1	1.3
18	Be on the same page 2	4	4	3	3.7	4	4	3	3.7	3	2	2	2.3
19	Break the ice 1	3	2	3	2.7	4	4	4	4.0	4	2	2	2.7
20	Break the ice 2	2	3	4	3.0	1	2	1	1.3	3	3	2	2.7
21	Bury the hatchet 1	4	3	4	3.7	4	3	3	3.3	3	3	2	2.7
22	Bury the hatchet 2	4	3	3	3.3	1	2	1	1.3	3	2	1	2.0
23	Come out of your shell 1	4	3	4	3.7	2	2	2	2.0	4	2	3	3.0
24	Come out of your shell 2	4	3	4	3.7	4	4	3	3.7	4	3	3	3.3
25	Face the music 1	3	3	3	3.0	4	4	3	3.7	4	4	3	3.7
26	Face the music 2	4	4	4	4.0	1	2	1	1.3	3	2	2	2.3
27	Give someone the green light 1	4	4	4	4.0	1	2	1	1.3	3	2	2	2.3
28	Give someone the green light 2	4	3	3	3.3	4	4	3	3.7	1	2	2	1.7
29	Go bananas 1	2	3	4	3.0	4	4	4	4.0	4	3	4	3.7
30	Go bananas 2	3	3	4	3.3	1	2	1	1.3	4	3	2	3.0
31	Go cold turkey 1	3	4	3	3.3	1	2	1	1.3	2	2	3	2.3
32	Go cold turkey 2	4	3	3	3.3	4	3	4	3.7	4	3	4	3.7
33	Go through hell 1	4	4	4	4.0	4	4	2	3.3	3	3	3	3.0

34	Go through hell 2	4	4	4	4.0		1	2	1	1.3		4	3	3	3.3
35	God's gift to women 1	4	4	4	4.0		1	2	2	1.7		3	3	2	2.7
36	God's gift to women 2	3	3	3	3.0		4	4	3	3.7		4	4	4	4.0
37	Have a lot on your plate 1	4	4	4	4.0		1	2	1	1.3		1	2	1	1.3
38	Have a lot on your plate 2	4	4	4	4.0		4	4	4	4.0		2	3	3	2.7
39	Have a skeleton in the closet 1	4	4	4	4.0		2	2	2	2.0		2	3	3	2.7
40	Have a skeleton in the closet 2	4	4	4	4.0		3	3	3	3.0		2	3	3	2.7
41	Have a skeleton in the closet 3	4	4	4	4.0		4	3	3	3.3		2	3	3	2.7
42	Have your back to the wall 1	4	4	4	4.0		1	2	1	1.3		1	2	1	1.3
43	Have your back to the wall 2	4	4	4	4.0		4	4	4	4.0		2	2	2	2.0
44	Kick the bucket 1	4	4	4	4.0		1	2	1	1.3		1	2	2	1.7
45	Kick the bucket 2	4	4	4	4.0		2	3	3	2.7		2	3	3	2.7
46	Kick the bucket 3	4	4	4	4.0		3	3	4	3.3		2	3	3	2.7
47	Lay down the law 1	3	4	2	3.0		4	4	3	3.7		2	3	2	2.3
48	Lay down the law 2	2	4	2	2.7		1	2	2	1.7		1	2	1	1.3
49	Like comparing apples and oranges 1	3	4	4	3.7		2	2	2	2.0		1	2	1	1.3
50	Like comparing apples and oranges 2	4	4	3	3.7		4	2	2	2.7		4	4	3	3.7
51	Make someone's blood boil 1	2	4	3	3.0		3	4	4	3.7		4	4	4	4.0
52	Make someone's blood boil 2	3	2	2	2.3		1	1	1	1.0		3	2	1	2.0
53	Make someone's blood boil 3	1	2	2	1.7		3	4	4	3.7		3	3	2	2.7
54	Make someone's blood boil 4	1	2	1	1.3		1	2	1	1.3		1	2	1	1.3
55	Money talks 1	4	2	4	3.3		1	2	2	1.7		4	3	3	3.3
56	Money talks 2	4	3	4	3.7		4	4	4	4.0		4	3	3	3.3
57	Not cut the mustard 1	4	3	4	3.7		1	2	1	1.3		1	2	2	1.7
58	Not cut the mustard 2	4	3	4	3.7		4	3	1	2.7		2	3	2	2.3
59	Not cut the mustard 3	1	1	2	1.3		1	2	1	1.3		1	2	1	1.3
60	Pull strings 1	4	3	4	3.7		4	4	4	4.0		4	3	3	3.3
61	Pull strings 2	4	4	4	4.0		1	2	1	1.3		1	2	1	1.3
62	Pull the plug 1	3	4	4	3.7		3	3	3	3.0		2	3	2	2.3
63	Pull the plug 2	4	4	4	4.0		1	2	1	1.3		1	2	1	1.3
64	Put something on ice 1	4	4	4	4.0		4	4	3	3.7		3	3	3	3.0
65	Put something on ice 2	3	4	4	3.7		2	3	2	2.3		1	2	2	1.7
66	Raise eyebrows 1	4	4	3	3.7		1	2	2	1.7		1	2	1	1.3
67	Raise eyebrows 2	3	4	3	3.3		4	3	3	3.3		2	3	3	2.7
68	Recharge your batteries 1	4	4	4	4.0		1	2	1	1.3		1	2	1	1.3
69	Recharge your batteries 2	4	4	4	4.0		4	3	4	3.7		4	3	4	3.7
70	Red tape 1	4	4	4	4.0		1	2	1	1.3		1	1	1	1.0
71	Red tape 2	3	4	4	3.7		4	4	3	3.7		4	3	3	3.3
72	Smooth sailing 1	3	3	4	3.3		4	3	3	3.3		2	2	2	2.0
73	Smooth sailing 2	4	4	4	4.0		2	3	2	2.3		1	2	2	1.7
74	Spill the beans 1	4	3	4	3.7		1	2	1	1.3		1	2	1	1.3
75	Spill the beans 2	4	3	4	3.7		4	4	4	4.0		4	3	3	3.3
76	The birds and the bees 1	3	3	4	3.3		4	3	4	3.7		4	4	4	4.0

77	The birds and the bees 2	4	4	4	4.0		1	2	1	1.3		1	2	2	1.7
78	The end of the road 1	4	4	4	4.0		4	4	2	3.3		3	3	2	2.7
79	The end of the road 2	3	3	3	3.0		2	3	2	2.3		1	2	2	1.7
80	Throw in the towel 1	4	4	4	4.0		4	4	3	3.7		2	2	2	2.0
81	Throw in the towel 2	4	4	4	4.0		1	2	1	1.3		1	2	1	1.3
82	Throw in the towel 3	2	3	4	3.0		1	2	1	1.3		2	2	1	1.7
83	Tie the knot 1	4	4	4	4.0		1	2	1	1.3		1	2	2	1.7
84	Tie the knot 2	3	3	4	3.3		4	4	4	4.0		3	3	3	3.0
85	Turn heads 1	4	4	4	4.0		2	3	2	2.3		2	3	2	2.3
86	Turn heads 2	4	4	4	4.0		4	4	4	4.0		2	2	4	2.7
87	Under the weather 1	4	4	4	4.0		4	4	4	4.0		4	3	3	3.3
88	Under the weather 2	4	3	3	3.3		1	2	1	1.3		1	2	1	1.3

Cronbach's Alpha Inter-rater reliability

(3 raters for 88 items)

Literal-Visual Representation	Figurative-Visual Connectedness	Degree of Bizarreness
Pre-discussion .634	Pre-discussion .891	.843
Post-discussion .772	Post-discussion .927	

G.2 Justification for ratings and post discussion data for literal elements

Raters were only required to comment on idioms for which there was a discrepancy of 2 or greater. Cells highlighted in yellow indicate a change in rater score. The original ratings are indicated in red.

Idiom	1 L	2 L	3 L	1L Comments	2L Comments	3L Comments
a drop in the bucket 2	2 3	4 3	3	I felt that the drop was literally hovering over the bucket, and not quite inside it. Also, the presence of the old man and the faucet weren't within the literal wording of the idiom, and didn't contribute enough to the figurative meaning to merit a three. (although I wouldn't mind jumping this up to a three.)	On this one, I misinterpreted 'resultative state' and thought that the imminent drop in the bucket would make this a 4. After clarification, I realize the drop is not actually in the bucket in the picture so I would lower my score to a 3, or even a 2.	Sticking to my guns! The literal parts are there, but the drop is not in the bucket.
Break the ice 2	2	4 3	4	My issue here is that, although the ice is broken, I don't see the presence of an agent who breaks said. The depicted man is too small. I think this would be more suited to represent a non-existent idiom in the passive voice: "the ice has been broken."	While the ice has been broken, suppose there's no clear representation of someone or something breaking the ice. I'd change this to a 3.	Sticking to my guns! The ice is clearly broken. The action verb is in a resultative state.
Go bananas 1	2	3	4	This idiom is short--only two words--and although these bananas are excited and moving, they don't appear to be literally going anywhere. So I gave it a 2.	This was a tough one, but the main elements (bananas) are well represented and they're obviously active (going?). I'd also accept this one as a 2, but I'm fine with my 3	Sticking to my guns! Obviously bananas is shown in a literal form. The verb "go" doesn't necessarily mean to "leave"; it can mean to "become", which I think the picture shows.
Lay down the law 1	3	4	2	The police officer is an obvious representative of the law, and here he is literally "laying down" his badge on the table. The badge is a symbol of the law, which makes it slightly figurative, but since law is an intangible concept, some slight symbology must be employed if one seeks to visually depict this concept.	I gave a four to this one and the next since the badge and book of laws are symbols of the law and they're literally being laid down.	Sticking to my guns! The officer is literally "laying down his badge", but there is also a man standing up straight - which draws my attention more (larger image) and is the exact opposite of the verb lay.

Lay down the law 2	2	4	2	It's a book of law, but it doesn't clearly demonstrate that the hands are literally "laying it down." It could be incorrectly interpreted as "handing someone the book of law." The presence of a table upon which the book is being "laid down" would clear this up.	Same as above	Sticking to my guns! The person could be laying down the book, or passing the book, or doing anything with the book. It isn't clear.
Make someone's blood boil 1	2	4	3	Another passive voice issue here. The man's blood is boiling, sure, but I don't see any kind of agent making his blood boil. Maybe if there was a knob on his head or something, and a hand was twisting it.	To me it was very obvious that the blood from his head was boiling.	Sticking to my guns! It's adequately represented. I think it's fairly obvious its blood and it's boiling. Though, the absurdness of the picture distracts from the literal elements.
Make someone's blood boil 2	4	3	3	I'd like to change this to a 3. I gave it a 4 because I felt the presence of a stove more clearly implied that an agent had turned it on.	After reviewing this one again, I think I would give it a lower score (2). The liquid is not obviously someone's blood and it's not boiling.	Sticking to my guns! Ok, something is obviously boiling, but I don't see it as adequately representing blood. Could be tomato soup.
Make someone's blood boil 3	1	3	2	Similar issues that I had with #1, only now I don't see anything actually boiling. Just steam coming out of a guy's head.	The steam from the head indicates boiling, but the blood is not represented. I'd be fine with a rating of 2.	Sticking to my guns! There is no blood in the picture. It is the same picture as #1 but now blood - hence my score is lowered by one point.
Money talks 1	4	2	4	Although the money could be yawning or laughing, it seems fairly clear to me that it's talking.	For me, the mouth wasn't immediately clear in the picture and there is no indication of talking or any sound coming from the mouth. I stick to the 2.	Sticking to my guns! There is literally money in the picture and there it is talking. Fairly unambiguous.
Not cut the mustard 3	4	1	1	I'd like to change this to a 1. Don't know what I was smoking.	No mustard in the picture and it looks like the knife could be moving or in motion to cut something. I stick with 1.	Sticking to my guns! There are two important literal elements: cut and mustard. The "cut" part is shown in the image, but the "mustard" part is not.
Throw in the towel 3	2	3	4	My issue here is that it doesn't look very much like a towel. More of a wet napkin or something.	Pretty obvious that something (Towel? Tissue? Paper?) is being thrown in the trash can. For literal, I stick with 3 since it's not obviously a towel.	Sticking to my guns! All the literal parts are here - "throw", "towel" and "in" (the garbage). No distracting additional images. The hand contributes to the verb "throw"

G.3 Justification for ratings and post discussion data for figurative elements

Raters were only required to comment on idioms for which there was a discrepancy of 2 or greater. Cells highlighted in yellow indicate a change in rater score. The original ratings are indicated in red.

Idiom	1 F	2 F	3 F	1F Comments	2F Comments	3F Comments
A sitting duck 2	2	3	1	Here we see the sitting duck, seemingly without a care in the world. While he is defenseless, I don't think most people would immediately associate this image with vulnerability implied in the figurative nature of the idiom.	The 3 is for presenting a very outstanding and unsuspecting potential victim. After knowing the meaning of the idiom, it's somewhat easy to understand the relationship between figurative meaning and image	Sticking to my guns! A duck-like person sitting on a bench does not connect to the meaning that he is "an easy target" in any way that I can imagine.
A heart of gold 2	2	3	1	The heart is made of gold but it's not located within an individual, distancing it from a full figurative understanding of the idiom. However, since most people mentally associate the heart symbol with positive intentions, and most people associate shiny gold with purity and value, it seems possible that someone might view this picture and connect it to the figurative meaning of the idiom.	To me, the gold represents a heart of great value and worth. While the connection between image and idiom meaning isn't that strong, I'd be happy changing this to a 2.	Sticking to my guns! All this image shows is a gold heart. A golden heart by itself doesn't connect with being a nice person. Perhaps if there were a smile on the heart or something.
Go through hell 1	4	4	2	The character is literally traveling through hell, but this picture depicts him in arduous exertion and perilous perambulation, thereby fulfilling the figurative aspect of the idiom.	Pretty clear figurative meaning. Feeling of distress is evident from the picture and the situation that he's in. 4.	Sticking to my guns! This picture looks like the man is hot and tired from literally "going through hell". I would give this a higher score if the image showed him doing other difficult activities while going through hell. This idiom is not always used for non-physical activities. Showing one of these would strengthen the connection.

Have a lot on your plate 1	1	3	1	I gave this a 1 because the idiom (in my understanding) is never employed figuratively to describe food. When it's used figuratively, it's always describing non-food stuff. IMO	I suppose I personally tackle a large plate of food the similarly to how I'd approach a lot of work. Sometimes overwhelmed. Based on this personal, and possibly unique perspective, I'd be fine lowering my ranking to a 2.	Sticking to my guns! This image is very literal. There is no connection to the concept of multitasking or being busy.
Lay down the law 2	1	3	2	I don't see any hint of an authority figure imposing lawful rule on a lawless person or chaotic environment. Those are the elements that I would expect from a figurative rendition of this idiom.	I would say the book represents a list of rules, regulations, etc. and this has been placed before someone who possibly needs disciplining. Makes sense figuratively, but again, would be fine lowering my score to a 2.	Sticking to my guns! It is difficult to get the figurative meaning out of this, However, if when I see a big book with a judge's hammer, I think of being punished to the full extent of the law (i.e. "to throw the BOOK at someone"). For learners, though, this wouldn't be obvious.
Like comparing apples and oranges 2	4	2	2	The judge here is wrestling with a difficult choice. He must compare two things that are fundamentally different. I supposed some could argue that since both pageant contestants are female and fruit, comparing the two isn't as difficult as a figurative understanding of the idiom might imply. However, I believe that if one of the contestants were changed to something completely and radically different--say a lawnmower, nitrogen gas, or the theory of relativity, etc.--the picture wouldn't make any sense at all, thereby rendering it impossible to grasp any figurative meaning whatsoever. Thus, for this idiom to be depicted and interpreted in any figurative sense at all, there needs to be some degree of uniformity between the two contestants.	This one didn't make much sense to me based on my understanding of the idiom. I'm not sure why the judge is stressed since apples and oranges are very different.	Sticking to my guns! The essence of the idiom is that you can't compare two things because they are completely different. The picture shows two fruits that are both very attractive. The judge probably has to make a tough decision. Why? Because they are both very similar (NOT DIFFERENT) in the most important quality for the competition: attractiveness.

