English idioms in the first language and second language lexicon: a dual representation approach

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In two empirical studies, judgements that native speakers of German make about the decomposability of English idioms were investigated. A decomposable idiom is an idiom whose individual components contribute to its figurative meaning, whereas the constituents of a nondecomposable idiom do not make such a contribution. The findings were analysed and compared to native judgements. The Model of Dual Idiom Representation is introduced in order to explain the differences between the two groups. At the lexical level, the model postulates the parallel existence of idiom entries and constituent entries. The degree of decomposability and the frequency with which the idiom is encountered determine its lexical representation. If there is no idiom entry for a particular idiom, conceptual representations are accessed during comprehension. Because nonnative speakers encounter idioms less often than native speakers, the first language (L1) and second language (L2) lexicon vary with regard to the number of idiom entries.

I Introduction

Idioms such as back to square one, play with fire, pull someone’s leg, steal the show or with flying colours are expressions that abound in English and are easily produced and understood by speakers of that language.

Traditionally, idioms are described as fixed expressions, i.e., as phrases or sentences whose figurative meaning is not clear from the literal meaning of their individual constituents. As a consequence, most authors have drawn a fundamental distinction between literal and figurative language and have assumed that idioms and their

1The approach that dominated the early days of idiom research and established distinctions was generative grammar. From a generative, i.e., syntactic point of view, the fact that an expression is not interpretable in a literal way necessarily leads to the assumption that it is a fixed (noncompositional) expression. More pragmatically oriented studies use the terms ‘true idioms’ (Wood, 1986: II) or ‘pure idioms’ (Howarth, 1998: 28) to refer to the ‘idiomatic = fixed’ relationship and allow for other nonliteral phrases to be idiomatic but nonfixed at the same time.
figurative meanings must be stored separately in the mental lexicon, and that this meaning must be learnt as a whole unit. This article argues that these assumptions only apply to a subgroup of idioms and that it is more adequate to think of idioms as being represented in a dual way.

For linguistic theories, which are mainly concerned with literal language, idioms have always caused serious problems. This is why, over the last four decades, linguists and psycholinguists have developed a number of hypotheses to describe the special grammatical characteristics of idioms and to explain their processing and representation. Although we have gained many insights from these studies, there are three aspects that have been neglected. First, the studies deal exclusively with the native mental lexicon and do not try to integrate the second language (L2) lexicon. Secondly, the studies concentrate either on lexical representations or on conceptual aspects but do not try to combine the two into one theoretical model. Lastly, most of the studies do not allow for frequency effects to play a role in the representation or processing of idioms.

This article introduces a model that includes these aspects, the Model of Dual Idiom Representation (henceforth the DIR Model). It is a psycholinguistic model which not only combines the lexical and the conceptual level but also integrates the representation of idioms in the first language (L1) and the L2 lexicon. Additionally, it considers frequency effects that influence the representations. Supporting evidence for the DIR Model comes from empirical studies on the decomposability of idioms with native and nonnative speakers of English. Insights and results of experimental morphological studies are also used to confirm the model’s assumptions.

The next section briefly reviews psycholinguistic idiom research, focusing on hypotheses and models of idiom comprehension and processing and the so-called Idiom Decomposition Hypothesis (Gibbs and Nayak, 1989). Next, empirical studies on the decomposability of idioms carried out with native and nonnative speakers of English are presented and the differences between the two groups of speakers are compared. The main assumptions of the DIR Model suggest explanations for the findings. Finally, the conclusions summarize the central points made in this article.

II Psycholinguistic idiom research

Over the last few decades, psycholinguistic idiom research has been dominated by several approaches to idiom comprehension and
representation and by the Idiom Decomposition Hypothesis (Gibbs and Nayak, 1989). One of the central questions was whether during idiom comprehension the literal or the figurative meaning is retrieved. A related question has been in which order the different meanings are accessed, if both meanings are retrieved. There are three prominent studies that experimentally tested these questions and that can be referred to as the ‘first generation’ of idiom processing hypotheses. These are the Idiom List Hypothesis (Bobrow and Bell, 1973), the Lexical Representation Hypothesis (Swinney and Cutler, 1979) and the Direct Access Hypothesis (Gibbs, 1980). All three hypotheses fundamentally rely on the idea that the meaning of an idiom is stored in a separate mental idiom list (Weinreich, 1969). First, Bobrow and Bell (1973) wanted to gather evidence of two separate modes of processing, a literal and a figurative one. The participants in their study were asked to indicate which meanings of the two they process first. Although a closer look at their results shows that they did not find significant differences, Bobrow and Bell’s study has been cited ever since as evidence for the existence of two separate modes of processing. According to the authors, the literal meaning is accessed first and only after its rejection is the idiomatic meaning retrieved. Secondly, Swinney and Cutler (1979) assumed parallel activation of both the literal and the figurative meaning with the idiomatic one having a processing advantage because it is fixed and is stored in a separate list. The authors interpreted their results as evidence in favour of their hypothesis. Follow-up studies yielded supporting findings (Estill and Kemper, 1982; Glass, 1983; Botelho da Silva and Cutler, 1993) and contradictory evidence (Burt, 1992). Thirdly, Gibbs (1980) assumed that an idiom’s figurative meaning can be activated without the literal meaning being processed first. His studies have shown that, given an appropriate context, the idiomatic meaning is processed faster than the literal meaning (see also Gibbs, 1985; 1986; Schweigert, 1986; Schweigert and Moates, 1988; Needham, 1992).