Make someone's blood boil 1	2 3	4	4	I'd like to change my answer for this to a 3. If someone knows the meaning of the idiom, they could likely figure it out. Originally I put it at a 2 because the emphasis seemed to be placed on the angry person whereas the idiom's emphasis is generally associated with the agitator.	Figurative meaning seems very obvious. The person in the image is furious. 4.	Sticking to my guns! This person is obviously becoming very angry. I can see this because he has a very angry, red face.
Make someone's blood boil 2	1	1	1	This idiom is about someone's emotional state. Since there are no people, it's unlikely that someone would figuratively associate this image (which could be marinara sauce) to someone's anger at someone else.	I think my thought process here was that when we get angry, we feel very hot, get red and our heartbeat increases. I thought the picture represented this, but the person who's angry should be represented. I'd change this to a 2 or 1.	Sticking to my guns! The figurative meaning is to become angry. This image has absolutely no connection with anger.
Make someone's blood boil 3	2 3	4	4	I'm willing to upgrade this to a 3 for the same reasons as number 1.	Compared to #1, this seemed less effective in portraying the figurative; however, I would say it's closer to a 4.	Sticking to my guns! Same as with #1. This person is obviously becoming very angry. I can see this because he has a very angry, red face.
Not cut the mustard 2	4	3	1	The price tag on the knife and the appearance of its inability to slice through the mustard in spite of the exertion lines indicating effort combine to indicate that the tool is inadequate for the job. Thought this was about as figurative as the idiom could be depicted.	The \$1 tag on the knife makes this somewhat easy to understand: a knife so shitty, it can't cut mustard. A tough one to represent visually. Not perfectly intuitive, but not bad. 3.	Sticking to my guns! Can't cut the mustard means someone can't handle the job. In the image. It doesn't look like the knife is having trouble cutting the mustard. The price take doesn't really add anything-- at first it seemed completely irrelevant. I'm fairly certain a one-dollar knife can cut mustard.
Pull the plug 1	4 3	3	2 3	Here we see the figurative meaning in that the plug was pulled resulting in the cessation of the operation. That said, upon reflection I'd like to change my score to a three simply because the picture bears an implication of mischief, an element that isn't essential to a figurative understanding of the idiom.	The shock of the computer user and malice of the plug puller might represent an unnecessary distraction in understanding figurative meaning, but overall, pretty easy to understand.	I will change my score to a 3. Usually, "pulling the plug" isn't used for when someone maliciously puts an end to something. This image looks like the person is sabotaging another's work, but I guess a learner can somewhat understand the connection.

Pull the plug 2	1	3	2	1	The figurative meaning of this idiom is quite wide, but this depiction is purely literal. It doesn't hint at any larger interpretation than draining a tub.	While very literal, I still think it properly represents the figurative meaning, that is, to put an end to something. 3 but could be swayed to accept 2.	Obviously no figurative meaning.
Put something on ice 2	2	3	1	2	The hand appears to be putting something on ice. I gave it a 2 because, while food is the most literal and least figurative use of this idiom, there's still an element of "I'm putting this on ice with the intention of using it later," which satisfies a bare minimum of my figurative understanding of the idiom.	Fig meaning somewhat easy to understand. In the pic, fish put on ice to use later. With the idiom, something is placed on a later priority but intended to be used. 3.	I will change my score to a 2. The idiom's meaning is to save something for later. Even though you need to cool fish to preserve them, I think the connection is pretty weak.
Raise eyebrows 1	1	3	2	2	The guys are clearly raising their eyebrows, but the reason behind their expressions seems solely to be surprise, whereas the idiom's figurative meaning has a more diverse range of causes. Additionally, we don't see what causes the people to raise their eyebrows, and that's kind of important.	You can imagine the type of situation that would cause the men to react in this way. Like I mentioned before, I associate this idiom with suspicion, not surprise, so I'd be ok degrading to a 2.	Sticking to my guns! The meaning of the idiom "to shock people". The looks on their faces are of shock (kind of); the essence of the figurative meaning is the actual action or cause of the shock. The image doesn't show what they are shocked at.
Recharge your batteries 1	1	3	2	1	The batteries are literally getting a recharge, but the figurative meaning implies a human element. This depiction is clearly focused on electronic devices.	Again, if you know the meaning, I think the picture represents a clear parallel between batteries and a person getting more energy. Could be clearer though, so wouldn't argue with classifying this as a 2.	Sticking to my guns! The image needs to convey rest and recuperation for living things not machines. This image does relate to how the idiom can be applied to non-living things.
The end of the road 1	4	4	4	2	The road has ended and the person has no place left to go. I figure that sums up the figurative meaning.	Not sure how this could be represented better. 4.	Sticking to my guns! The figurative meaning is the end of a process. Sure, walking down a road is a kind of process, but this very literal image doesn't help learners connect the idiom's usage to other non-physical processes for which this idiom is usually applied.

Tie the knot 1	1	2	3	1	<p>The hands are literally tying a knot. However, the figurative meaning of 'tie the knot' is clearly related to marriage, and that's not at all represented in this picture.</p>	<p>The fact that the bow represents two loops with a strong knot, I felt there were enough parallels to marriage. Based on the imagery scale, I feel that it's somewhat easy to understand the relationship. 3, but would begrudgingly accept 2.</p>	<p>Sticking to my guns! The literal figurative meanings for this are quite far apart. A pink bow does not relate to marriage anymore than it does to birthday or shoe or...</p>
-------------------	---	---	---	---	---	--	---

APPENDIX H TREATMENT MATERIALS

H.1 Study 3 treatment phases

Phase 1 example slides for the 3 picture conditions

(no picture condition)

(埋める) (斧)
3. Bury the hatchet

Jane and Mary had a terrible argument last week, but they have already buried the hatchet and become friends again.

(literal only condition)

(埋める) (斧)
3. Bury the hatchet

Jane and Mary had a terrible argument last week, but they have already buried the hatchet and become friends again.



(literal + figurative condition)

(埋める) (斧)
3. Bury the hatchet

Jane and Mary had a terrible argument last week, but they have already buried the hatchet and become friends again.



Phase 2 example slides for the 3 picture conditions

(no picture condition)

34. Turn heads

A) Disapproval
(非難)

B) Stressful
(ストレスの多い)

C) Attractive
(魅力的)

(literal only condition)

34. Turn heads

A) Disapproval
(非難)

B) Stressful
(ストレスの多い)

C) Attractive
(魅力的)



(literal + figurative condition)

34. Turn heads

A) Disapproval
(非難)

B) Stressful
(ストレスの多い)

C) Attractive
(魅力的)



Phase 3 example slides for the 3 picture conditions


(no picture condition)

58. 元気を取り戻すために休息する

(充電する) (電池)
A) Recharge your batteries

(地獄)
B) Go through hell

• Click to add text

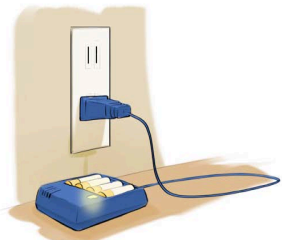



(literal only condition)

58. 元気を取り戻すために休息する

(充電する) (電池)
A) Recharge your batteries

(地獄)
B) Go through hell


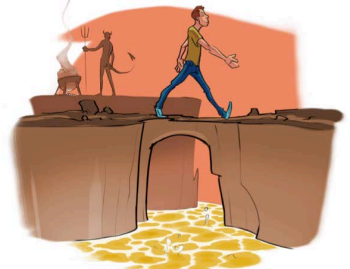



(literal + figurative condition)

58. 元気を取り戻すために休息する

(充電する) (電池)
A) Recharge your batteries

(地獄)
B) Go through hell

Phase 4 example slides for the 3 picture conditions

(no picture condition)

96. Red tape (テープ)

不必要な書類や手順が多い事

(literal only condition)

96. Red tape (テープ)

不必要な書類や手順が多い事



(literal + figurative condition)

96. Red tape (テープ)

不必要な書類や手順が多い事



H.2 Study 3 idiom paraphrases and translations

HIGH TRANSPARENCY	English annotated meaning	Japanese translation
recharge your batteries	To rest in order to get your energy back	元気を取り戻すために休息する
turn heads	To notice someone who is very attractive	魅力がある人に注目する
come out of your shell	To overcome shyness in social situations	社交の場で内気を克服して心を開く
pull the plug	To put an end to someone's activities or plans	人の活動や計画を終わらせる
A drop in the bucket	The amount you need is much smaller than what you have	必要な量と比べるとかなり少ない
give someone the green light	To give permission to do something	許可する
raise eyebrows	Surprise and disapproval of someone's behavior	人の行動に驚き難色を示す
the end of the road	No longer able to continue something	続ける事が不可能な事
go through hell	To go through a very difficult period	辛い時期を経験する
MID TRANSPARENCY	English annotated meaning	Japanese translation
have a heart of gold	To be a very kind and caring person	とても親切で思いやりのある人
have a skeleton in the closet	To hide a secret from the past	過去の秘密を隠す
throw in the towel	To admit defeat or failure	敗北や失敗を認める
have your back to the wall	To be in a very difficult situation with few options to act	困難な状況下で選択肢が少ない事
a sitting duck	To be an easy target for attack or criticism	攻撃や批難されやすい標的である事
sit on the fence	To be undecided about making a choice between two options	2つの選択の中で決めかねる事
God's gift to women	A man who believes he is sexy to all women	女性にとって魅力的と自信過剰な男性
have a lot on your plate	To have many important tasks or work to do	重要な課題や仕事が沢山ある事
be in the hot seat	a stressful situation in which you have to answer difficult questions	ストレスの多い状況下で難しい質問に答える事
LOW TRANSPARENCY	English annotated meaning	Japanese translation
spill the beans	to reveal secret information	秘密を暴露する
face the music	To accept punishment for something you have done	自分の行動に対する罰を受け入れる事
bury the hatchet	To make peace with someone	和解する事
the birds and the bees	To explain sexual reproduction to children	子供に性教育する事
red tape	Too many unnecessary documents and procedures to do something	不必要な書類や手順が多い事
go cold turkey	To suddenly quit a bad habit such as smoking or drinking lots of alcohol	喫煙や大量飲酒等の悪習慣を突然やめる事
go bananas	To become very excited	興奮する
tie the knot	To get married	結婚する
under the weather	To be sick	体調が優れない事

H.3 Study 3 glossed words, key words, and translations

HIGH TRANSPARENCY	Words to gloss	Translation	Key word	Translation
recharge your batteries	recharge	(充電する)	rest	(休息)
turn heads			attractive	(魅力的)
come out of your shell	shell	(貝殻)	confidence	(自信)
pull the plug	plug	(栓)	stopping	(停止)
A drop in the bucket	a drop bucket	(一滴) (バケツ)	amount	(量)
give someone the green light			permission	(許可)
raise eyebrows	eyebrows	(眉毛)	disapproval	(非難)
the end of the road			can't continue	(継続不可能)
go through hell	hell	(地獄)	difficulty	(困難)
MID TRANSPARENCY	Words to gloss	Translation	Key word	Translation
have a heart of gold			kindness	(親切)
have a skeleton in the closet	skeleton closet	(骸骨) (クローゼット)	concealing	(隠す)
throw in the towel	towel	(タオル)	failure	(失敗)
have your back to the wall	back	(背中)	few options	(わずかな選択肢)
a sitting duck	duck	(あひる)	easy target	(容易い標的)
sit on the fence	fence	(柵)	deciding	(決定)
God's gift to women	God's	(神様の)	conceit	(自惚れ)
have a lot on your plate	plate	(皿)	work	(仕事)
be in the hot seat			stressful	(ストレスの多い)
LOW TRANSPARENCY	Words to gloss	Translation	Key word	Translation
spill the beans	spill beans	(こぼす) (豆)	secret	(秘密)
face the music	face	(直面する)	punish	(罰する)
bury the hatchet	bury hatchet	(埋める) (斧)	peace	(平和)
the birds and the bees	bees	(蜂)	sexual reproduction	(性教育)
red tape	tape	(テープ)	documents	(書類)
go cold turkey	turkey	(七面鳥)	bad habits	(悪習慣)
go bananas	banana	(バナナ)	excitement	(興奮)
tie the knot	tie knot	(結ぶ) (結び目)	marriage	(結婚)
under the weather	weather	(天気)	sickness	(病気)

H.4 Study 3 treatment idiom example sentences

HIGH TRANSPARENCY	Example sentence
recharge your batteries	Mary was so tired from work, so she was looking forward to recharging her batteries over the weekend.
turn heads	Mary wearing her new dress was turning a lot of heads.
come out of your shell	At first John is very quiet and shy around new people. After he knows them better, he starts to come out of his shell.
pull the plug	They decided to pull the plug on the project because there was no money left.
A drop in the bucket	John borrowed 1,000,000 yen from the bank but has only paid back 1,000 yen. That's just a drop in the bucket!
give someone the green light	John's boss gave him the green light to take off from work and attend the conference.
raise eyebrows	Peter really raised eyebrows when he came to the important business meeting wearing shorts!
the end of the road	It was the end of the road for the yakuza member. The police caught him and he was going to jail for life.
go through hell	Mary had to go through hell to finish her long, difficult training.
MID TRANSPARENCY	Example sentence
have a heart of gold	John had a heart of gold. He would always try to do things for other people.
have a skeleton in the closet	Jane found out that John got in trouble with the police when he was a young man. She wondered if he had any other skeletons in the closet.
throw in the towel	Peter had tried again and again to pass the test, but he failed everytime. It was time to throw in the towel.
have your back to the wall	Everyone disagreed with John. John really had his back to the wall, so he finally gave in and let them have their way.
a sitting duck	If North Korea gets nuclear weapons, Japan will be a sitting duck since North Korea is so close to Japan.
sit on the fence	Mary hasn't decided what to do yet. She is still sitting on the fence.
God's gift to women	Peter really thinks he is God's gift to women, but actually most women don't like him.
have a lot on your plate	Mary can't go out this weekend. She has a lot on her plate these days and doesn't have time to enjoy herself.
be in the hot seat	John was really in the hot seat during the job interview.
LOW TRANSPARENCY	Example sentence
spill the beans	Jane spilled the beans and told Jack about his girlfriend's secret lover.
face the music	Jack had cheated and lied to his girlfriend for too long. Now she knew what he had done and he was going to have to face the music very soon.
bury the hatchet	Jane and Mary had a terrible argument last week, but they have already buried the hatchet and become friends again.
the birds and the bees	Sam was 10 years old when his father first told him about the birds and the bees.
red tape	If you want to get a student visa to study in America, you must do a lot of preparation and complete many forms and documents. It's so much red tape!
go cold turkey	John decided to go cold turkey and quit smoking on January 1st.
go bananas	John and his friends were watching the soccer game. When their favorite team won the match, they went bananas!
tie the knot	Jack and Jane have been dating for over 10 years. It was time to tie the knot.
under the weather	John caught a cold and was feeling under the weather so he didn't go to work today.

LITERAL + FIGURATIVE
LITERAL ONLY
NO PICTURE

H.5 Study 3 counterbalancing and Sequencing Scheme

(P1=1st intact class; P2=2nd intact class; P3=3rd intact class)

Phase 1--Prediction					
order	High Transparency Idioms	order	Mid Transparency Idioms	order	Low Transparency Idioms
Slide 6	give someone the green light	Slide 7	be in the hot seat	Slide 8	bury the hatchet
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 9	come out of your shell	Slide 10	a sitting duck	Slide 11	the birds and the bees
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 12	turn heads	Slide 13	throw in the towel	Slide 14	face the music
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 15	raise eyebrows	Slide 16	have a lot on your plate	Slide 17	spill the beans
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 18	A drop in the bucket	Slide 19	a heart of gold	Slide 20	red tape
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 21	recharge your batteries	Slide 22	have your back to the wall	Slide 23	go bananas
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 24	pull the plug	Slide 25	a skeleton in the closet	Slide 26	tie the knot
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 27	the end of the road	Slide 28	sit on the fence	Slide 29	be under the weather
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 30	go through hell	Slide 31	God's gift to women	Slide 32	go cold turkey
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	

Phase 2--Key Word					
order	High Transparency Idioms	order	Mid Transparency Idioms	order	Low Transparency Idioms
Slide 35	give someone the green light	Slide 36	be in the hot seat	Slide 37	tie the knot
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 38	a drop in the bucket	Slide 39	have your back to the wall	Slide 40	go cold turkey
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 41	turn heads	Slide 42	a sitting duck	Slide 43	red tape
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 44	recharge your batteries	Slide 45	God's gift to women	Slide 46	the birds and the bees
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 47	pull the plug	Slide 48	sit on the fence	Slide 49	bury the hatchet
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 50	the end of the road	Slide 51	have a lot on your plate	Slide 52	face the music
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 53	go through hell	Slide 54	a skeleton in the closet	Slide 55	be under the weather
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 56	raise eyebrows	Slide 57	throw in the towel	Slide 58	spill the beans
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 59	come out of your shell	Slide 60	a heart of gold	Slide 61	go bananas
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	

Phase 3--Full Meaning Receptive					
order	High Transparency Idioms	order	Mid Transparency Idioms	order	Low Transparency Idioms
Slide 63	a drop in the bucket	Slide 64	throw in the towel	Slide 65	bury the hatchet
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 66	recharge your batteries	Slide 67	a sitting duck	Slide 68	go cold turkey
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 69	go through hell	Slide 70	a skeleton in the closet	Slide 71	the birds and the bees
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 72	turn heads	Slide 73	have your back to the wall	Slide 74	tie the knot
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 75	raise eyebrows	Slide 76	be in the hot seat	Slide 77	red tape
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 78	give someone the green light	Slide 79	have a lot on your plate	Slide 80	spill the beans
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 81	the end of the road	Slide 82	sit on the fence	Slide 83	go bananas
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 84	pull the plug	Slide 85	God's gift to women	Slide 86	face the music
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 87	come out of your shell	Slide 88	a heart of gold	Slide 89	be under the weather
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	

Phase 4--Full Meaning Productive					
order	High Transparency Idioms	order	Mid Transparency Idioms	order	Low Transparency Idioms
Slide 91	give someone the green light	Slide 92	sit on the fence	Slide 93	be under the weather
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 94	recharge your batteries	Slide 95	throw in the towel	Slide 96	go bananas
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 97	come out of your shell	Slide 98	have a lot on your plate	Slide 99	face the music
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 100	raise eyebrows	Slide 101	have your back to the wall	Slide 102	tie the knot
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 103	go through hell	Slide 104	a sitting duck	Slide 105	red tape
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 106	the end of the road	Slide 107	a skeleton in the closet	Slide 108	spill the beans
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 109	turn heads	Slide 110	God's gift to women	Slide 111	the birds and the bees
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 112	pull the plug	Slide 113	a heart of gold	Slide 114	go cold turkey
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	
Slide 115	a drop in the bucket	Slide 116	be in the hot seat	Slide 117	bury the hatchet
P1		P1		P1	
P2		P2		P2	
P3		P3		P3	

H.6 Study 3 participant worksheets

Given Name _____ Family Name _____

Special Topics Section _____

For you, what is the most important reason for learning English (circle one)

Getting a good job	Communicating with foreigners	Getting accepted into an overseas university program	Becoming part of a different culture
--------------------	-------------------------------	--	--------------------------------------

For you, what is your preferred learner style (circle one)

Aural Learner I learn things best by listening	Visual Learner I learn things best by watching	No Preference I learn by listening and watching equally well
--	--	--

A. Vocabulary Check I

Below is a list of words. Circle any words you **do not know** the meaning of.

back to come end gift to give to go heads road to sit to turn women birds cold God gold green heart hot light music to pull to raise through to throw wall	beans bucket to bury a duck fence knot plate shell to spill to tie towel weather tape	bananas batteries bees closet eyebrows hatchet hell plug to recharge skeleton turkey to face a drop
--	---	---

B. Vocabulary Check II

Here are the same words you saw above, except here they are arranged together as idioms with a special meaning.