A more recent hypothesis, the Configuration Model (Cacciari and Tabossi, 1988; Tabossi and Cacciari, 1988), dispenses with the strict separation and either–or question of literal or figurative meaning. These studies have shown that the literal meanings of the constituents of an idiom are activated and stay activated during processing. The processing of the idiomatic meaning starts 300 ms after the presentation. The Configuration Model claims that the idiomatic configuration is recognized via the activation of the idiomatic key. The configuration takes its specific idiomatic meaning while the literal meanings are still being activated. Depending on
the position of the idiomatic key within the configuration, processing time may vary. This fact could not be explained by the ‘first generation’ hypotheses and makes the Configuration Model superior to them.

The four processing hypotheses discussed so far were developed before Gibbs and his colleagues (Gibbs and Nayak, 1989; Gibbs, Nayak and Cutting, 1989; Gibbs, Nayak, Bolton and Keppel, 1989) introduced the Idiom Decomposition Hypothesis, which has initiated detailed research on the construct of decomposability and has helped authors of subsequent studies to systematically control their material, thus improving their results. Lack of this control might be one reason why the results of the four hypotheses discussed above are very heterogeneous and difficult to compare. Gibbs and his colleagues started to systematically control an idiom’s degree of decomposability (Gibbs and Nayak, 1989; Gibbs, Nayak and Cutting, 1989; Gibbs, Nayak, Bolton and Keppel, 1989), an idea that goes back to Nunberg (1978; see also Wasow et al., 1982; Nunberg et al., 1994). Although often cited as such, the Idiom Decomposition Hypothesis is not an assumption about the processing of idioms; decomposability is an influencing variable with regard to comprehension or representation (Gibbs, Nayak and Cutting, 1989). First of all, it is a hypothesis about the analysability of idioms: ‘speaker’s assumptions about how the meaning of the parts contribute to the figurative meanings of the whole’ (Gibbs and Nayak, 1989: 104). A decomposable idiom is an idiom whose individual components contribute to its figurative meaning. Idioms whose individual constituents do not make such a contribution are nondecomposable. Note that decomposability is a feature of idioms that is based on speakers’ judgements and is therefore relevant from a psycholinguistic point of view, whereas compositionality – a notion often wrongly used synonymously with it – is a theoretical assumption about the combination of syntactic constituents and their phrasal or sentential meanings, which is important within linguistic theories such as generative grammar.² From a generative, syntactic point of view, only the literal meaning of an idiom is compositional, while the figurative meaning is always noncompositional. Therefore, decomposable idioms can be partly

²The compositionality principle, which goes back to Frege and holds that the ‘meaning of an expression is a function of the meanings of its parts and of the way they are syntactically combined’ (Partee, 1984: 281) is a basic assumption of generative grammar. It is responsible for the great problems that idioms pose within this framework and is the reason why generative grammarians have proposed various, complex assumptions for the description of idiomatic expressions. These assumptions were intended to make idioms fit into the overall compositional pattern (e.g., Katz and Postal, 1963; Weinreich, 1969; Fraser, 1970; Katz, 1973; Everaert, 1993; Schenk, 1995; van Gestel, 1995).
compositional, whereas nondecomposable idioms are usually truly noncompositional (but see Hamblin and Gibbs, 1999). As an example, consider the decomposable idiom *miss the boat*. Here, the verbal constituent *miss* contributes to the figurative meaning in a compositional way: something is *missed*. In a truly compositional, i.e., literal reading, a *boat* is *missed*, whereas in the idiomatic reading, an opportunity is *missed*. Many nondecomposable idioms, e.g., *kick the bucket*, have a compositional reading as well. The compositional reading denotes their literal meaning, whereas the figurative meaning is noncompositional. Note that there are some nondecomposable idioms that have no compositional reading at all, e.g., *shoot the breeze*. In generative work on idioms, *kick the bucket* has been used as the standard example. This particular idiom is indeed noncompositional and nondecomposable, but it proved to be a mistake to overgeneralize noncompositionality and apply it to the whole group of idioms and assume that *per se* all idioms are noncompositional in nature. As many psycholinguistic studies on idioms have shown, the presupposition of noncompositionality does not hold for all idioms (see, for example, Gibbs and Nayak, 1989; Gibbs, Nayak and Cutting, 1989; Gibbs, Nayak, Bolton and Keppel, 1989; Titone and Connine, 1994).

A fifth processing hypothesis, the Hybrid Model of Idiom Comprehension (Titone and Connine, 1999), used insights gained from the Idiom Decomposition Hypothesis, although they did not strictly differentiate between decomposability and compositionality. The authors focus on one of the central questions mentioned above, namely on ‘determining the degree to which idiomatic and literal meanings are initially computed during idiom processing’ (Titone and Connine, 1999: 1668). With a relatively small sample of 24 participants and 32 idioms they conducted an eye-tracking study. The results support their hypothesis that automatically both meanings – the literal and the figurative – are activated. For nondecomposable (in their terminology noncompositional) idioms it takes longer to integrate the correct meaning into the idiomatic context, because in this case the two meanings are semantically distinct. The Hybrid Model is superior to the other processing hypotheses because it controls for the decomposability of idioms. It allows – as the Configuration Model (Cacciari and Tabossi, 1988; Tabossi and Cacciari, 1988) does – for both the literal and the figurative meaning to be activated during idiom processing.

In general, the present study agrees with the fundamental assumptions and findings of both the Configuration Model and the Hybrid Model. However, the five comprehension hypotheses discussed above suffer from certain shortcomings. The three studies
of the ‘first generation’ are too simple due to their either–or characterization of an idiom’s literal or figurative meaning. All five hypotheses restrict themselves to the native mental lexicon only. Furthermore, they are limited to the lexical, i.e., linguistic level, whereas conceptual aspects during idiom comprehension are not considered. Studies that deal with conceptual aspects in idiom comprehension (e.g., Gibbs, 1990; 1992; 1995; Gibbs and O’Brien, 1990; Nayak and Gibbs, 1990; Glucksberg et al., 1993) primarily concentrate on the conceptual or metaphorical motivation for an idiom’s meaning, but this aspect has not yet been integrated into comprehension models. That is why pure lexical models necessarily have to assume the existence of specific idiomatic entries. Regardless of an idiom’s status as being decomposable or nondecomposable, its figurative meaning has to be learned and stored separately. However, as the studies conducted with nonnative speakers described below have suggested, this is not necessarily so. If lexical information, i.e., the literal meaning of the constituents, is not sufficient, conceptual knowledge can play a role in the idiomatic comprehension process. In the present study, the notion conceptual refers to a nonlexical, i.e., nonlinguistic aspect of cognition and must not be confused with semantic knowledge (for detailed discussions see Pavlenko, 1999; 2000a; b; de Groot, 2000; Ervin-Tripp, 2000; Francis, 2000; Green, 2000; Paradis, 2000; Roelofs, 2000; Vaid, 2000). In the context of the L1 and the L2 lexicon it is assumed that there are language specific, separate lexical representations but only one conceptual representation, which is independent of languages or modalities (de Groot, 1992; Kroll and Sholl, 1992; Kroll 1993).

The purpose of the present study is to introduce a model that attempts to compensate for the factors neglected by the models discussed above. The Model of Dual Idiom Representation (DIR Model) assumes that nondecomposable idioms require an idiom entry, whereas decomposable idioms can be represented via constituent entries and can additionally develop an idiom entry. The more frequently the idiom occurs as an idiomatic configuration, the more probable is the development of an idiom entry, independently of whether the idiom is decomposable or nondecomposable. Frequency plays an important role in language processing and should therefore be part of every model of idiom representation. For decomposable idioms, the idiom entries should be regarded as additional pieces of information about frequently occurring linguistic entities and not as a mandatory prerequisite to idiom processing. If decomposable idioms have no idiom entry at the lexical level, conceptual representations are accessed during comprehension. Supporting evidence for the twofold claim of dual
representations – that there is not only a lexical, but also a conceptual level of representation, and secondly that constituent and idiom entries co-exist at the lexical level – was gathered from native and nonnative judgements on the decomposability of idioms.

III Judgements on the decomposability of idioms

1 Native speakers

Gibbs and his colleagues carried out many studies on idiom decomposability (Gibbs and Nayak, 1989; Gibbs, Nayak and Cutting, 1989; Gibbs, Nayak, Bolton and Keppel, 1989). They identified three groups of idioms: decomposable (e.g., *pop the question*, *break the ice*, *clear the air*), abnormally decomposable (e.g., *carry a torch*, *spill the beans*, *bury the hatchet*) and nondecomposable (e.g., *chew the fat*, *shoot the breeze*, *pack a punch*) ones (Gibbs and Nayak, 1989: 133–34). As mentioned above, in decomposable idioms the constituents contribute to the idiom’s figurative meaning, in nondecomposable idioms they do not. Abnormally decomposable idioms are a subgroup of decomposable idioms, ‘whose individual components have some metaphorical relation to their idiomatic referents’ (Gibbs and Nayak, 1989: 109). The results show that decomposable idioms are syntactically more productive, lexically more flexible and more quickly processed than nondecomposable ones. One point of criticism is that in the studies reported by Gibbs and his colleagues the participants had to judge idioms that were preselected by the authors on the basis of the three groups of idioms described above, thus implying a balanced distribution of all English idioms among the three groups. Titone and Connine (1994) had their participants freely comment on 171 idioms and found an asymmetrical division, i.e., they found that native speakers of English judge 41.9% to be decomposable idioms and 58.1% to be nondecomposable. Furthermore, they identified some fundamental problems with regard to abnormally decomposable idioms: ‘subjects cannot easily make this distinction for all but a few idiosyncratic phrases. In contrast, the decomposable and nondecomposable sorting task was more reliable’ (Titone and Connine, 1994: 262). It seems that the subdivision of decomposable idioms into normally and abnormally decomposable ones is of low psychological validity.