Circle one:

I KNOW **SOME** OF THESE IDIOMS / I KNOW **NONE** OF THESE IDIOMS

If you circled "I know some of these idioms" please write the meaning next to the idioms you know the meaning of (Japanese or English is OK)

recharge your batteries
a heart of gold
spill the beans
turn heads
have a skeleton in the closet
face the music
come out of your shell
throw in the towel
bury the hatchet
pull the plug
have your back to the wall
the birds and the bees
a drop in the bucket
a sitting duck
red tape
give someone the green light
be on the fence
go cold turkey
raise eyebrows
God's gift to women
go bananas
the end of the road
have a lot on your plate
tie the knot
go through hell
be in the hot seat
under the weather

C. PowerPoint Part 1

You will see some slides about idioms. Some slides will have pictures. Other slides will not have pictures. All slides will have the English idiom and an example sentence. Try to use the information you read and pictures you see to guess what the meaning of the idiom is. Write your ideas below. You may use English or Japanese. You will have 35 seconds for each idiom to write your ideas down.

Example: Drink like a fish

_____ To be able to drink a lot of alcohol

1. Give someone the green light

2. Be in the hot seat

3. Bury the hatchet

4. Come out of your shell

5. A sitting duck

6. The birds and the bees

7. Turn heads

8. Throw in the towel

9. Face the music

10. Raise eyebrows

11. Have a lot on your plate

12. Spill the beans

13. A drop in the bucket

14. A heart of gold

15. Red tape

16. Recharge your batteries

17. Have your back to the wall

18. Go bananas

19. Pull the plug

20. Have a skeleton in the closet

21. Tie the knot

22. The end of the road

23. Sit on the fence

24. Be under the weather

25. Go through hell

26. God's gift to women

27. Go cold turkey

C. PowerPoint Part 2

You will see each idiom again. You will also see three answer choices. One of these answer choices is related to the meaning of the idiom. Choose your idea and write the letter answer in the space under "My answer". After 11 seconds, you will see the answer. Write down the correct letter answer in the space under "Correct answer" as well.

Idiom	My answer	Correct answer
Example: Drink like a fish		
28. Give someone the green light		
29. Be in the hot seat		
30. Tie the knot		
31. A drop in the bucket		
32. Have your back to the wall		
33. Go cold turkey		
34. Turn heads		
35. A sitting duck		
36. Red tape		
37. Recharge your batteries		
38. God's gift to women		
39. The birds and the bees		
40. Pull the plug		
41. Sit on the fence		
42. Bury the hatchet		
43. The end of the road		
44. Have a lot on your plate		
45. Face the music		
46. Go through hell		
47. Have a skeleton in the closet		
48. Be under the weather		
49. Raise eyebrows		
50. Throw in the towel		
51. Spill the beans		
52. Come out of your shell		
53. A heart of gold		
54. Go bananas		

C. PowerPoint Part 3

In this section, you will see two idioms on each slide. You will also be provided with the meaning to one of these idioms. Match the meaning you see on the slide to the idiom, and write its letter answer in the space under “My answer”. After 8 seconds, you will see the correct answer. Write the correct answer letter in the space under “Correct answer” as well.

Idiom Meaning	My answer	Correct answer
55. 必要な量と比べるとかなり少ない		
56. 敗北や失敗を認める		
57. 和解する事		
58. 元気を取り戻すために休息する		
59. 攻撃や批難されやすい標的である事		
60. 喫煙や大量飲酒等の悪習慣を突然やめる事		
61. 辛い時期を経験する		
62. 過去の秘密を隠す		
63. 子供に性教育する事		
64. 魅力がある人に注目する		
65. 困難な状況下で選択肢が少ない事		
66. 結婚する		
67. 人の行動に驚き難色を示す		
68. ストレスの多い状況下で、難しい質問に答える事		
69. 不必要な書類や手順が多い事		
70. 許可する		
71. 重要な課題や仕事が沢山ある事		
72. 秘密を暴露する		
73. 続ける事が不可能な事		
74. 2つの選択の中で決めかねる事		
75. 興奮する		
76. 人の活動や計画を終わらせる		
77. 女性にとって魅力的と自信過剰な男性		
78. 自分の行動に対する罰を受け入れる事		
79. 社交の場で内気を克服して心を開く		
80. とても親切で思いやりのある人		
81. 体調が優れない事		

C. PowerPoint Part 4

This is the last section of the PowerPoint. On each slide you will see an idiom. For each idiom, try to remember as closely as you can the Japanese paraphrased translation and write it under “My answer”. If you cannot remember it exactly, write as much as you can remember. After 18 seconds, you will see the answer. Please write the correct answer under “Correct answer” in the space as well.

Idiom	My answer	Correct answer
82. Give someone the green light		
83. Sit on the fence		
84. Be under the weather		
85. Recharge your batteries		
86. Throw in the towel		
87. Go bananas		
88. Come out of your shell		
89. Have a lot on your plate		
90. Face the music		
91. Raise eyebrows		
92. Have your back to the wall		
93. Tie the knot		

94. Go through hell		
95. A sitting duck		
96. Red tape		
97. The end of the road		
98. Have a skeleton in the closet		
99. Spill the beans		
100. Turn heads		
101. God's gift to women		
102. The birds and the bees		
103. Pull the plug		
104. A heart of gold		
105. Go cold turkey		
106. A drop in the bucket		
107. Be in the hot seat		
108. Bury the hatchet		

D. Short Quiz A

今日学んだ英語の慣用句のリストが出てきます。パワーポイントの最後のセクションのように、出来るだけ近い日本語での言い換え文を書いて下さい。もし正確に覚えていない場合、覚えている事を出来るだけ書いて下さい。

Given Name: _____ Family Name: _____

Idiom	Meaning (write the Japanese phrase you learned)
1. Tie the knot	
2. Sit on the fence	
3. Go cold turkey	
4. Come out of your shell	
5. The birds and the bees	
6. Face the music	
7. Throw in the towel	
8. A sitting duck	
9. Raise eyebrows	
10. Bury the hatchet	
11. Red tape	
12. Turn heads	
13. The end of the road	
14. Pull the plug	
15. Go through hell	

16. A heart of gold	
17. Have a skeleton in the closet	
18. Give someone the green light	
19. Spill the beans	
20. Go bananas	
21. Recharge your batteries	
22. Have a lot on your plate	
23. Under the weather	
24. Be in the hot seat	
25. Have your back to the wall	
26. A drop in the bucket	
27. God's gift to women	

E. 2 Weeks Later—Short Quiz B

2週間前に学んだ英語の慣用句のリストが出てきます。前と同じように、出来るだけ近い日本語での言い換え文を書いて下さい。もし正確に覚えていない場合、覚えている事を出来るだけ書いて下さい。

Given Name: _____ Family Name: _____

Idiom	Meaning (write the Japanese phrase you learned)
(地獄) 1. Go through hell	
(柵) 2. Sit on the fence	
(蜂) 3. The birds and the bees	
(栓) 4. Pull the plug	
(背中) 5. Have your back to the wall	
6. Give someone the green light	
(テープ) 7. Red tape	
(神様の) 8. God's gift to women	
(眉毛) 9. Raise eyebrows	
(埋める) (斧) 10. Bury the hatchet	
11. Turn heads	
(貝殻) 12. Come out of your shell	
(骸骨) (クローゼット) 13. Have a skeleton in the closet	
(あひる) 14. A sitting duck	
(七面鳥) 15. Go cold turkey	

(こぼす) (豆) 16. Spill the beans	
(一滴) (バケツ) 17. A drop in the bucket	
(結ぶ) (結び目) 18. Tie the knot	
(タオル) 19. Throw in the towel	
20. A heart of gold	
(天気) 21. Under the weather	
(皿) 22. Have a lot on your plate	
23. Be in the hot seat	
24. The end of the road	
(充電する) (電池) 25. Recharge your batteries	
(バナナ) 26. Go bananas	
(直面する) 27. Face the music	

E. Interview

Given Name: _____ Family Name: _____

Did you study any of these idioms between the two-week break?

YES/NO

Which idioms were the easiest to remember?

Why do you think these idioms were easy to remember? Please be specific.

Which idioms were the most difficult to remember?

Why do you think these idioms were difficult to remember? Please be specific.

APPENDIX I STUDENT PARTICIPANT DATA

I.1 Example screenshot of meaning recall posttest responses

Idiom	Meaning (write the Japanese phrase you learned)
1. Tie the knot	結婚する
2. Sit on the fence	選択肢があり 選ぶのが困難なこと
3. Go cold turkey	タバコ、酒などを 突然やめること
4. Come out of your shell	社会的な場で 内面を克服すること
5. The birds and the bees	子どもに小生教育をすること
6. Face the music	自分の罪を認めること
7. Throw in the towel	人の行動や目標をやめさせること
8. A sitting duck	ねらわれやすい標的のこと
9. Raise eyebrows	人のしたことに驚くこと
10. Bury the hatchet	和解すること
11. Red tape	不必要な書類等が多いこと
12. Turn heads	魅力的で目立つこと
13. The end of the road	継続が困難なこと
14. Pull the plug	失敗や敗北を認めること

(Following the translation of these paraphrases from Japanese into English, I created an excel file with the approximately 2,900 paraphrases to facilitate their subsequent rating. An example screenshot of this is provided on the following page.

I.2 Screenshot of translated student paraphrases in spreadsheet
 (Green=Correct; Yellow=Partially Correct; Red=Incorrect; Purple=Blank)

(20B) A heart of gold	(21B) Under the weather	(22B) Have a lot on your plate	(23B) Be in the hot seat	(24B) The end of the road
To be a very kind and caring person	blank	To have a lot of work to do	To get nervous	blank
A kind person	A state of emotions	To have a lot of work to do	a stressful situation in which you have to answer difficult questions	No longer able to continue something
kind	blank	To have a lot of work to do	To get nervous	To overcome difficulties
kindness	To not be in the mood to do something	To have a lot of work to do	a stressful situation in which you have to answer difficult questions	To die
To be a very kind and caring person	To have mood swings	To have a lot of work to do	a stressful situation in which you have to answer difficult questions	There is no more option to choose from
To be a very kind and caring person	feeling down	To have a lot of work to do	Can't sit still due to nervousness	Can't escape without an option
To be a very kind and caring person	To be sick	To have a lot of work to do	a stressful situation in which you have to answer difficult questions	To get cornered
To be a very kind and caring person	blank	To have a lot of work to do	unreasonable interview	No longer able to continue something

APPENDIX J PARAPHRASE JUDGMENT RESOLUTIONS

J.1 Summary of paraphrase disagreements and resolutions

Correct (Green)	The paraphrase contains the core meaning of the idiom.
Partially correct (Yellow)	The paraphrase contains some element(s) related to the meaning of the idiom, but the core meaning is absent.
Incorrect (Red)	The paraphrase has no relation to the meaning of the idiom.
Blank (Purple)	The answer is left blank.

Summary of Resolutions for Paraphrase Category Disagreements

(There were a total of 267 disagreements among a total of approximately 2,900 paraphrases provided by student participants, representing a disagreement rate of about 9.2%. The information presented below shows the results of a 3+ hour discussion to resolve any discrepancies between paraphrase raters. The color indicated in the outcome column reflects the category that the paraphrase in question was eventually resolved to correspond to.)

Idiom	Paraphrase in Question	Period/Cell	Rater 1	Rater 2	Rater 3	Result
1. Tie the knot	To worry	2 nd F23	Yellow	Red	Red	Red
2. Tie the knot	To be neat	2 nd AX5	Red	Yellow	Red	Red
3. Tie the knot	To make a promise	2 nd AX13	Yellow	Yellow	Red	Yellow
4. Tie the knot	To have a strong bond	2 nd AX3	Red	Yellow	Red	Yellow
5. Sit on the fence	It's hard to choose	1 st G18	Yellow	Green	Green	Green
6. Sit on the fence	To decide between two choices	2 nd G23	Yellow	Green	Yellow	Yellow
7. Sit on the fence	To be undecided about making a choice between options	3 rd G2	Green	Green	Yellow	Green
8. Sit on the fence	To be undecided about making a choice	3 rd G9, 10, 12, 2 nd AH16, 3 rd AH9, 10, 14	Green	Y & G	Yellow	Green
9. Sit on the fence	Having no way out or no way to go, not having a choice (Jon got "at the end of one's rope)	1 st AH2	Green	Red	Red	Red
10. Sit on the fence	To be undecided about making a choice among choices	2 nd AH3	Green	Green	Yellow	Green
11. Sit on the fence	To be undecided about making a choice between 2 choices	2 nd AH4	Purple	Green	Green	Green
12. Sit on the fence	Cannot decide	3 rd AH2	Green	Yellow	Yellow	Yellow
13. Sit on the fence	To choose	3 rd AH18	Red	Yellow	Yellow	Red
14. Go cold turkey	To quit a bad habit	1 st H8, 9, 18	Green	Yellow	Yellow	Yellow
15. Go cold turkey	A bad habit such as smoking or drinking alcohol	1 st H19, 3 rd H12	Green	Yellow	Y & G	Yellow
16. Go cold turkey	To suddenly improve a bad habit	3 rd H16	Yellow	Yellow	Red	Yellow
17. Go cold turkey	To hide the face being panicked	2 nd AU7	Purple	Red	Red	Red
18. Go cold turkey	Bad things	3 rd AU4	Red	Yellow	Red	Red