The fact that the results obtained by Gibbs *et al.* differ from the findings of Titone and Connine led to the two studies described below. In order to support and validate one or the other study, a nonnative sample was used. On the one hand, the nonnative judgements were examined in their own right and, on the other
hand, they were directly compared to the native judgements (for a
detailed discussion of theoretical and methodological aspects of
nonnative judgements, see Chaudron, 1983; Sorace, 1990; 1996). The
findings were used to support the DIR Model, which is suitable for
both the L1 and the L2 lexicon.

2 Nonnative speakers

First, it should be noted that for nonnatives there is no such idiom
research tradition comparable to the L1 psycholinguistic studies
discussed above (but see Irujo, 1986a; 1993). Most studies deal with
idioms and the problems they cause for the foreign language learner,
resulting in suggestions on how to teach them better (e.g., Irujo,
1986b; Otier, 1986; Lattey, 1994; McCaskey, 1994; Duquette, 1995;
Richards, 1996; Lennon, 1998; for details, see Abel, 2003). Therefore,
the following has the character of a pilot study in that it tries to
consider insights gained from L1 research in order to provide a
theoretical framework for future empirical studies on idioms and L2.

In two separate studies, nonnative judgements on the de-
composability of English idioms were conducted. Study 1 dealt
exclusively with verbal idioms (V + DET + N, e.g., miss the boat,
steal the show, shoot the breeze), while Study 2 used idioms with
various syntactic forms (e.g., back to square one, a piece of cake).
Study 1 restricted itself to verbal idioms in order to control for the
syntactic structure of the data and to keep the sorting task simple
because of the nonnative sample. Study 2 was designed to yield an
identical dataset to that reported on by Titone and Connine (1994)
for a direct comparison between natives and nonnatives. Although
the focus of the present study was on the decomposability sorting
task, participants also rated the familiarity of idioms and the ease
of the decomposability decision. Familiarity refers to the knowledge
of meaning a participant has about an idiom. Ease of decision was
checked in order to control for the difficulties nonnatives might
have in rating idioms. The participants who rated decomposability
were also asked to indicate how difficult or easy they found the
decision about each idiom’s decomposability on a 5-point scale. The
results did not show relevant differences between the nonnative
participants and a native control group, which indicated that
nonnatives have no difficulties with judgement tasks of this type.
Therefore, this factor is not considered here any further (for details,
see Abel, 2003).

a Participants: A total of 169 graduate and undergraduate
students at the University of Wuppertal, Germany, participated in
the studies. They were recruited during courses or volunteered to take part. All of them were native speakers of German. On average, they had studied English at school for eight and a half years and had spent about 7 months abroad in an English-speaking country. The random distribution of the 169 participants to the different conditions of the two studies was as follows: In Study 1, 110 participants judged the idioms according to their degree of decomposability and gave an estimate of their ease of decision. Due to the large number of idioms, each participant rated a subgroup of idioms only. Fifty-six participants rated the first group of idioms, 54 participants the second group. Twenty-nine participants judged the idioms according to their familiarity. In sum, a total of 139 participants took part in Study 1. In Study 2, 30 participants rated the idioms according to both their status of decomposability and familiarity. Again, the idioms were divided in two groups, resulting in 15 participants judging each subset.

b Stimuli: In sum, 320 English idioms were studied, 190 verbal idioms in Study 1 and 130 idioms of various syntactic forms in Study 2 (for examples of idioms and their paraphrases, see Appendix 1). The idioms for Study 1 were taken from the Longman Dictionary of English Idioms (Long, 1979) and the NTC’s American Idioms Dictionary (Spears and Schinke-Llano, 1990). All V + DET + N idioms listed there were considered, but not selected for Study 1 if the dictionary entry specified them as being rare or old-fashioned, e.g., *drop the pilot*, or only to be used in very specific contexts, e.g., *scotch a snake*. Furthermore, discontinuous idioms were excluded, e.g., *give someone the chop*, idioms containing a PP, e.g., *run an errand for something*, *bend the knee to someone*, idioms containing a phrasal verb, e.g., *ride out the storm*, or a negation, e.g., *don’t give a damn*, or idioms that are usually used as an imperative, e.g., *Shake a leg!, Splice the mainbrace!* This led to a sample of 190 verbal idioms. Forty-one of these were used by Titone and Connine (1994) in a native speaker study conducted with 171 idioms. For Study 2, the remaining 130 idioms used by Titone and Connine were selected. As mentioned above, the idioms of Study 1 and Study 2 were randomly divided into two subsets, so as to limit the time the participants needed to give their judgements. Within the subsets, the idioms were randomized into three different orders to avoid serial effects.