19. Come out of your shell	To open up to others (but Jon got "to come around)	1 st AR16	Green	Green	Yellow	Green
20. Come out of your shell	To be confident in public in front of other people	2 nd I19	Green	Yellow	Green	Yellow
21. Come out of your shell	In public	3 rd I3	Red	Yellow	Red	Red
22. Come out of your shell	To open up with great efforts	3 rd I5	Green	Yellow	Green	Green
23. Come out of your shell	To become aggressive	3 rd I10, AR10	Red	Yellow	Red	Red
24. Come out of your shell	To show a new side of yourself in public	3 rd I12	Yellow	Yellow	Green	Yellow
25. Come out of your shell	To participate with efforts	3 rd AR5	Green	Yellow	Red	Yellow
26. Come out of your shell	To go/attend a social occasion	3 rd AR8	Green	Yellow	Yellow	Yellow
27. Come out of your shell	To show a new side of yourself	3 rd AR12	Red	Yellow	Green	Yellow
28. Come out of your shell	To show your true self	3 rd AR19	Yellow	Yellow	Green	yellow
29. The birds and the bees	To explain sexual reproduction	3 rd AI17, 18	Green	Green	Yellow	Green
30. Face the music	There is no way to escape	1 st K7	Red	Yellow	Yellow	Red
31. Face the music	To commit a crime, get scolded	1 st K20	Yellow	Yellow	Green	Yellow
32. Face the music	To get away from an unpleasant thing or situation	1 st BG12	Red	Yellow	Red	Red
33. Face the music	To face difficulties	1 st BG6, 10 2 rd BG3, K15 3 rd BG7	Yellow	Y & R	Red	Red
34. Face the music	To punish someone	3 rd K17	Yellow	Yellow	Red	Yellow
35. Face the music	To get scolded	3 rd BG2	Yellow	Yellow	Green	Yellow
36. Face the music	To admit something you have done and apologize	3 rd BG20	Yellow	Yellow	Green	Yellow
37. Throw in the towel	Stop someone's actions or make someone give up their goal	1 st L2	Red	Yellow	Yellow	Yellow
38. Throw in the towel	To quit something	1 st L11	Yellow	Green	Green	Yellow
39. Throw in the towel	To quit work or activities	1 st L15	Green	Green	Yellow	Yellow
40. Throw in the towel	To put an end to a project	1 st AY 18	Red	Yellow	Yellow	Yellow
41. Throw in the towel	Having failure one after another and give up	2 nd L7	Yellow	Green	Yellow	green
42. To throw in the towel	To cut off something (revision—to quit in the middle of something)	2 nd AY11	Red	Yellow	Red	Yellow
43. To throw in the towel	To give up because no longer to continue	3 rd L10	Green	Yellow	Green	Green
44. To throw in the towel	To determine no longer able to continue something	3 rd L8	Yellow	Green	Green	Green
45. To throw in the towel	To be unable to keep going	3 rd L12	Green	Green	Yellow	Yellow
46. To throw in the towel	To stop fighting	3 rd AY3	Yellow	Yellow	Red	Yellow
47. A sitting duck	A state of low alertness	1 st M7	Red	Yellow	Yellow	Yellow
48. A sitting duck	An easy task	2 nd AT9	Red	Yellow	Red	Red
49. A sitting duck	To be easy to be picked on	3 rd M5	Yellow	Yellow	Green	Yellow
50. A sitting duck	To target a weak person	3 rd M18	Yellow	Green	Yellow	Yellow
51. A sitting duck	To get careless	3 rd AT12	Red	Yellow	Red	Red
52. A sitting duck	A weak person	3 rd AT18	Red	Yellow	Yellow	Yellow

53. Raise eyebrows	To criticize (Jon got "to judge someone")	1s N5	Red	Yellow	Red	Red
54. Raise eyebrows	To criticize	Multiple	Red	Yellow	Red	Red
55. Raise eyebrows	To make people surprised	1 st H18	Yellow	Yellow	Green	Green
56. Raise eyebrows	To frown	1 st AO7	Red	Y & R	Red	Red
57. Raise eyebrows	To get mad	1 st AO10	Red	Yellow	Red	Red
58. Raise eyebrows	To get confused	1 st AO11, 3 rd AO9	Red	Yellow	Red	Red
59. Raise eyebrows	To have doubts	1st AO15, 3 rd AO8, AO12	Red	Yellow	Red	Red
60. Raise eyebrows	A situation in which it's hard to hide your feeling of surprise	2 nd N17	Green	Green	Yellow	Green
61. Raise eyebrows	To doubt	2 nd AO13	Red	Yellow	Red	Red
62. Raise eyebrows	To have doubts and distrust about others	2 nd AO18	Yellow	Yellow	Red	Yellow
63. Raise eyebrows	Disapproval of someone's reaction to your behavior	3 rd N7	Yellow	Yellow	Red	Yellow
64. Raise eyebrows	To get surprised by something unexpected	3 rd N10	Green	Yellow	Yellow	Yellow
65. Raise eyebrows	Surprise and disapproval at someone's suggestion	3 rd AO6	Yellow	Yellow	Green	Yellow
66. Raise eyebrows	Surprise and disapproval at someone's ideas	3 rd AO7	Green	Yellow	Green	Yellow
67. Raise eyebrows	To make a negative evaluation	3 rd AO13	Red	Yellow	Yellow	Yellow
68. Bury the hatchet	Peace	1 st O11, 2 nd AP4	G & Y	Yellow	Yellow	Yellow
69. Bury the hatchet	To stop fighting	2 nd O4, 3 rd AP11	Yellow	Yellow	Green	Yellow
70. Bury the hatchet	To get along with someone as always	2 nd AP18	Red	Yellow	Yellow	Red
71. Bury the hatchet	To hold a mediating position	3 rd AP12	Red	Yellow	Red	Red
72. Red tape	Too many unnecessary documents	Multiple	Green	Yellow	Green	green
73. Red tape	Too many related documents and tasks	1 st P12, 13	Green	Yellow	Green	Green
74. Red tape	There are many regulations and rules (but Jon got "there are too many unnecessary documents")	1 st AM3,	Green	Yellow	Green	Yellow
75. Red tape	Too many unnecessary tasks	1 st AM10	Green	Yellow	Green	Green
76. Red tape	Unnecessary documents	1 st AM13, 2 nd AM15	Green	Yellow	Green	Green
77. Red tape	Important documents	1 st AM17	Red	Red	Yellow	Red
78. Red tape	To write on documents	1 st AM22	Yellow	Red	Yellow	Yellow
79. Red tape	Too many unmeaningful procedures	2 nd P9	Green	Yellow	Green	Green
80. Red tape	Deadline is coming up soon	2 nd AM7	Purple	Red	Red	Red
81. Red tape	Annoying documents	2 nd AM24	Green	Yellow	Green	Green
82. Red tape	Too many tasks and work to do	3 rd P12	Yellow	Yellow	Red	Yellow
83. Red tape	Many necessary documents	3 rd P13	Yellow	Yellow	Red	Yellow
84. Red tape	Too many unnecessary things	3 rd P15	Green	Yellow	Yellow	Yellow
85. Red tape	To have a lot of work to do	3 rd AM4, 6, 14	Yellow	Yellow	Red	Yellow
86. Red tape	To have a lot of paperwork	3 rd AM8, 10	Green	Yellow	Red	Yellow
87. Red tape	To have many things to do	3 rd AM9	Red	Yellow	Red	Yellow
88. Red tape	There are many things to do	3 rd AM18	Red	Yellow	Red	Yellow

89. Turn heads	To be attractive	Multiple	Yellow	Green	Green	Green
90. Turn heads	Attractive people get a lot of attention	1 st Q13	Green	Yellow	Green	green
91. Turn heads	To notice someone who is very attractive	Multiple	Green	Green	Yellow	Green
92. Turn heads	An attractive person	1 st AQ17	G & Y	Yellow	Yellow	Green
93. Turn heads	To gather attention	1 st AQ22	Green	Yellow	Yellow	Yellow
94. Turn heads	To look at many people	2 nd AQ18	Red	Yellow	Red	Red
95. Turn heads	To approve	2 nd AQ20	Red	Yellow	Red	Red
96. Turn heads	To get attracted to someone	2 nd AQ24	Green	Yellow	Yellow	Green
97. Turn heads	To get attracted to something attractive	2 nd AQ 12, 8	Green	Green	Yellow	Green
98. Turn heads	To become attractive	2 nd AQ15	Yellow	Yellow	Green	Yellow
99. Turn heads	Make someone attracted to you	3 rd Q3	Green	Yellow	Green	Yellow
100. Turn heads	To get surprised	3 rd Q14	Red	Yellow	Red	Red
101. End of the road	There is no place to run to	1 st R7	Red	Yellow	Yellow	yellow
102. End of the road	There is no options to choose from	1 st R17, BD16, 3 rd BD17	Red	Yellow	R & G	Yellow
103. End of the road	The end of something	1 st BD3	Yellow	Green	Green	Yellow
104. End of the road	The end of life	1 st BD6	Red	Yellow	Yellow	Yellow
105. End of the road	There is no way to escape	1 st BD7	Red	Yellow	Green	yellow
106. End of the road	A feeling like you are at a dead end (metaphorical?)	1 st BD14, 2 nd BD20	R & G	Yellow	Yellow	Green
107. End of the road	The end	1 st BD15, 3 rd BD19	Red	Yellow	Green	Yellow
108. End of the road	There is no place to go	1 st BD17	Red	Yellow	Green	Yellow
109. End of the road	Something is about to end	1 st BD20	Red	Yellow	Green	Yellow
110. End of the road	To arrest	1 st BD10	Red	Red	Yellow	Red
111. End of the road	There is no place to go, get cornered	2 nd R7	Red	Yellow	Yellow	Yellow
112. End of the road	There is no place to escape	2 nd R17	Red	Yellow	Yellow	Yellow
113. End of the road	To die	2 nd BD5, 3 rd BD9	Red	Yellow	Yellow	Yellow
114. End of the road	There are no more options to choose from	2 nd BD6, 11, 13	G & R	Yellow	Green	Yellow
115. End of the road	To get cornered	2 nd BD8	Red	Yellow	Yellow	Yellow
116. End of the road	Dead end in the road (literal dead end)	2 nd BD14	Red	Yellow	Green	yellow
117. End of the road	To get cornered without options	2 nd BD21	Red	Green	Yellow	Yellow
118. End of the road	The end of life	2 nd BD24	Red	Yellow	Yellow	yellow
119. End of the road	There is only one option to choose from	3 rd R8	Red	Yellow	Red	Red
120. End of the road	To put an end to someone's plans or activities	3 rd R11	Green	Yellow	Yellow	Yellow
121. End of the road	The end of a matter	3 rd R15	Yellow	Yellow	Green	Yellow
122. End of the road	To have to quit	3 rd R18	Yellow	Yellow	Green	Yellow
123. End of the road	To accomplish a goal	3 rd BD4	Red	Yellow	Red	Red
124. End of the road	Dead end (metaphorical)	3 rd BD7	Red	Yellow	Green	Green
125. End of the road	To end	3 rd BD8	Red	Yellow	Green	yellow
126. End of the road	To come to an end	3 rd BD9	Red	Yellow	Green	yellow
127. End of the road	To suddenly quit a bad habit	3 rd BD10	Red	Yellow	Red	Red
128. End of the road	To feel at a loss without an option	3 rd BD14	Red	Yellow	Green	Yellow

129. End of the road	The plan is over	3 rd BD15	Yellow	Yellow	Green	Yellow
130. End of the road	To quit	3 rd BD18	Red	Yellow	Yellow	Yellow
131. Pull the plug	To admit failure or defeat	1 st S2, AJ2,	Red	Y & R	Green	Yellow
132. Pull the plug	To put an end	1 st S4, 5,	Yellow	Yellow	Green	Yellow
133. Pull the plug	To fail or give up	1 st S6	Red	Yellow	Green	Yellow
134. Pull the plug	To make someone stop from doing something	1 st S10	Yellow	Yellow	Green	Yellow
135. Pull the plug	To give up	1 st S16, AJ15, 16, 2 nd S2, 3 rd S2	Red	Yellow	Green	Yellow
136. Pull the plug	To stop a project	1 st S18	Yellow	Yellow	Green	Green
137. Pull the plug	To fall through (revision—metaphorical sense...fall through as in fail)	1 st AJ7	Red	Red	Yellow	Yellow
138. Pull the plug	Plans or activities get cut off	1 st AJ17	Green	Yellow	Green	Green
139. Pull the plug	To end	1 st AJ18	Red	Yellow	Green	Yellow
140. Pull the plug	To put an end to something	1 st AJ22	Yellow	Green	Green	Green
141. Pull the plug	To put an end to plans	2 nd S5	Green	Yellow	Green	Green
142. Pull the plug	To make someone stop working	2 nd S9	Yellow	Yellow	Green	Yellow
143. Pull the plug	To stop something suddenly	2 nd S22	Yellow	Yellow	Green	Yellow
144. Pull the plug	To abort plans	2 nd AJ4, 3 rd AJ4	Green	Yellow	Green	Green
145. Pull the plug	To make someone quit their work	2 nd AJ5	Yellow	Yellow	Green	Yellow
146. Pull the plug	To stop someone from doing something in the middle of something	2 nd AJ6	Yellow	Yellow	Green	Yellow
147. Pull the plug	To make someone stop doing something	2 nd AJ8	Purple	Yellow	Green	Yellow
148. Pull the plug	To make someone stop working	2 nd AJ9	Yellow	Yellow	Green	Yellow
149. Pull the plug	To make someone stop doing something	2 nd AJ11	Yellow	Yellow	Green	Yellow
150. Pull the plug	To reveal secrets	3 rd AJ3	Red	Yellow	Red	Red
151. Pull the plug	To rest	3 rd AJ6	Purple	Red	Red	Red
152. Pull the plug	To stop something you have already started	3 rd AJ7	Yellow	Yellow	Green	Yellow
153. Go through hell	To overcome difficulties	1 st T20, AG17,	Y & G	R & Y	Yellow	Yellow
154. Go through hell	To be in a difficult situation	2 nd T17	Yellow	Yellow	Green	Yellow
155. Go through hell	To do something difficult	2 nd T22	Yellow	Yellow	Green	Yellow
156. Go through hell	To go through a dangerous situation	2 nd AG25	Yellow	Green	Yellow	Yellow
157. Go through hell	A bad situation becomes worse	2 nd AG24	Red	Yellow	Red	Red
158. Go through hell	To overcome suffering and difficulties	2 nd AG18	Green	Yellow	Yellow	yellow
159. Go through hell	To have things go wrong	3 rd AG12	Red	Yellow	Yellow	Yellow
160. Go through hell	To experience difficulty	3 rd AG13	Green	Green	Yellow	Yellow
161. Go through hell	To overcome a difficult situation	3 rd AG16	Green	Yellow	Yellow	Yellow
162. Heart of gold	A strong heart	1 st AZ12	Red	Yellow	Yellow	Red
163. Heart of gold	To be considerate	2 nd AZ15	Green	Yellow	Green	Yellow

164. Heart of gold	A good natured person	2 nd AZ20	Green	Yellow	Green	Green
165. Heart of gold	Brave	3 rd AZ4	Red	Red	Purple	Red
166. Have a skeleton in the closet	To face difficulties	1 st AS6	Red	Yellow	Red	Red
167. Have a skeleton in the closet	To reveal secret information	1 st AS11	Red	Yellow	Yellow	Red
168. Have a skeleton in the closet	To have secrets	1 st AS15, 16, 17	Green	Yellow	Yellow	Yellow
169. Have a skeleton in the closet	To hide (Jon got "to fide")	1 st AS18	Yellow	Yellow	Red	Yellow
170. Have a skeleton in the closet	Have nothing to do (Jon got "M"...typo in cell)	1 st AS20	Red	Red	Purple	Red
171. Have a skeleton in the closet	To hide a secret from the past	1 st AS22	Green	Green	Purple	Green
172. Have a skeleton in the closet	To hide something	2 nd V24, 3 rd , V15, AS12	G & Y	Yellow	Yellow	Yellow
173. Have a skeleton in the closet	To have a secret you can't tell anyone about	3 rd AS13	Green	Yellow	Green	Green
174. Have a skeleton in the closet	To forgive someone for a mistake from the past	3 rd AS16	Yellow	Red	Yellow	Red
175. Give someone the green light	To give permission to take a day off	1 st AL6	Yellow	Green	Yellow	Yellow
176. Give someone the green light	To give someone a break	1 st AL8	Red	Yellow	Red	Red
177. Give someone the green light	To forgive/give permission	1 st AL10	Yellow	Green	Yellow	Green
178. Give someone the green light	To be kind	1 st AL20	Red	Yellow	Red	Red
179. Give someone the green light	To offer a helping hand	2 nd AL10	Red	Yellow	Red	Red
180. Give someone the green light	To give someone a chance	2 nd AL13	Red	Yellow	Yellow	Yellow
181. Give someone the green light	Kindness	2 nd AL15	Red	Yellow	Red	Red
182. Give someone the green light	To get permission	3 rd AL13, 16	Green	Yellow	Yellow	Yellow
183. Spill the beans	To ruin something	1 st AV7	Red	Yellow	Red	Red
184. Spill the beans	To have a big mouth	2 nd AV11	Yellow	Green	Yellow	Yellow
185. Go bananas	Unbelievable	1 st BF	Red	Purple	Red	Red
186. Go bananas	Full of motivation	1 st BF20	Yellow	Yellow	Red	Red
187. Go bananas	Full of confidence	2 nd BF4	Red	Yellow	Red	Red
188. Go bananas	To make noise	2 nd BF25	Red	Yellow	Yellow	Yellow
189. Go bananas	To agree with someone/something	3 rd BF7	Red	Yellow	Red	Red
190. Go bananas	To have energy	3 rd BF10	Yellow	Yellow	Red	Yellow
191. Go bananas	To support a team	3 rd BF19	Red	Yellow	Red	Red
192. Recharge your batteries	To rest in order to release stress	1 st BE6	Yellow	Yellow	Green	Yellow
193. Recharge your batteries	To release stress and take a break	2 nd Z7	Green	Yellow	Green	Yellow
194. Recharge your batteries	To feel better from doing something for a change	2 nd BE15	Y & R	R & Y	Red	Red
195. Recharge your batteries	To restore energy for tomorrow	2 nd BE18	Green	Yellow	Green	Yellow
196. Recharge your batteries	To recover	2 nd BE5	Yellow	Yellow	Green	Yellow
197. Recharge your batteries	To rest	(Multiple times)	Green	Green	Yellow	Green
198. Recharge your batteries	To rest to feel better	3 rd Z7	Green	Green	Yellow	Green
199. Recharge your batteries	Do something to make yourself feel better	3 rd BE13	Red	Yellow	Red	yellow