c Procedure: Participants took part in small groups or on their own. They were given a booklet containing the idioms and their figurative paraphrases. As far as decomposability was concerned,
participants were asked to give a dichotomous decision, i.e., to
decide whether they judged the idiom to be decomposable or
nondecomposable. The instructions first introduced the term idiom
and told the participants that the booklet lists idioms and their
paraphrases. Then the participants were given the following
instructions, which were a very close translation of the instructions
used by Titone and Connine (1994: 256), who took their instructions
directly from Gibbs and his colleagues (see, for example, Gibbs and

Your task is to sort the following idioms into two categories: idioms whose
individual words contribute to their overall figurative meaning (so-called
decomposable idioms) and idioms whose individual words do not contribute to
their overall figurative meaning (so-called nondecomposable idioms). An
example of a decomposable idiom would be play the market, which means ‘try
to make money on the stock market by buying and selling stocks’. The word
play relates to ‘try to make money’, and market refers to the stock market. An
example of a nondecomposable idiom would be chew the fat, which means ‘talk
about affairs or events, especially those of other people, in a careless way’. The
individual word meanings do not relate to the meaning of the idiom.

Note that the example idiom, its constituents and the paraphrase
were given in English, although the rest of the instructions were in
German. As mentioned above, the native participants in the studies
by Gibbs and Nayak (1989) and Titone and Connine (1994) had to
subdivide the idioms they rated as decomposable into normally and
abnormally decomposable ones, thus creating a third category. The
nonnative study reported here was restricted to the initial,
dichotomous decision, because Titone and Connine’s results (1994)
have convincingly shown that this third category is awkward and of
very low psychological plausibility.

In order to rate the familiarity of an idiom, participants were
asked to use a 7-point scale. They were given a booklet that con-
tained the idioms and that started with the following instructions:

For each of the following idioms, you will have to decide how well you know
the meaning of the idiom. Make your ratings on a scale of 1 to 7. A rating of
1 would mean that you have absolutely no idea what the idiom means, a 4 that
you are moderately certain of what it means, and a 7 would indicate that you
know exactly what the idiom means and could easily put it into your own words.

Again, the instructions were translated from Titone and Connine
(1994: 255; for a detailed discussion of problems with these
instructions, see below). The instructions concluded by giving two
examples. After they had worked through the list of idioms, the
participants were given an additional task which asked them to
choose three of the idioms they rated with 7 and to write down the
meaning of each idiom in their own words. Although this task was
voluntary nearly 80% of the participants fulfilled it. Apart from very few exceptions, the meaning paraphrases the participants gave were correct, which indicated the reliability of the participants’ judgements: if they rated an idiom with 7, they really knew what it meant.

Half of the participants who rated decomposability were randomly assigned to an experimental condition which allowed them to look up the German translation of the idiom’s constituents, in order to make sure that decomposability and not knowledge of vocabulary was at stake. This condition showed that constituents of nondecomposable idioms were more often checked for their German translation than words of decomposable idioms. Probably participants wanted to make sure that their nondecomposable judgement was not due to ignorance of the constituents’ meanings. Furthermore it showed that participants did not confuse lack of knowledge of vocabulary and nondecomposability (for details, see Abel, 2003). In the present context, the factor translation is of no relevance. The analysis supported the hypothesis that a nonnative sample is as reliable as a native sample (see also Chaudron, 1983; Sorace, 1990; 1996).

After completing the idiom judgements, all the participants filled in a biographical questionnaire, which was designed to gather individual information that might influence the participants’ decomposability-rating behaviour, e.g., L2 proficiency, knowledge of other foreign languages, language awareness or how often they read English texts. Participation in Study 1 took roughly sixty minutes; participants assigned to Study 2 needed 75 minutes on average.

3 Results: decomposability

The initial, dichotomous decomposability-rating task yielded the following results:³ In Study 1, the participants judged a mean proportion of 56.5% to be decomposable and 43.5% to be nondecomposable. In Study 2, the mean proportions were 55.2% and 44.8%, respectively. Recall that natives rated 41.9% as decomposable and 58.1% as nondecomposable (Titone and Connine, 1994). This demonstrates that nonnatives show an overall

³From a statistical point of view, due to the simple yes–no answers that are commonly used in this kind of judgement task it is not possible to give more than percentages as results. Because especially Study 2 was a replication of the study conducted by Titone and Connine (1994) with a native sample, the dichotomous decision was retained. However, as the overall results indicate, future research should use 5-point scales in order to get a more detailed picture of the range between a yes or no decision. This does not mean that there is no need to identify the linguistic and psychological variables that influence each decision.
tendency to judge idioms as being decomposable rather than nondecomposable, independently of the syntactic structure of the idioms.