200. Have a lot on your plate	To overcome shyness in social situations	1 st BB2	Green	Red	Red	Red
201. Have a lot on your plate	There are many options to choose from	1 st BB6, 3 rd BB9	Red	Yellow	Red	Red
202. Have a lot on your plate	Greed	1 st BB7	Red	Purple	Red	Red
203. Have a lot on your plate	To get many things done at the same time	2 nd BB18	Red	Yellow	Yellow	Yellow
204. Have a lot on your plate	Unstable	2 nd BB25	Red	Yellow	Red	Red
205. Have a lot on your plate	To have too many unnecessary documents	3 rd AA13	Green	Green	Red	Red
206. Under the weather	Unstable	1 st BA22	Red	Yellow	Red	Red
207. Under the weather	A state of emotions	2 nd BA3	red	Yellow	Red	Red
208. Under the weather	To not be in the mood to do something	2 nd BA5	Red	Yellow	Red	Red
209. Under the weather	To have mood swings	2 nd BA6	Red	Yellow	Red	Red
210. Under the weather	Feeling down	2 nd BA7	Red	Yellow	Red	Red
211. Under the weather	To get influenced by the weather	2 nd BA18	Red	Yellow	Red	Red
212. Under the weather	Often moody	2 nd BA20	Red	Yellow	Red	Red
213. Under the weather	Moody	2 nd BA25	Red	Yellow	Red	Red
214. Under the weather	To have a cold	2 nd BA18	Green	Yellow	Green	Green
215. Under the weather	To feel down	3 rd AB7	Red	Yellow	Red	Red
216. Under the weather	To feel blue	3 rd BA3, 9	Red	Yellow	Red	Red
217. Under the weather	Depending on the mood	3 rd BA7	Red	Yellow	Red	Red
218. Be in the hot seat	To be in a nervous situation	1 st BC2, 17, 3 rd BC14	Green	Yellow	Green	Yellow
219. Be in the hot seat	A nervous situation due to stress	1 st BC7	Green	Yellow	Green	Yellow
220. Be in the hot seat	To be in a nervous situation with a cold sweat	1 st BC20	Yellow	Yellow	Green	Yellow
221. Be in the hot seat	To bear a situation with a lot of stress due to nervousness	2 nd AC7	Green	Yellow	Green	Green
222. Be in the hot seat	To be unable to speak well during an interview due to nervousness	2 nd AC17	Green	Yellow	Yellow	Yellow
223. Be in the hot seat	Can't sit still due to nervousness	2 nd BC7	Yellow	Yellow	Red	Yellow
224. Be in the hot seat	Unreasonable interview	2 nd BC9	Yellow	Yellow	Red	Yellow
225. Be in the hot seat	To get annoyed by difficult questions	2 nd BC15	Yellow	Yellow	Red	Yellow
226. Be in the hot seat	To get lectured under a tough situation	2 nd BC17	Yellow	Yellow	Green	Green
227. Be in the hot seat	To bear a difficult situation	3 rd BC3	Green	Yellow	Yellow	Yellow
228. Be in the hot seat	In a difficult situation	3 rd BC5	Red	Yellow	Yellow	Yellow
229. Be in the hot seat	To feel cornered in a difficult situation	3 rd BC8	Red	Yellow	Yellow	Yellow
230. Be in the hot seat	To get nervous	3 rd BC9	Red	Yellow	Red	Yellow
231. Be in the hot seat	To get criticized by many people	3 rd BC19	Red	Yellow	Red	Red
232. Have your back to the wall	To be unable to choose	1 st AD5	Red	Yellow	Red	Red
233. Have your back to the wall	To pressure someone to choose	1 st AD11	Red	Yellow	Red	Yellow
234. Have your back to the wall	There are only a few options to choose from	1 st AD22, AK16, 2 nd	Green	Yellow	Green	Green
235. Have your back to the wall	There is no option to choose from	1 st AK 3, 4, 6, 9, 3 rd AK7	Green	Yellow	Green	Green

236. Have your back to the wall	There is a few options to choose from	1 st AK16	Green	Yellow	Green	Green
237. Have your back to the wall	To get close to a deadline	1 st AK18	Red	Yellow	Yellow	Yellow
238. Have your back to the wall	There is no one who takes your side	2 nd AK3, 3 rd AK12	Yellow	Red	Red	Yellow
239. Have your back to the wall	To get cornered	2 nd AK5, 7, 15, 20	Green	Yellow	Green	Yellow
240. Have your back to the wall	There are limited options due to being cornered	2 nd AK6	Green	Yellow	Green	Green
241. Have your back to the wall	There is no option	2 nd AK4	Yellow	Yellow	Green	Green
242. Have your back to the wall	There is no way to escape	2 nd AK11	Yellow	Yellow	Red	Yellow
243. Have your back to the wall	To get cornered without an option	2 nd AK12	Green	Yellow	Green	Green
244. Have your back to the wall	There are few options and feels like being boxed in	2 nd AK21	Green	Yellow	Green	Green
245. Have your back to the wall	To decide among few options	3 rd AD2	Yellow	Yellow	Green	Yellow
246. Have your back to the wall	To get worried	3 rd AD19, AK8, 10	Red	Yellow	Red	Red
247. Have your back to the wall	There is only one option under a difficult situation	3 rd AK6	Green	Yellow	Green	Green
248. Have your back to the wall	To have to choose an option that someone dislikes	3 rd AK11	Red	Yellow	Green	Yellow
249. Have your back to the wall	To be put in a difficult situation	3 rd AK13	Yellow	Yellow	Green	Yellow
250. A drop in the bucket	A very small amount	1 st AE19, 3 rd AE7, 12, 3 rd AW 7, 10, 12	Green	Yellow	Green	Yellow
251. A drop in the bucket	A very little amount	1 st AW2, 22	Green	Yellow	Green	Yellow
252. A drop in the bucket	A small part of something	1 st AW12	Green	Yellow	Yellow	Yellow
253. A drop in the bucket	It's only a part of something	2 nd AW6	Green	Yellow	Red	Yellow
254. A drop in the bucket	Not enough	2 nd AW15	Green	Yellow	Yellow	Yellow
255. A drop in the bucket	Not enough for needed amount	2 nd AW20	Green	Yellow	Green	Yellow
256. A drop in the bucket	Something meaningless	2 nd AW24	Red	Yellow	Yellow	Yellow
257. A drop in the bucket	Not enough amount	2 nd AW25, 3 rd AW4	Green	Yellow	Green	Yellow
258. A drop in the bucket	The amount you HAVE is much smaller than what you NEED. (This applies to all)	3 rd AE13	Purple?	Green	Green	Green
259. God's gift to women	To be full of confidence (given an attractive woman)	1 st AF20	Yellow	Green	Yellow	Yellow
260. God's gift to women	A talent that God gives	1 st AN7	Red	Yellow	Red	Red
261. God's gift to women	To be attractive	1 st AN6	Yellow	Yellow	Red	Yellow
262. God's gift to women	Men who are attractive to women	2 nd AN4	Yellow	Yellow	Red	Yellow
263. God's gift to women	Beautiful person	2 nd AN25	Red	Yellow	Red	Red
264. God's gift to women	Attractive men	2 nd AN21	Yellow	Yellow	Red	Yellow
265. God's gift to women	Men who are attractive but narcissistic	3 rd AF4	Green	Green	Yellow	Yellow
266. God's gift to women	To not be a very good judge of character	3 rd AN12	Red	Yellow	Red	Red
267. God's gift to women	Attractive men to women	3 rd AN3, 9	Yellow	Yellow	Red	Yellow

APPENDIX K THINK-ALLOUD DATA

K.1 Transcription of participant data

LF=Literal + Figurative Picture; LO=Literal Only Picture; NP=No Picture; RA=Read Answer (the point at which participants saw the meaning)

(Participant 1 spoke solely in the L2; Participants 2 and 3 only spoke in the L1, and their speech was later translated into English)

Idiom	C	Participant 1	C	Participant 2	C	Participant 3
give someone the green light	LF	Green means fresh color and natural nature. Gentle. Someone gentle is giving information or solution. Green light, maybe hope.	LO	Green light, it means, is it a hint. Giving a hint for something unknown. Receiving a hint from someone? Getting a hint so that I understand? RA--Oh, I was wrong. Permission, is it because of using the word "give"?	NP	Give someone the green light. (This means giving someone the green light--compared to red, it sounds gentle. Such as giving someone advice. Just giving someone advice. Give approval. That's what I mean.)
sit on the fence	LF	She is (inaudible) and--fence. Look down something or someone and strange person. She is fall down. Make barrier. Make barrier against people. Fence. It takes long time to climb fence.	LO	Well, since a fence is in a high place, so maybe looking down from a high place? Hmm, I don't think it means looking down or judging people, but just looking around. Hmmm, like avoid getting involved in matters? RA--ahh wrong, it means unable to make a decision. I don't understand how the fence relates to this idiom.	NP	Sit on the fence. (Sitting on the fence. Sitting on the fence means, well, sounds like the edge or verge of something, sitting on the fence. That means, well, maybe a crisis or critical moment, I think. Oh, I see.)
be under the weather	LO	Gloomy and sad. It isn't going well. It's almost rain.	LF	Be under the weather, under the weather, whaaat? I don't understand where the hint is. Physical condition? Physical condition changes maybe? Affected by the weather? Maybe the physical condition changes due to the weather. Technical thing? RA-ah being sick. Because he's feeling not well, it doesn't fit.	NP	Be under the weather. (Well, being under the weather, that means, weather, weather, under the weather, the circumstances of the weather, weather, ummm, the weather, the weather, since the weather easily changes, circumstances can change, one's situation can change. In an unstable situation, that's what I think.)
recharge your batteries	LO	Refresh your body and mind and brain by having a rest or having a meal or--especially you have a rest like the battery recharge.	LF	To recharge, to do something to feel good, in general. RA-ahh yeah yeah.	NP	Recharge your batteries. (From the meaning of the words, it means recharge your batteries, that means to rest or go out somewhere. Take a day off, that's what I think it means.)

throw in the towel	LF	Console someone who lost the game. Interfere or interrupt something. Protect someone or cheer up	NP	ah, "throw the spoon" (participant knew the meaning, there is a close equivalent that means to give up in Japanese). Does towel mean spoon? Is it different? To accept? Throw and accept? Hmm RA.	LO	Throw in the towel. (Looks like a towel is being thrown in a garbage can in the related picture. Assuming from that picture, since the towel is not folded and being thrown somewhere, it means unorganized or sloppy. Do things in an unorganized way. Ahhhh, failure, defat--In boxing throwing in a white towel. Accept failure--I see.)
go bananas	NP	Yellow, happy. Be more happy or excited (he knew this one ahead of time) Some people are dancing or talk a lot. Imagined south america such as Brazil or other countries in South America.	LO	Go, move forward? Hmm, it's not becoming a banana right? Hmm, since bananas are yellow, you become yellow? Hmm, take it easy? RA--Ahh totally wrong! Why bananas? Is there any kind of ingredient in bananas? I don't know.	LF	Go bananas--I remember the meaning from the picture. Watching TV, the bananas as people as a metaphor get excited, watching something and not realize you're overly excited. Get excited, hmmm.
come out of your shell	LO	Overcome your shyness and communicate with othe people and don't hide your emotional feeling or thought and insetad of that he said he'll say he's hoping and don't make barrier to anything (he knew this one already) anything surrounding you. Hard, shell is very hard. Break a hard--don't be so hard. Take it easy.	NP	Shell. Come out--what does it mean? Isolate oneself? "come out" means come out? Come out of the shell? RA-ahh right.	LF	Come out of your shell (To come out of one's shell. I can guess from the picture and the sentence. The meaning is roughly, let's see, come out of your shell means to become social, become social and, well, hmmm, and joining a group. Become more cooperative. RA
have a lot on your plate	LF	A lot of. Too much food--too much work. He can't do, he don't think he want do so much task or thing he can't have so many things.	LO	Hmmm, having a lot in your hand or in stock? Idiom? hmmm, having a lot of connections? Maybe not connections. Anyway, having a lot of things. RA-Wrong. Having a lot of important work to do. But that wasn't drawn in the picture. Ohh, I see.	NP	Have a lot on your plate (There's no picture, just words. A lot on your plate. That means you have many things on your plate. Have many plates. I don't really understand the grammar. Using your plate, metaphorically, the things or skills you have. Have many ways to do things. RA--I see.

face the music	NP	Face the thing that you are you become curious about the thing. Music is, there are various, face a lot of fantastic things that you have never experienced.	LO	Face the music, what does it mean to face the music? Not listening, but facing? Hmm, vibration, no? Facing? Facing the music, haha. Feel the vibration, not listening to the actual music? RA-Why is music a punishment? I guess music isn't a positive meaning. Hmm	LF	Face the music (From the words what I perceive is what I see in the picture. There is a guitar and drums and looks like there's a person being trapped and sad. People think of music as a positive thing, but I don't get that feeling from the picture. In a situation where facing tasks or danger I think. RA--I see.
raise eyebrows	LO	Be surprised or people feel strange because something strange happened in front of them. They are surprised that unexpected news or, eyebrow, face.	NP	Raise eyebrows. Raise? Raising eyebrows? Getting mad? Raise..raise..Not putting on eyebrows? Being mad or facial expressions? RA--ahh, wrong. Ahh I see, facial expressions. After all, when we are suprised by others' actions, our facial expression changes, that's why it's raising eyebrows.	LF	Raise eyebrows (Raised eyebrows, that means from the picture roughly when you look at things or people you have an expression of surprise. RA
have your back to the wall	LO	Be tired and waiting someone or something to happen. There is no, there are no way to escape, He is in dangerous.	LF	A situation where got stuck, or can't move. Can't escape anymore. RA-ah, I was right.	NP	Have you back to the wall (Put your back to the wall). Guessing the meaning just from the sentence since there's no picture, putting your back to the wall, you won't get attacked from behind, leaning against the wall, somebody carrying you, somebody supporting your actions, since the person is leaning against something, have confidence. RA-I see.
tie the knot	LO	Make two thing strong. Getting, get, someone get along with some other, especially between men and women. They'll get married.	NP	Hmm, tie the knot. What does it mean, tying the knot. It's not like tying the string? Hmm, tie firmly? Detaining? Protect? RA-Oh! I see. Red string, and knot? Like emotional ties between people?	LF	Tie the knot (Tie the knot, the picture is showing the newly wed couple. This means roughly being tied, or bonding emotionally, This literallly means being tied. RA--ahh, I see. Exactly.
go through hell	LF	Overcome the most difficult experience for him. Experience some nasty reality about, against, a new situation. Be in dangerous and he almost die.	LO	Not go to hell, but through? Going through hell? Going past hell and to heaven? You're supposed to go to hell, but you go somewhere worse? Anyhow, you did something wrong or bad. RA-No? Going through difficulties. Ahh, go through means experience. Right. Hell means difficulty. I got it.	NP	Go through hell (Go through hell. Overcome difficult situations. Experience difficulties I think. Also, let's see, I think that's what it is. RA

a sitting duck	NP	Peaceful. Relaxing for a long time or don't, he don't do nothing, he or she isn't doing nothing. They have a vacation on the beach or some place relaxing.	LO	Since it's a duck, it's talktive? Ducks says "gaga". A duck sitting? Does it mean noisy? Very talkative? I'm not sure if duck has the same symbolism in Japan as other places. Duck, hmm. Aside from talkative, I don't have any other idea about what duck means. Food, animals? RA--ahh! Get targeted. What is this? Does it mean biologically an easy target? Since it's sitting and waiting? I see.	LF	A sitting duck (A sitting duck. From the picture there is a duck-human in a situation where his heart is targeted. Guessing from the picture, I think this idiom describes a situation that is a close call. A close call. RA--I see.
red tape	LF	Make someone or something, make something compact or make someone obey the rule by strict leader or strict system. He is, the leader is, is not good, he doesn't have good management or the thing or person don't stay there.	NP	Red tape. Red tape?? Huh? The color red? I don't see red. It is wrapping paper for presents? I image of red meaning danger. The tape the police use, to keep people out, is yellow..does it mean good as a contrast? Or literally a bad meaning? Hmm, red? Isn't it tape for presents? Danger? Don't do that such as keep out? RA-Ah, wrong. Why red tape? A warning maybe? I don't get it.	LO	Red tape (This idiom means, red tape, from the words and picture, I can only imagine red tape. Red tape is, intended purpose, also considering a situation in which red tape is used. The red color reminds of a town--I think it's a symbol of a tragic situation. RA
the end of the road	NP	It almost finish. The end of the work or book or movie or, it shows some positive meaning.	LF	The end of the road? The end of the road. A dead end? Can't continue? Does it mean a dead end maybe? Not hopeful? Is it a more negative meaning? RA-Hmm, OK.	LO	The end of the road (It means the end of the road. There's a forest in the picture, uh, guessing from that, it's an idiom that indicates finding an oasis. It's a positive meaning about accomplishing something. RA-totally different.
have a skeleton in the closet	LO	Some, there are too used clothes and clothes in the closet or anyone, no one use the item, not interesting in that. Some dark or narrow place or dirty.	NP	What? Having bones in the closet secretly? Having something secretly, does it mean not wanting to be seen by others? I think it's a negative meaning. RA-Skeleton means a secret from the past? Ahh. Is it because of bones? You can see through bones? A past thing? Hmm.	LF	Skeleton (A skeleton in the closet, From the picture, while my friend is visiting me, I'm trying to hide a skeleton in the closet. It's a situation where I have a secret or try to hide something about myself. I have a secret or something to hide. RA--Trying to hide a secret from the past. A skeleton is, could be for example, a murder. It's a past thing.