The 75% agreement criterion was used in native speaker studies (e.g., Gibbs and Nayak, 1989; Titone and Connine, 1994) to get a clearer picture of the distribution. The criterion identifies idioms that according to 75% of the participants belong to one class or the other. Using the 75% agreement criterion, in Study 1 33.2% (or 63 idioms) were rated as decomposable and 15.3% (29) as nondecomposable. In Study 2, 29.2% (38) were rated as decomposable and 17.7% (23) as nondecomposable. In both studies, about half of the idioms (Study 1: 51.5%, 98, Study 2: 53.1%, 69) could not be classified according to the 75% criterion. As the initial decomposability-rating task already indicated, nonnatives tend to judge idioms as being decomposable rather than nondecomposable.

Note that the lack of more clear-cut results is not due to the nonnative sample, but is rather characteristic of the task in question, as the results of the native participants discussed in the next paragraph show. In general – i.e., in showing an asymmetrical division – the nonnative results support the findings reported by Titone and Connine (1994) rather than those reported by Gibbs and Nayak (1989). However, the nonnative judgements are a mirror image of the native judgements.

The analysis of the biographical questionnaire identified frequency of reading English texts and the type of text as the factors that influenced the participants’ decomposability-rating behaviour most. Recall that in Study 1 the initial dichotomous decomposability-rating task for all nonnative participants yielded a mean proportion of 56.5% of idioms as decomposable. German speakers of English who read literary English texts daily (23 participants) only judged 49.8% of idioms to be decomposable. That means that their judgements are closer to those that native speakers display (41.9%; Titone and Connine, 1994; see below). This hints at a kind of frequency effect that might lead to specific lexical representations (for a discussion of familiarity, see next paragraph).

4 Comparison of native and nonnative judgements: norm-idioms

Titone and Connine (1994) reported descriptive norms for 171 idiomatic expressions, e.g., judgements on (de)composability and familiarity given by native speakers of English. These 171 idioms (referred to as ‘norm-idioms’), form a subset of the 320 idioms that were judged in Studies 1 and 2 by nonnative speakers of English.
The norm-idioms were extracted in order to form the basis for a direct comparison between native and nonnative judgements. Merging the data from Studies 1 and 2 was justified because of the great similarities between the two nonnative populations. Both the native and the nonnative group were large enough (56 and 169 participants respectively) to be compared (Titone and Connine, 1994: 255).

The following data refer to the 171 norm-idioms. As far as the dichotomous judgement decomposable–nondecomposable is concerned, the native and the nonnative group show opposing tendencies: Whereas native speakers tend to judge idioms as nondecomposable (41.9% decomposable, 58.1% nondecomposable; Titone and Connine, 1994: 259), nonnative speakers tend to decompose idioms (52.6% decomposable, 47.4% nondecomposable). This tendency is strengthened under the 75% agreement criterion: Nonnatives judge 26.3% of idioms (45) as decomposable and 20.5% (35) as nondecomposable. 53.2% (91) are uncategorizable under the 75% agreement criterion. Native speakers judge 15.2% of idioms (26) as decomposable and 35.7% (61) as nondecomposable; 49.1% (84) are uncategorizable under the 75% agreement criterion (Titone and Connine, 1994: 259).

The comparison between native and nonnative speakers shows that the former tend to judge idioms as nondecomposable, whereas the latter tend to decompose them. In both groups, speakers agree in their judgements on only about half of the idioms. Summarizing, it can be stated that natives and nonnatives show similar judgements as far as the overall distribution is concerned – under the 75% criterion both groups agree about only half of the idioms – whereas with regard to the decomposable–nondecomposable classification their judgements differ. The DIR Model interprets the differences in terms of different lexical representations in the L1 and L2 lexicon.

As far as familiarity and its relationship to decomposability under the 75% agreement criterion is concerned, the native and nonnative group show the same tendency in their judgements. However, the familiarity ratings given by the native participants are fairly close, whereas the nonnative ratings show a large range. Recall that familiarity was measured on a 7-point scale. Point 7 indicated highest familiarity, point 1 the lowest. In the native speaker group, the mean values were 5.92 for the 26 decomposable idioms and 5.76 for the 61 nondecomposable idioms. This means that decomposable idioms are rated as being more familiar. The mean values in the nonnative group were 4.9 (45 decomposable idioms) and 2.99 (35 nondecomposable idioms). This shows that in both groups
decomposability goes together with higher familiarity. The DIR Model argues that there is a difference between frequency and familiarity and that high familiarity hints at a close relationship to conceptual structure (compare second and third assumptions).