spill the beans	LO	Someone mess up thing or mess up, mess up and make a mistake. The floor become dirty with something. Slip the hand and spill the liquid or solid.	LF	Spill the beans? Reveal? Lure someone in? I not sure or not. Giving information? Giving information and it's a trap? Lure someone in? RA-I see.	NP	Spill the beans (Spill the beans, hmmm, this means, when you spill beans it scatters, spilling, first of all, it doesn't mean a good thing. As beans, not just one, many things, well, things need to be taken care of, no, no, well, handle, well, it's a situation where many things need to be taken care of. RA-the meaning (inaudible)
turn heads	NP	Look around, notice something. Notice something and find. They are surprised that something make noise or the news that which surprise them.	LO	Shaking their heads? Shaking their heads? It's difficult to tell from the facial expression. It's not a negative meaning, but they're just shaking their heads? Facial expressions? Not it's not facial expressions. It's not that they are saying anything. Are they playing dumb or pretending not to know? RA-Ahh, it's the opposite. To notice something and turn around. It's a positive meaning.	LF	Turn heads (Turn heads, from the situation, two guys are looking back at an attractive lady. Consciousness of attractive things. Looking at them again. This idiom means, well, being attracted to something attractive. RA.
God's gift to women	LO	Women are beautiful and they, they have, they can't get married and have children. Sometimes the guys treat women, especially the women can have children.	NP	A gift for women from God. What? Beauty? Hmm, but it's given to women. Children? Women seem to have strong desires. God gives women something they want. RA-ah wrong. whaat? Why is God involved in this?	LF	God's gift to women (Well, God' is giving a woman as a gift), In the picture, the guy has a ribbon on and looking at the picture, it looks like a situation where God is looking from above. From the words, I don't know whether it's God's gift or a gift from God. In the picture, the man is about to receive a woman. I think it's a happy thing, the guy is receiving a good thing and good things happen. RA--I see.
the birds and the bees	LF	People from, people or thing from different places meet and make a new things. Create a new thing.	NP	Birds..birds and bees? Birds and bees? Both are flying? They have similar pronunciation. Whaat? But they have similar pronunciation and both fly. Birds and insects are different. Do birds eat bees? Is it that kind of thing--I'm not sure. RA-aahh. I see. Birds means stork maybe? Bees, what is it? Beehive? Making babies? Hmm?	LO	The birds and the bees (The birds and the bees. From the words and the picture, birds and bees are flying around. I think it's a situation where things are scattered or unorganized. RA-I had no idea.

pull the plug	NP	Waste money or waste or throw away something. Or set off, start, start the work or task or project. The liquid goes through the pipe.	LF	Outlet? Pull a prank? Pulling a prank on someone? Pestering someone on purpose? RA-Huh, a negative meaning then.	LO	Pull the plug. It's a situation where something has been drained that has collected. Well, well, it means, it's considering the situation where an onsen, no bathtub is being drained. I think it means forgetting unpleasant things. RA-Hmmm.
a heart of gold	NP	Be confident, or too confident, be too confident. Some people respect you and other people don't believe him. He has his ?	LF	A gold what? A gold heart? Does gold mean gentle or kind? Steel? It's not steel. It's harder since it's gold. Because gold is hard. Don't give up? Kind? To become a good role model--like an angel? RA-that's right, it's a positive meaning.	LO	The idiom's meaning is that gold is expensive. A golden heart is unusual and something valuable. I think it's a luxury item and something valuable. RA-ahh, I see.
go cold turkey	NP	It's taste bad and it took quite a long time since the turkey grilled. The party become almost, the party almost end. People are, people got tired. Turkey. Miss their chance and the turkey go bad.	LF	Hmm, what? A turkey feels cold? Turkey is something people eat when they celebrate something, isn't it? "Go cold", it's shaking. The turkey is shaking. I think it's negative meaning. I don't understand what the turkey is standing for. Getting cold. RA-oh. Ah-that's cigarettes! I see. The turkey is shaking because he has withdrawal symptoms, ahhh. Why turkey though?--I don't know.	LO	Freeze the turkey. In the picture, instead of being frozen, the turkey has a cold, the turkey has chills, hmm, it's a situation where one is frightened, or have chills. I have no idea what turkey is supposed to mean. The turkey is shaking, having chills, the idiom means, what I can think of is, well, roughly, let's see, what I can think of is...I'm trying to think..being frightened--let's see. It could mean a turkey is frightened. That's what I think. RA-I see.
a drop in the bucket	LF	The people who is, who has difficult, who have difficultly economically. A small hope for the people.	NP	Like a drop of dew. A drop of dew? Is it important? Am I wrong? As it's only one drop in the bucket, maybe it's important? RA-right, right, just a very small amount.	LO	A drop of dew in the bucket. A bucket is supposed to hold a lot of things. But it's a situation where only a drop in the bucket means it's irreplaceable. Also, it also could be wrong. Things could be wrong or a drop is an irreplaceable thing. RA-I see.
be in the hot seat	NP	Very uncomfortable and have a lot of problem. Get angry. He is excited. Hot seat. Sit, the seat is used, was used for a long time. It became hot.	LF	Be nervous? Stressful interview? Burning. Nervous, being nervous. I wonder what? The blood pressure is raising? So nervous or stressed that you can't think what to do--is that not it? RA-Where is the difficult question coming from? (The picture) it only has a hot seat. "Being in". Where's the difficult question?	LO	Sit in the hot seat. From the words and picture, sitting through a difficult situation, trying to endure a difficult situation. Or I think being forced to face a difficult situation. RA-I see.

bury the hatchet	LF	Stop the war and cooperate with each other. Stop fighting, stop fighting, start the discussion and find out some solution.	LO	<p>Bury the hatchet? Bury the hatchet? Why is it buried? Did someone do something bad with the hatchet? If so..hmm..then it's hidden? Or since it's a hatchet someone cut a tree or something. For example, cutting a tree.</p> <p>Hmm, but why would it need to be buried after cutting a tree? In order to destroy the evidence, I suppose. Or, someone still wants to use it? Ahh it's probably not such a simple meaning like that. Destroying evidence then?</p> <p>RA-ah! ahhh, afterall, weapon, since it's a weapon. If you bury the weapon, then you can't use the weapon anymore.</p>	NP	<p>I don't know how to pronounce "hatchet". Considering how a hatchet is used and guessing the meaning from burying the hatchet, trying to hide a secret--a hatchet could be used for murder. It could mean to hide something. Or to try to hide a secret forever. RA-I see.</p>
------------------	----	--	----	---	----	--

APPENDIX L ETYMOLOGICAL DATA

L.1 Etymologies of **high transparency** idioms from idiom dictionaries

Idiom	OAI	HDI	IORI	CID
1) be skating on thin ice	Denotation: in a risky or precarious situation Etymology: Not listed	Denotation: in a precarious or risky position Etymology: This idiom, which alludes to the danger that treading on thin ice will cause it to break, was first used figuratively by Ralph Waldo Emerson in his essay <i>Prudence</i> (1841).	Not listed	Denotation: If someone is skating on thin ice, they are doing something which could have unpleasant consequences for them. Etymology: Not listed
2) add fuel to the fire	Denotation: (of a person or circumstance) cause a situation or conflict to become more intense, especially by provocative comments Etymology: Not listed	Denotation: worsen an already bad situation, as by increasing anger, hostility, or passion. Etymology: This metaphor dates from Roman times—Livy used it in his history of Rome—and it remains in common use.	Not listed	Denotation: If something that someone says or does adds fuel to the fire, it makes a bad situation worse. Etymology: Not listed.
3) win the battle, but lose the war	Not listed	Not listed	Not listed	Denotation: If you win the battle, but lose the war, you achieve a small thing but in achieving that, lose or fail to get something which is more important. Etymology: Not listed
4) recharge your batteries	Denotation: regain your strength and energy by resting and relaxing for a time. Etymology: Not listed	Denotation: Restore a person's physical and/or emotional strength. Etymology: The literal meaning, restoring an electrical charge to batteries, dates from 1774. The figurative sense was first recorded in 1921.	Not listed	Denotation: If you recharge your batteries, you stop working for a short period in order to rest so that you have more energy when you start working again. Etymology: When people recharge batteries, they put an electric charge back into the batteries by connecting them to a machine that draws power from another source of electricity.
5) the tip of the iceberg	Denotation: the small perceptible part of a much larger situation or problem which remains hidden	Denotation: superficial evidence of a much larger problem. Etymology: This idiom alludes to the	Denotation: an unpleasant problem which is just the first phase of a much larger and even more difficult situation	Denotation: If something is the tip of the iceberg, it is a small part of a very large problem or very serious situation.

	Etymology: This phrase refers to the fact that only about one fifth of the mass of an iceberg is visible above the surface of the sea.	structure of an iceberg, most of whose bulk lies underwater. [mid-1900s]	Etymology: An iceberg is a massive floating body of ice that has broken away from an ice sheet or glacier. Most of its mass floats beneath the surface of the sea; only a small portion is visible above the water. The iceberg has been used allusively since the mid-twentieth century. Michael Gilbert in his thriller <i>The Etruscan Net</i> (1969) calls it a “well-known metaphor”.	Etymology: Only a very small part of an iceberg is visible above the water. About nine-tenths of it is below the surface.
6) free as a bird	Not listed	Denotation: at liberty, without obligations. Etymology: Not listed	Not listed	Denotation: If someone is free as a bird, they are completely free and have no worries or troubles. Etymology: Not listed
7) be caught in the act	Not listed	(catch in the act) Denotation: Apprehend someone in the course of wrong-doing. Etymology: This idiom is a translation of the Latin <i>in flagrante delicto</i> , part of the Roman code, and long used in English law.	Not listed	Denotation: If you are caught in the act, someone sees you doing something secret or wrong. Etymology: Not listed
8) a necessary evil	Denotation: something that is undesirable but must be accepted Etymology: Not listed	Denotation: an undesirable circumstance, person, or thing that is useful enough to be tolerated. Etymology: The OED cites a 1547 treatise that calls woman a necessary evil. The term remains current.	Not listed	Denotation: If you describe something as a necessary evil, you mean that although it is unpleasant, it is needed.
9) an accident waiting to happen	Denotation 1: a potentially disastrous situation, usually caused by negligent or faulty procedures Denotation 2: a person certain to cause trouble Etymology: Not listed	Denotation: a situation that is likely to result in a mishap. Etymology: Not listed	Not listed	Denotation: If you describe a situation or activity as an accident waiting to happen, you mean that they are likely to be a cause of danger in the future. Etymology: Not listed.
10) stab someone in the back	(a stab in the back) Denotation: a treacherous act or statement; a	(stab in the back) Denotation: a betrayal of trust, an act of treachery.	Not listed	Denotation: If someone that you trust stabs you in the back, they secretly do something which hurts and betrays you.

	betrayal. Etymology: Not listed	Etymology: This idiom alludes to physical attack when one's back is turned, and date from the early 1900s.		Etymology: Not listed.
11) killing two birds with one stone	Denotation: achieve to aims at once. Etymology: Not listed	Denotation: achieve two ends with a single effort. Etymology: Not listed	Not listed	Denotation: If you kill two birds with one stone, you manage to achieve two things at the same time. Etymology: Not listed
12) the end of the road	Denotation: the point beyond which progress or survival cannot continue Etymology: Not listed	Denotation: The conclusion or final outcome. Etymology: This idiom alludes to the point where a road stops, and dates from the mid-1900s.	Not listed	Denotation: You use the end of the road to describe a point in a situation after which someone or something can no longer continue or survive. Etymology: Not listed
13) be on autopilot	Not listed	Not listed	Not listed	Denotation: If you are on autopilot, you are acting without thinking about what you are doing, usually because you have done it many times before or because you are very tired. Etymology: In aircrafts, automatic pilot is a device which automatically keeps the plane on course without the need for the pilot to do much.
14) be skin and bones	Denotation: be very thin Etymology: Not listed	Denotation: Painfully thin, emaciated. Etymology: This hyperbolic expression—one could hardly be alive without some flesh—dates from the early 1400s.	Not listed	Denotation: If you describe someone as skin and bones, you mean that they are very thin, usually because they are ill. Etymology: Not listed
15) a drop in the bucket	Denotation: a very small amount compared with what is needed or expected Etymology: Not listed	Denotation: a very small quantity, especially one that is too small. Etymology: John Wycliffe's followers used this seemingly modern phrase in their translation of the Bible (1382), and it also appears in the 1611 King James version (Isaiah 40:15).	Not listed	Denotation: If something, especially an amount of money, is a drop in the bucket, it is very small in comparison with the amount which is needed or expected. Etymology: This expression may come from a line in the Bible (Isaiah 40:15).
16) give someone the green light	(green light) Denotation: permission to go ahead with a project	(the green light) Denotation: Permission to go ahead.	Not listed	Denotation: If someone in authority gives someone or something the green light, they allow someone to do something or something to happen.

	Etymology: The green light referred to is the traffic signal indicating that traffic is free to move forward. Red and green lights were in use from the late 19 th century in railway signals, but this figurative use of green light appears to date from the mid 20 th century.	Etymology: This term originated in the late 1800s for the signal used by railroads to indicate that a train could proceed. It was transferred to more general use in the first half of the 1900s.		
17) a hidden agenda	Denotation: a person's real but concealed aims or intentions.	Denotation: An ulterior motive or concealed intent behind an action, statement, or policy. Etymology: Not listed	Not listed	Denotation: If someone has a hidden agenda, they are secretly trying to achieve something while appear to be doing something else. Etymology: An agenda is a list of things that need to be dealt with, for example at a meeting.
18) be alive and kicking	Denotation: prevalent and very active (informal) Etymology: Not listed	Denotation: Alive and alert; living and healthy. Etymology: This expression originally was used by fishmongers hawking their wares to convince customers of their freshness and has been considered a cliché	Denotation: very active, lively. Etymology: This phrase dates back to at least the early 1830s. The general consensus is that fish vendors used it to advertise their wares. The fish are so fresh that they are still jumping and flapping about. Although there is no known written example of its use in this context, it bears comparison with <i>(all) alive oh</i> for which there is ample evidence, notably in James Yorkston's popular song "Cockles and Mussels" (1884). Nevertheless, the <i>Dictionary of Slang</i> (Farmer and Henley, 1890-1904) states that the phrase alludes to the months of pregnancy following "quickenning", when the mother is able to feel the child she is carrying moving in her womb.	If someone is alive and kicking, they are still active or still exist. Etymology: Not listed
19) drab sb. kicking and screaming	(kicking and screaming) Denotation: protesting vociferously, especially	Not listed	Not listed	Denotation: If you drag someone kicking and screaming to a place or into a different state, you force them to go there or to change even though they are

	<p>against being forced to accept invitations</p> <p>Etymology: Not listed</p>			<p>unwilling to do this.</p> <p>Etymology: Not listed</p>
20) the light at the end of the tunnel	<p>Denotation: a long-awaited indication that a period of hardship or adversity is nearing an end</p> <p>Etymology: Not listed</p>	<p>Denotation: The end of a difficult situation or task, the solution to a difficult problem.</p> <p>Etymology: The metaphoric expression dates from the 1800s, but became widespread only in the mid-1900s.</p>	Not listed	<p>Denotation: If there is light at the end of the tunnel, there is hope that a difficult situation might be coming to an end.</p> <p>Etymology: Not listed</p>
21) be caught with your pants down	<p>Denotation: catch someone in an unprepared state or sexually compromising situation (informal)</p> <p>Etymology: Not listed</p>	<p>Denotation: be surprised in an embarrassing or guilty posture.</p> <p>Etymology: This phrase presumably alludes to someone's pants being lowered to attend to bathroom needs but is not considered particularly vulgar.</p>	Not listed	<p>Denotation 1: If someone is caught with their pants down, they are discovered in an embarrassing situation or in a situation for which they are not prepared</p> <p>Denotation 2: If someone is caught with their pants down, they are discovered having sex with someone they should not be having sex with.</p>
22) smooth sailing	<p>(plain sailing)</p> <p>Denotation: used to characterize a process or activity that goes well and is easy and uncomplicated</p> <p>Etymology: Not listed</p>	<p>Denotation: Easy progress.</p> <p>Etymology: The <i>smooth</i> in this idiom alludes to calm waters, free from big waves or roughness, a usage dating from the late 1300s. The transfer to other kinds of easy progress dates from the second half of the 1900s. Also see <i>plain sailing</i>.</p> <p>(Plain sailing) Denotation: Easy going; straightforward, unobstructed progress.</p> <p>Etymology: Alluding to navigating waters free of hazards, such as rocks or other obstructions, this term was transferred to other activities in the early 1800s.</p>	<p>Denotation (listed as "plain sailing"): a trouble-free situation or course of action.</p> <p>Etymology: This nautical term originated as <i>plane sailing</i> which, since the seventeenth century, was a simplified method of charting the position of a vessel by assuming that she was progressing along a plane surface rather than following the earth's sphere. The phrase began to be used figuratively in the first half of the nineteenth century. Later, Admiral William Smyth referred to this idiomatic use of a nautical term in his <i>Sailor's Word Book</i> (1867): "Plane-sailing is so simple that it is colloquially used to express anything so easy that it is impossible to make a mistake." The term, even amongst seafarers, was often misspelt as <i>plain sailing</i>, and this is now the accepted form of the idiom.</p>	<p>Denotation: (plain sailing or smooth sailing) If an activity or task is smooth sailing, it is easy to do or achieve.</p> <p>Etymology: 'Plain sailing' is sailing in good conditions, without any difficulties. However, the expression may have come from 'plane sailing', a method of working out the position of a ship and planning its route using calculations based on the earth being flat rather than round. This is a simple and easy method which is fairly accurate over short distances, especially near the equator.</p>

L.2 Etymologies of **low transparency** idioms from idiom dictionaries

Idiom	OAI	HDI	IORI	CID
201) tie the knot	Denotation: get married Etymology: Not listed	Denotation: get married; also perform a marriage ceremony Etymology: The "knot" originally meant a binding tie, but the term continues to be used even in these days of frequent divorce. [Colloquial, early 18 th century]	Denotation: to get married Etymology: <i>He has tied a knot with his tongue he can't untie with his teeth</i> is an old proverb dating back to at least the sixteenth century and still in limited use in the early twentieth. The warning is clear: The bonds of matrimony so easily tied are not so easily loosened. By the early eighteenth century the first part of the proverb, <i>to tie the knot</i> , was being used with the sense 'to perform the marriage ceremony'. During the twentieth century it came to mean 'to get married', the warning note sounded by the old proverb long forgotten.	Denotation: if two people tie the knot, they get married Etymology: Tying knots in items of clothing or ribbons worn by the bride and groom is a traditional feature of many wedding ceremonies, symbolizing their unity.
202) one sandwich short of the picnic	Denotation: (of a person) stupid or crazy Etymology: Not listed	Not listed	Not listed	Denotation: If you say someone is one sandwich short of a picnic, you mean they are stupid or crazy Etymology: Not listed
203) have something under your belt	Denotation 1: (of food or drink) consumed Denotation 2: safely or satisfactorily achieved, experienced, or acquired Etymology: Not listed	(under one's belt) Denotation: experienced or achieved Etymology: This metaphorical expression likens food that has been consumed to an experience that has been digested. [Colloquial; first half of the 1800s]	Not listed	Denotation: If you have something under your belt, you have already achieved it. Etymology: Not listed
204) go bananas	Denotation 1: become extremely angry or excited Denotation 2: go mad Etymology: Not listed	Denotation: act crazy Etymology: According to the lexicographer J.E. Lighter, this expression may allude to the similar GO APE, in that apes and other primates are closely associated with eating bananas. [Slang; second half of 1900s]	Not listed	Denotation: If someone goes bananas, they become very angry, upset, or excited. Etymology: Not listed
205) the	Denotation: basic facts about sex	Denotation: a euphemism for sex	Not listed	Denotation: If you tell a child about

birds and the bees	and reproduction as told to a child Etymology: Not listed	education, especially when taught informally Etymology: This idiom alludes to sexual behavior in animals to avoid explicit explanation of human behavior. [Second half of 1800s]		the birds and the bees, you explain to them about sex and sexual reproduction. Etymology: People sometimes explain sex and sexual reproduction to children by telling them how animals reproduce.
206) turn over a new leaf	Denotation: improve your conduct or performance Etymology: The <i>leaf</i> referred to here is a page of a book. The phrase has been used in this metaphorical sense since the 16 th century, and while now it always means 'change for the better', it could previously also mean just 'change' or even 'change for the worse'.	Denotation: make a fresh start, change one's conduct for the better. Etymology: This expression alludes to turning the page of a book to a new page. [Early 1500s]	Denotation: to make a fresh start, to revolve to change one's ways for the better. Etymology: The need to <i>turn over a new leaf</i> or embark upon a program of self-improvement and character-building is common to everyone at one time or another. New leaves here have nothing to do with budding foliage on trees but rather the pages of a book. The expression originated in the first half of the sixteenth century. John Heywood has <i>Naie she will tourne the leaf</i> in his book of <i>Proverbs</i> (1546). It has been suggested that the book in question might be one of precepts to be learnt and mastered for self-edification. This fits with the improving tone of the expression, but does not satisfy the present day notion of making a totally new beginning. The image is more likely to be that of turning over a page of blots and crossed out words and beginning again on clean, white paper.	Denotation: If someone has turned over a new leaf, they have started to behave in a better way than before. Etymology: Not listed
207) catch someone red-handed	Not listed	Denotation: apprehend someone in the course of wrong-doing Etymology: This term referred to the blood on the murderer's hands and originally signified only that crime. Later it was extended to any offense.	Not listed	Denotation: If you catch someone red-handed, you see or find them while they are doing something illegal or wrong Etymology: The reference here is to a guilty person whose hands are covered in blood.
208) red tape	Not listed	Denotation: official forms and procedures, especially those that are	Denotation: excessive bureaucracy, form-filling	Denotation: red tape is official rules and documents that seem

		<p>complex and time-consuming</p> <p>Etymology: This expression alludes to the former British custom of tying up official documents with red ribbon. [Early 1800s]</p>	<p>Etymology: The phrase originates in the former practice of tying together papers and official documents with red tape. This procedure goes back to the seventeenth century, as instanced by an advertisement in the <i>Public Intelligencer</i> (6 December 1658), which offered a reward for a <i>little bundle of papers tied with a red tape which were lost on Friday last</i>. Possibly it was Sydney Smith who first used the term to satirical effect. Discussing with the philosopher Sir James Mackintosh, he writes: <i>What a man that would be, had he a particle of gall, or the least knowledge of the value of red tape! As Curran said of Grattan, 'he would have governed the world'. (Lady Holland's Memoir, 1855)</i>. Modern usage has reinforced the use of <i>red tape</i> as a condemnatory phrase, often the insult of a frustrated person doing battle with officialdom.</p>	<p>unnecessary and cause delay.</p> <p>Etymology: Lawyers and government officials used to tie documents together with red or pink tape.</p>
209) be under the weather	<p>Denotation 1: slightly unwell</p> <p>Denotation 2: in low spirits</p> <p>Etymology: Not listed</p>	<p>Denotation: ailing, ill; also, suffering from a hangover</p> <p>Etymology: This expression presumably alludes to the influence of the weather on one's health. [Early 1800s]</p>	Not listed	<p>Denotation: If you are under the weather, you are feeling ill</p> <p>Etymology: Not listed</p>
210) spill the beans	<p>Denotation: reveal secret information, especially unintentionally or indiscreetly.</p> <p>Etymology: Not listed</p>	<p>Denotation: disclose a secret or reveal something prematurely.</p> <p>Etymology: In this colloquial expression, first recorded in 1919, <i>spill</i> means "divulge", a usage dating back to the 1500s.</p>	<p>Denotation: to let out a secret, to disclose</p> <p>Etymology: This idiom originated in America in the second decade of the twentieth century. Its origin is obscure but the expression may be cobbled together from other bits of US slang. The verb <i>to spill</i> meaning 'to divulge facts' had come into use in the previous decade. <i>Beans</i>, on the other hand, occurs in the earlier phrase <i>to know beans</i>, meaning 'to be well-informed'.</p>	<p>Denotation: If you spill the beans, you reveal the truth about something secret or private.</p> <p>Etymology: This expression has a number of possible explanations. One is derived from an ancient practice of voting by placing colored beans in one of a number of jars or pots, then tipping the beans out and counting them. Another is an informal description of vomiting.</p>

			Thus <i>to spill the beans</i> means 'to disclose confidential information'.	
211) face the music	Denotation: be confronted with the unpleasant consequences of your actions Etymology: Not listed	Denotation: confront unpleasantness, especially the consequences of one's errors. Etymology: The precise allusion in this expression has been lost. Most authorities believe it refers to a theater's pit orchestra, which an actor must face when he faces what can be a hostile audience, but some hold it comes from the military, where a formal dismissal in disgrace would be accompanied by band music. [Second half of 1800s]	Not listed	Denotation: If you face the music, you accept responsibility for something that you have done wrong and you prepare yourself to be criticized or punished for it. Etymology: The 'music' in this expression may refer to the orchestra at an opera or musical. The orchestra sits in front of the stage, so when a performer faces the audience, they also face the orchestra, or 'music'. Alternatively, the expression may come from an army practice in which a soldier who had been dismissed for dishonorable behavior was sent away with drums beating.
212) give sb. a run for their money	Denotation: provide someone or something with challenging competition or opposition Etymology: Not listed	Not listed	Not listed	Denotation: If you give a very skillful person or team a run for their money in a competition, you compete as well as them, or almost as well. Etymology: Not listed
213) get a kick out of something		Not listed	Not listed	Denotation: If you get a kick out of something, you enjoy it very much Etymology: Not listed
214) sell sb. down the river	Denotation: betray someone, especially so as to benefit yourself Etymology: This expression originated in the USA, with reference to the practice in the slave-owning states of selling troublesome slaves to owners of sugar cane plantations on the lower Mississippi, where conditions were harsher than those in the more northerly states.	Denotation: betray Etymology: This expression, dating from the mid-1800s, alludes to slaves being sold down the Mississippi River to work as laborers on cotton plantations. Its figurative use dates from the late 1800s.	Denotation: to betray someone, usually for one's own profit Etymology: The phrase was coined in the southern states of North American, where an illegal trade in slaves continued, even after a bill had been passed to abolish it in 1808. The southern states relied heavily on slave labour to work their prosperous cotton and sugar plantations. Unwanted slaves from the north would be transported	Denotation: If someone sells you down the river, they betray you or do something which harms you in order to gain an advantage for themselves Etymology: This is a reference to slave-owners on the Mississippi river selling unwanted slaves to other slave-owners further down the river, where conditions were harsher.

			down the Mississippi river to be sold into the harsher conditions of the deep south.	
215) tongue in cheek	Denotation: speaking or writing in an ironic or insincere way Etymology: This expression originated in the fuller form <i>put or thrust your tongue in your cheek</i> , meaning 'speak insincerely'. At one time, putting your tongue in your cheek could also be a gesture of contempt, but that shade of meaning has disappeared from the modern idiom.	Denotation: ironically, or as a joke Etymology: This term probably alludes to the facial expression produced by poking one's tongue in one's cheek, perhaps to suppress a smile. [First half of the 1800s]	Not listed	Denotation: if a remark or piece of writing is tongue in cheek, it is meant to be funny and is not meant to be taken seriously Etymology: Not listed
216) beat around the bush	(beat about the bush) Denotation: discuss a matter without coming to the point; be ineffectual and waste time Etymology: This phrase is a metaphor which originated in the shooting or netting of birds.	Denotation: approach indirectly, in a roundabout way, or too cautiously. Etymology: This term, first recorded in 1572, originally may have alluded to beating the bushes for game.	Denotation: to go about something in a roundabout way; to avoid coming to the point Etymology: In a hunt <i>beaters</i> are employed to thrash the bushes and undergrowth in order to frighten game from its cover. It is they who <i>beat about the bush</i> ; the huntsman is more direct. In the words of George Gascoigne (1525-77) <i>He bet about the bush whyles others caught the birds.</i>	Denotation: if you don't beat around the bush, you say what you want to say clearly and directly Etymology: In game shooting, <i>beaters</i> drive birds or small animals out of the undergrowth by beating it with sticks. They may have to do this cautiously as they do not know exactly where the birds or animals are.
217) for the hell of it	Not listed	Denotation: for no particular reason, on a whim. Etymology: Not listed	Not listed	Denotation: if someone does something, especially something bad, for the hell of it, they do it for fun or for no particular reason Etymology: Not listed
218) a catch 22	Denotation: a dilemma or difficulty from which there is no escape because of mutually conflicting or dependent conditions Etymology: The classic statement of this situation is in Joseph Heller's novel <i>Catch-22</i> (1961), from which the expression is taken: 'Orr would be crazy to fly more missions and sane if he didn't, but	Denotation: a no-win dilemma or paradox Etymology: The term gained currency as the title of a 1961 war novel by Joseph Heller, who referred to an Air Force rule whereby a pilot continuing to fly combat missions without asking for relief is regarded as insane, but is considered sane enough to continue flying if he does make such a request.	Denotation: a troublesome situation from which there is no apparent escape since the solution leads back to the original difficulty Etymology: <i>Catch-22</i> , a novel by American novelist and dramatist Joseph Heller, was published in 1961 and is a darkly humorous satire on the evils of war. <i>Catch-22</i> itself is an apparently humane Air Force regulation which traps	Denotation: a Catch 22 is an extremely frustrating situation in which one thing cannot happen until another thing has happened, but the other thing cannot happen until the first thing has happened. Etymology: This expression comes from the novel 'Catch 22' (1961), by the American author Joseph Heller, which is about bomber pilots in the

	if he was sane he had to fly them. If he flew them he was crazy and didn't have to, but if he didn't want to he was sane and had to.'		the airmen by its cyclical logic. Heller's novel was a great success and, following its release as a film in 1970, <i>Catch-22</i> entered the popular idiom to describe any circular or nonsensical problem.	Second World War. Their 'Catch 22' situation was that any sane person would ask if they could stop flying. However, the authorities would only allow people to stop flying if they were insane.
219) a piece of cake	Denotation: something easily achieved Etymology: Not listed	Denotation: something easily accomplished Etymology: This expression originated in the Royal Air Force in the late 1930s for an easy mission, and the precise reference is as mysterious as that of the simile EASY AS PIE. Possibly it evokes the easy accomplishment of swallowing a slice of sweet dessert.	Not listed	Denotation: if something is a piece of cake, it is very easy to do Etymology: Not listed
220) kick the bucket	Denotation: die Etymology: The <i>bucket</i> in this phrase may be a pail on which a person committing suicide might stand, kicking it away before they hanged themselves. Another suggestion is that it refers to a beam on which something can be hung up; in Norfolk dialect the beam from which a slaughtered pig was suspended by its heels could be referred to as a <i>bucket</i> .	Denotation: die Etymology: this moderately impolite usage has a disputed origin. Some say it refers to committing suicide by hanging, in which one stands on a bucket, fastens a rope around one's neck, and kicks the bucket away. A more likely origin is the use of <i>bucket</i> in the sense of "a beam from which something may be suspended"; because pigs were suspended by their heels from such beams after being slaughtered, the term kick the bucket came to mean "to die". [Colloquial; late 1700s]	Denotation: to die Etymology: The origin of this phrase is open to conjecture. One explanation points to the common suicide method of tying oneself to a beam while standing upon an upturned bucket and then kicking the bucket away. There is a preferred etymology, however, which suggests that pigs were suspended by their back legs from a beam known as a <i>bucket</i> (from Old French <i>buquet</i> , 'balance beam') in order to be slaughtered, and in their death throes would kick against it. Grim stuff.	Denotation: If someone kicks the bucket, they die Etymology: The origins of this expression are uncertain. It may refer to someone committing suicide by standing on a bucket, tying a rope around their neck, then kicking the bucket away.
221) cut the mustard	Denotation: come up to expectations; meet the required standard Etymology: <i>Mustard</i> appears in early 20-century US slang with the general meaning of 'the best of anything'.	Denotation: perform satisfactorily Etymology: The origin of this expression is disputed. Some believe it alludes to <i>mustard</i> in the sense of the best of main attraction (owing to its spicing up food), whereas others believe it is a corruption of PASS MUSTER. Still others hold that it concerns the preparation of mustard, which involves adding vinegar to	Denotation: to come up to standard Etymology: <i>Mustard</i> , a condiment noted for its zest and piquancy, has been in figurative use since the seventeenth century when <i>as keen as mustard</i> was coined to describe a person full of enthusiasm for a cause or undertaking. Around the turn of the twentieth century <i>mustard</i> was a slang term in American English denoting 'the best of anything'. It	Denotation: If someone or something doesn't cut the mustard, they are not of an acceptable standard Etymology: In the United States, 'mustard' used to be slang for 'the best' or 'the genuine article'.