IV The central assumptions of the DIR Model

First, it should be noted that the DIR Model is a general model that is compatible with various, more concrete hypotheses, for example the graded salience hypothesis (Giora, 1997; 1999; Giora and Fein, 1999). The model is a heuristic representational approach, whereas the hypotheses discussed at the beginning of this article are processing hypotheses. It is a fundamental question whether there is a difference between representation and processing. Usually the two terms are regarded as synonymous, because the manner of representation directly influences processing. However, if one takes a closer look, assumptions about the mental representation of language should be located at an even more abstract and ‘higher’ level than those about processing. The DIR Model postulates two levels of representation: a lexical and a conceptual one. The first two assumptions discussed below deal with lexical representations only and the third assumption refers to the conceptual level. The fourth assumption deals with differences between the L1 and the L2 lexicon. The central question with regard to lexical representation is: Are idioms represented (and accessed) via the lexical entries of the individual constituents that form each idiom or are there separate lexical entries specifying the idiomatic meaning? The former are called constituent entries, the latter idiom entries.

1 Idiom entries and constituent entries

First assumption: An idiom’s decomposability status determines its manner of representation. Nondecomposable, i.e., noncomposi-

4 Another basic question concerns the relationship between conscious judgements of speakers about language data and unconscious knowledge in the form of mental representations. It is common in linguistics to assume that unconscious knowledge (competence) underlies these judgements (performance) and to infer one from the other.

5 In this very broad sense, the usage of the term dual is in accordance with approaches like Paivio’s dual coding theory (Paivio, 1971; 1986) rather than with Jackendoff’s (1989) external and internal concepts. Jackendoff assumes the conceptual level to be a subpart of the linguistic level, whereas Paivio separates the verbal from the nonverbal system. Apart from that, Paivio’s approach is much more comprehensive than the DIR Model, which restricts itself to idioms.
tional idioms require an idiom entry; decomposable idioms, which have compositional aspects, can be represented via constituent entries and can additionally develop an idiom entry.

As the native and nonnative judgements have shown, the meaning of nondecomposable idioms cannot be determined via the meaning of the individual constituents. This means that nondecomposable idioms are noncompositional and therefore need a separate lexical entry to specify their idiomatic meaning. However, decomposable idioms, which have compositional aspects, can be represented via their constituent entries. So far this assumption is in agreement with the Configuration Model (Cacciari and Tabossi, 1988; Tabossi and Cacciari, 1988) and the Hybrid Model (Titone and Connine, 1999). However, the DIR Model additionally proposes that in the case of decomposable idioms, idiom entries are supplementary information which is not absolutely necessary for successful comprehension, provided conceptual representations are activated (compare third assumption). The fact that Tabossi and Zardon (1993; 1995) and Titone and Connine (1999) showed that constituent entries are activated during processing although idiom entries also exist does not contradict the claim made above. Parallel activation might be due to a close connection between the two entries in the mental lexicon. Future research on the architecture of the lexicon will help to clarify this point.

Independent evidence supporting the first assumption comes from the results of empirical studies carried out in the area of morphology. With regard to idioms, compounds are of special interest, because they are to be located somewhere on the continuum between words and (idiomatic) phrases. Compounds are, like idioms, to a greater or lesser degree (non)compositional, i.e., there are compounds with compositional aspects. These could be referred to as decomposable, although in morphological terminology they are usually called transparent. Others are non-

As one anonymous reviewer pointed out, decomposing could be considered a kind of specialized inferencing behaviour in comprehension (Haastrup, 1991). If there is no idiom entry, the speaker has to make use of other information available, in this case the meaning of the constituents. In a very general sense, this might be true. On the other hand, however, native and nonnative speakers are able to tell the difference between decomposable and nondecomposable idioms even if they have idiom entries at their disposal. Furthermore, decomposing is an analysis that extends processes of (lexical) inference. It is a ‘strategy’ that uses lexical and conceptual information.
decomposable, i.e., opaque. As the notions of decomposability and transparency are very closely connected, it seems justified to apply the well-known effects of transparent and opaque morphologically complex words to decomposable and nondecomposable idioms.

Some experimental studies have tested whether compounds have a separate lexical representation or whether they are represented via their stem morpheme, which is comparable to asking whether idioms have constituent or idiom entries. For example, priming experiments carried out by Sandra (1990) indicated that semantically transparent – in our terminology decomposable – two-part compounds show priming effects, i.e., that both constituents of a compound and both representations are accessed. In the case of opaque, i.e., nondecomposable compounds, only the first constituent is accessed, which shows that they – in contrast to semantically transparent compounds – must have a separate lexical representation. Zwitserlood (1994) confirmed priming effects for transparent (decomposable) compounds. According to her findings, opaque (nondecomposable) compounds are not semantically linked with their constituents but behave like monomorphemic words, i.e., have a separate lexical representation. These findings show that morphological research supports the assumption of dual representations: opaque compounds (nondecomposable idioms) have a separate lexical representation, but transparent compounds (decomposable idioms) are represented via the lexical entries of their individual constituents.

2 Frequency effects

Second assumption: Apart from its degree of decomposability, the frequency of an idiom determines the development of an idiom entry. The more frequently the idiom occurs as an idiomatic configuration, the more probable is the development of an idiom entry.