		<p>mustard seed to “cut” (reduce) its bitterness. The expression is often in negative form. [Slang; c. 1900]</p>	<p>was the ingredient that made all the difference: <i>I’m not headlined in the bills, but I’m the mustard in the salad dressing just the same</i> (O Henry, ‘The Phonograph and the Graft’, in <i>Cabbages and Kings</i>, 1903). This is probably the origin of the term <i>to cut the mustard</i>, meaning ‘to come up to expectations’. There are, however, other theories as to the idiom’s etymology. One of these alludes to the common practice of adding vinegar to mustard to ‘cut’ its sharp flavor; another says it is a corruption of the synonymous military idiom <i>to pass MUSTER</i>, meaning ‘to pass inspection’, ‘<i>to make the GRADE</i>’.</p>	
222) go cold turkey	<p>Denotation: suddenly and completely stop taking drugs</p> <p>Etymology: the image is of one of the possible unpleasant side effects of this, involving bouts of shivering and sweating that cause goose flesh or goose pimples, a bumpy condition of the skin which resembles the flesh of a dead plucked turkey.</p>	<p>(cold turkey)</p> <p>Denotation: immediate, complete withdrawal from something, especially an addictive substance; also, without planning or preparation</p> <p>Etymology: This term may have come from the earlier expression TALK TURKEY (for blunt speaking). At first used strictly for abrupt withdrawal from drugs or alcohol, it was soon transferred into quitting any habit.</p>	<p>Denotation: to come off (hard) drugs abruptly, rather than gradually and more easily</p> <p>Etymology: This phrase, which is of American origin, has been drug-world terminology since at least the first quarter of the twentieth century. A favorite explanation for the use of <i>cold turkey</i> in this context is that it is a plain dish requiring no preparation and served up without frills or ceremony: by analogy, the withdrawal method is the most basic and straightforward. Other commentators claim that the phrase is descriptive of an addict’s clammy mottled skin which looks like that of a plucked turkey once this drastic treatment is underway. There is however, a third explanation. When the expression <i>cold turkey</i> was coined another American idiom <i>to talk cold turkey</i>, meaning ‘to be frank, to talk in plain terms’, was current (this was a twist on the earlier phrase to talk TURKEY, which had the same meaning) and it is possible that the drug-related term derived from this.</p>	<p>Denotation 1: if someone goes cold turkey, they suddenly stop taking drugs that they depend on</p> <p>Denotation 2: if someone goes cold turkey, they suddenly stop having or doing something that they are used to</p> <p>Etymology: Not listed</p>

APPENDIX M TEACHER PERCEPTION DATA

M.1 Study 5 quantitative and qualitative data of teacher perceptions

4-Point Likert Scale



Statements related to the role of idioms in teaching and learning contexts

- 1) Learning idioms is important for second language learners
- 2) Learning idioms has no place in an EAP (English for Academic Purposes) setting
- 3) Native speakers of English react positively when second language learners use idioms correctly.
- 4) Idioms are important for second language learners to understand the culture of the target language.
- 5) Idioms are important for understanding colloquial English in everyday life.
- 6) Idioms are important for understanding academic English.
- 7) Idioms, when used correctly, serve an important function of reducing social distance between a native speaker and a second language learner
- 8) Commercial textbooks do a good job of intergrating idioms into the materials

Statement 1 “Learning idioms is important for second language learners.”

Participant	Rating	Comments
Rater 1	1	Phrasal verbs yes. The idioms you have here are too low frequency to be worth teaching.
Rater 2	2	For some learners—those with strong integrative motivation. For learners who wish to use English with other non-native speakers, idioms could be a barrier to effective communication.
Rater 3	3	I think idioms are needed to understand some types of English conversations, but students in Japan tend to put too much focus on this area.
Rater 4	3	I think a certain number of very common idioms aid understanding of authentic English, but too much teaching is unnecessary and confusing
Rater 5	3	I'd probably go for a 2.5 if I could get one. I think they are often interesting and I think interest is the key; receptively useful at times, but not a huge concern until learners reach a slightly higher level or are entering an unforgiving native environment.
Rater 6	2	There's an issue with their utility and frequency. If they're important, it's only for those at the very high level of proficiency.
Rater 7	3	Many times they are culturally bound. Important for more advanced learners, I'd say.
Rater 8	4	At all levels, but not possible realistically with published materials.
Rater 9	1	They are infrequently used and difficult to learn without explicit instruction.
Rater 10	2	I think it is useful for more intermediate level learners and beyond. Beginners tend to use idioms in the wrong situations, or at a higher rate than normally spoken.
Rater 11	3	It's important because students must think beyond literal surface meaning. It gets students to combine linguistic and cultural knowledge.
Rater 12	3	Idioms feature frequently in language so it's inevitable that some must be tangible; however, it's a mistake to focus solely on them or even to emphasize their instruction. Language instruction should be based on teaching discernible patterns, e.g. grammar and word-formation.
Rater 13	3	Idioms become more important as proficiency advances, but they're not so important in the early stages.
Rater 14	3	This list casts a fairly broad net. Some of these will be more important than others (and some are barely idiomatic).
Rater 15	4	Learning idioms gives students an opportunity to understand how a language is used in unstructured ways. This is necessary for the use of language in real-world settings. It may also allow for some insight into the cultural aspects of language use.

Statement 2 “Learning idioms has no place in an EAP (English for Academic Purposes) setting.”

Participant	Rating	Comments
Rater 1	4	See question 1.
Rater 2	3	At most idioms are informal/restricted to speech, learning them as part of EAP may cause inappropriate use.
Rater 3	2	Lecturers and other students will use idioms in class, but they should be studied in context.
Rater 4	1	There is certainly a necessity to read authentic texts, which will inevitably contain idiomatic expressions.
Rater 5	3	No place is too 100%, there are a few that might be useful, but it wouldn't be a priority.
Rater 6	3	They tend to be clichés, and I know that in Australian higher learning, academics do complain about students using them. The “plain English” movement is especially “anti-idiom”.
Rater 7	2	I've often been exposed to idioms in academia, perhaps not in written, formal form, but in other interactions.
Rater 8	?	(No answer)
Rater 9	4	Needed to develop well rounded individuals.
Rater 10	2	Depends on context and in which type of course.
Rater 11	2	I'm sure there are probably many academic idioms.
Rater 12	2	To a large part, many idioms should not be used in academic writing; however, in discussion they may be useful or even essential, for example, as passive knowledge.
Rater 13	1	Idioms occur all the time in academic lectures. 2 nd language learners should know them.
Rater 14	1	(No answer)
Rater 15	1	An understanding of idioms is highly valuable in EAP as academic language can be highly figurative at times. Also, students are likely to encounter idiomatic language while participating in Academic programs.

Statement 3 “Native speakers of English react positively when second language learners use idioms correctly.”

Participant	Rating	Comments
Rater 1	3	If you consider laughter as a positive reaction. Usually due to a minor change that makes the idiom useless. Like when a student once told me he wanted to “punch hay” in class.
Rater 2	2	Use of idioms, to my knowledge, evinces no special approval – certainly no more than correct use of grammar/vocabulary.
Rater 3	3	Provided the idiom is used naturally and matches the level of the L2 speakers English.
Rater 4	3	Students can sound more fluent, although only if used sparingly and appropriately.
Rater 5	2	NNSs often suffer from a lack of register (or command of register) and not knowing when to use an idiom over a more standard choice of words exacerbates this situation.
Rater 6	3	It would cause them to over-estimate their proficiency.
Rater 7	2	Somewhat disagree because they are often used inappropriately thus compromising the meaning of the message.
Rater 8	3	No idea.
Rater 9	3	(no response)
Rater 10	2	Idioms often seem to be used in the wrong context or are overused.
Rater 11	3	Depends how they use them. If an appropriate idiom is used, there is a lot of communicative value. It almost signals a sort of cultural solidarity as well.
Rater 12	3	High frequency idioms: No; low frequency idioms: Yes (when used correctly)
Rater 13	3	It’s cute, but it rarely sounds natural.
Rater 14	2	(no response)
Rater 15	4	Provided they are used correctly, idioms demonstrate not only degree of confidence and competence, but also an enthusiasm for using English which native speakers often find appealing.

Statement 4 “Idioms are important for second language learners to understand the culture of the target language.”

Participant	Rating	Comments
Rater 1	1	Very limited connection to culture. Slang might be better.
Rater 2	2	Most high-level students have a repertoire of idioms, though often are able to ‘understand’ the ‘culture’ (whatever those two words really mean!) Certainly, idioms, if studied in depth, could reveal cultural insights, but are not necessary to understand the culture.
Rater 3	3	Idioms come from culture and are a part of it, but need to be learned in context.
Rater 4	2	Although idioms are a part of culture, they are not necessary to understand the culture.
Rater 5	2	There are probably a dozen fighting (boxing) terms on the list – unless you are in that culture, they are just idioms. Again, occasionally interesting but not always so much a part of the target culture to be indispensable.
Rater 6	1	Not sure English has much of a “culture”. In situations where the idiom reveals culture, I’m not convinced that learning that culture is especially useful.
Rater 7	2	They can be culturally bound, but not necessary to understanding local culture. Learning slang would be more effective, I think.
Rater 8	3	No different to vocabulary/grammar, surely?
Rater 9	4	Some have strong links to culture.
Rater 10	3	Idioms are useful to know, but need to be presented with and within context usage. They can be useful in conversation, to set an opinion across quickly.
Rater 11	2	I think cultural knowledge is needed to understand idioms (bible, sports, values, etc.), but they aren’t absolutely essential to understanding culture.
Rater 12	3	Idioms may be indicative of cultural values, but not necessarily so.
Rater 13	2	I think idioms can give cultural insights, but they aren’t truly essential to understanding a culture.
Rater 14	3	(no response)
Rater 15	3	On a macro level, idioms can provide insight into broad aspects of culture such as degrees of deference to authority or the status of minorities. On a micro level, idioms can give language learners information relating to class or status, appropriateness of behavior, social rituals, and taboos, etc.

Statement 5 “Idioms are important for understanding colloquial English in everyday life.”

Participant	Rating	Comments
Rater 1	2	I don't think there is any idiom used often enough even to native speakers to justify teaching.
Rater 2	2	A few idioms may help – but most idioms are so rarely used, or used in contexts where the meaning can be deduced, that knowing many idioms is not important for understanding spoken/colloquial English.
Rater 3	3	Yes, but idioms are always changing so being able to fill in missing lexical knowledge is just as important.
Rater 4	4	Native speaking often use idioms in general conversation.
Rater 5	2	I think they are more something you pick up once your level is high enough that a colloquial English setting is an option.
Rater 6	3	But only in situations where the learner was living inside an English-speaking culture.
Rater 7	3	I'd say there is a connection between idioms and colloquialisms.
Rater 8	3	As above: why give special prominence ahead of vocab, fixed phrasal verbs (e.g.)?
Rater 9	3	(no response)
Rater 10	2	Speakers can still get the meaning across without the use of idioms.
Rater 11	4	English speakers rarely use only literal statements in daily communication. There's a lot of hidden meaning.
Rater 12	4	They are the spicy and color of language that native speakers will naturally gravitate to.
Rater 13	4	We use them all the time. I've seen students struggle with them while trying to talk to native speakers.
Rater 14	3	(no response)
Rater 15	4	While basic transactions such as shopping or ordering food can be conducted using highly structured, formalized language, many daily situations such as conversation or watching television require a command of idiomatic English

Statement 6 “Idioms are important for understanding academic English.”

Participant	Rating	Comments
Rater 1	1	Even less important.
Rater 2	1	Rarely used in AE – if they are, they are marked or ironic, which is likely to make understanding them even more difficult.
Rater 3	3	Less than colloquial but idioms being used in an academic setting tend to change less.
Rater 4	3	Idioms are found in academic writing, although to a lesser extent than colloquial spoken English.
Rater 5	2	There are a few that I can think of appearing regularly, but not many. Also, they are difficult for students to use correctly. I'd say it's more important for students to learn a non-idiomatic way of saying things for productive purposes and learn to use Google for receptive purposes.
Rater 6	2	In a foreign student situation, I would “somewhat agree”.
Rater 7	2	Assuming that academic English means formal papers, then not so important. Idioms could still be used in explaining academic terms and materials though.
Rater 8	3	Yes, but...(as above)?
Rater 9	3	(no answer)
Rater 10	1	For most topics, students would not need to use idioms in their academic writing about a topic. My thinking is that it would seem too informal or be used inappropriately.
Rater 11	3	Idioms and metaphorical language still exist in academic English.
Rater 12	1	Frequent use of idioms in written academic English is frowned upon, therefore it should not be expected of students to learn them.
Rater 13	3	While idioms rarely occur in academic texts, lecturers often use them during class.
Rater 14	2	(no answer)
Rater 15	4	While academic English has a reputation for being dry or sterile, it is often highly idiomatic and unstructured in the humanities

Statement 7 “Idioms, when used correctly, serve an important function of reducing social distance between a native speaker and a second language learner.”

Participant	Rating	Comments
Rater 1	3	See comments to question 3.
Rater 2	1	They may do this, but this is probably rare, and they may also cause some confusion on the NS part, as idioms used by NNS often draw attention to themselves and may carry an unnecessary message – e.g. “I’m using an idiom now.”
Rater 3	2	Idioms, when used correctly, can. But they are often used incorrectly and end up sounding strange.
Rater 4	2	Idioms aid in understanding, but in general native speakers try to avoid idioms when communicating with non-native speakers.
Rater 5	1	I think clear graded language (appropriate for the level) would be better for facilitating communication and therefore reducing social distance.
Rater 6	3	But there is much to lose if they get it wrong.
Rater 7	3	Generally, ease of communication decreases social distance, so using and understanding idioms could reduce this distance.
Rater 8	1	Dependent on the NS/NNS. Impossible/difficult to generalize
Rater 9	3	Possibly.
Rater 10	3	It can help, if the idioms are used in correct context. Like cussing in a second language, it is not always done correctly.
Rater 11	3	Same explanation as #4. When used correctly, yes, they do. But it depends on where the native speaker is from.
Rater 12	3	Aid in understanding of native speakers (receptive) and aid in engaging native speakers (active).
Rater 13	2	I don’t think most native speakers are disinclined to socialize with NNS because they lack knowledge of idiomatic English. But miscommunication can disrupt relationships.
Rater 14	2	(no response)
Rater 15	4	The appropriateness of idioms demonstrates an affinity for the customs and habits of native speakers and can serve to reduce social distance between a native speaker and a second language learner.

Statement 8 “Commercial textbooks do a good job of integrating idioms into the materials.”

Participant	Rating	Comments
Rater 1	2	Only cheesy ones.
Rater 2	2	I’m not really sure, as I have not used a textbook in many years. From memory, I’d say probably not.
Rater 3	2	They either focus on them too much or not enough.
Rater 4	1	In general textbooks try to avoid idioms, or else they teach them out of context.
Rater 5	N/A	I haven’t used a commercial textbook in so long I can’t really comment! Sorry!
Rater 6	3	I really don’t know of many EAP texts that address idioms.
Rater 7	3	I’m not too confident in this answer due to lack of exposure, but the books I’ve used have incorporated idioms.
Rater 8	3	I Strongly disagree at lower levels and strongly agree at higher levels.
Rater 9	1	(no response)
Rater 10	1	Usually cheesy and not so natural.
Rater 11	1	I don’t think that commercial textbooks reflect authentic English very well. Authors maybe stay away from idioms because they are too culture specific and it’s difficult to capture such naturalistic expressions.
Rater 12	N/A	(no response)
Rater 13	1	A lot of textbooks employ idioms without highlighting or explaining them.
Rater 14	1	(no response)
Rater 15	1	I believe it is rare to find a commercial textbook that integrates idioms in a deep and systematic way. There are a number of possibilities for this such as the fluid nature of idioms, or the disparate nature of idioms in different types of English (i.e. US vs. UK etc.).