7If one takes a closer look at the definitions of semantic transparency and decomposability, it becomes evident that ‘semantically transparent’ is used as a synonym of ‘decomposable’: ‘Whereas the former notion [i.e., transparency] refers to the relationship between compound and constituent meanings, the latter [i.e., decomposability] refers to the possibility of determining the whole-word meaning from the constituent meanings. (Sandra, 1990: 550). This shows that decomposability refers to whether it is possible to infer the compound’s meaning from the meaning of the individual constituents and that transparency describes the relationship between the compound’s meaning and the meaning of the individual constituents. Therefore the difference between decomposability and transparency might be relevant on a theoretical level, but in the context of speakers’ judgements this slight difference does not have any psychological plausibility. To decompose is a natural strategy, whereas transparency is an abstract notion that is irrelevant during the process of understanding.
As the analysis of information gained from the biographical questionnaire shows, nonnative speakers who are frequently exposed to idioms because they read English literary texts every day start to judge idioms as nondecomposable more often, just as native speakers do. This is taken as evidence in favour of the underlying representations, i.e., the existence of idiom entries.

The fact that frequency has an effect on mental representations is one of the most replicated results of many psycholinguistic experiments. Therefore, its integration into the DIR Model is necessary and independently supported by these studies. Here too morphological studies provide further evidence. For example, Caramazza et al. (1988), who postulated the Augmented Addressed Morphology Model for derived and inflected words, experimentally supported a fundamental differentiation between frequent and less frequent words: whereas the former have word entries, the latter are decomposed into their individual morphemes before access and comprehension take place. Similarly, Frauenfelder and Schreuder (1992) assumed in their Morphological Race Model that morphologically complex words are represented via their individual morphemes but have their own entries as well. In processing, both representations are activated. The frequency and transparency (decomposability) of the word being processed determine which ‘route’ is quicker. Transparent, i.e., decomposable word forms of low frequency are accessed via the decomposition route whereas words of high frequency are accessed via their full entry, regardless of their morphological or semantic structure. A transfer of these findings to idioms confirms the second assumption. An idiom’s frequency determines how it is represented. That is why decomposable idioms that are frequent enough can develop an idiom entry.

Note that the second assumption is about frequency, not familiarity. How does the finding that natives and nonnatives judge decomposable idioms as more familiar fit in with the first and second assumptions? It is argued here that familiarity and frequency refer to two distinct aspects. Frequency denotes an ‘objective’ occurrence that can be statistically captured (Baayen, 1992; 1993; Baayen and Lieber, 1997), while familiarity is a ‘subjective’ measure, that cannot be determined in a mathematical way. At the linguistic or lexical level, where the first two assumptions apply, frequency is relevant, whereas familiarity plays a role at the conceptual level. The difference between frequency and familiarity is reflected in the instructions given to the participants taking part in the studies in question. For example, Titone and Connine (1994: 255) have their participants rate the idiom’s meaningfulness (‘how well you know the meaning of the
idiom’) and its frequency (‘rate the idiom’s frequency of occurrence independently from [sic] whether or not you know its meaning’). Taken together, the two measures comprised Titone and Connine’s familiarity scale. The present study used the meaningfulness-instructions to measure familiarity, because the frequency-instructions are difficult enough to answer for native speakers, let alone nonnatives. The results were compared to Titone and Connine’s (1994: 265ff) meaningfulness data. The analyses showed that both native and nonnative speakers judged decomposable idioms as more familiar, or rather ‘meaningful’, than nondecomposable idioms.

It is argued here that the relationship between frequency and familiarity is a unidirectional one: A frequently occurring idiom will be judged as familiar, but a familiar idiom is not necessarily a frequent one. Native speakers in fact encounter both types of idioms quite often and therefore have a lot of idiom entries, because frequency is responsible for the development of idiom entries at the lexical level. For natives, decomposable and nondecomposable idioms are similar in familiarity (5.92 and 5.76 respectively) and of higher familiarity than for nonnatives (4.90 and 2.99). This is because frequency influences familiarity, but not vice versa. If this were the case, one would have to conclude that for both groups decomposable idioms were more frequent than nondecomposable ones, which seems unlikely. The fact that both groups judge decomposable idioms as more familiar than nondecomposable idioms can be explained if it is assumed that familiarity, unlike frequency, is not relevant at the linguistic level, but at the conceptual level. This is discussed in the next paragraph.

To conclude this discussion of the first two assumptions of the DIR Model it should be noted that they are comparable to the existing processing hypotheses discussed above in that they restrict themselves to the lexical level. Representations at a lexical level, however, are only sufficient if the existence of separate idiom entries is considered to be a necessary precondition for idiom processing. This is the underlying assumption made in all studies carried out with native speakers and discussed earlier. However, the studies with nonnative speakers have shown that sometimes idiom entries are nonexistent. In that case, processing is possible but only if conceptual representations are integrated.

8In three experimental studies, Schweigert (1986; 1991; Schweigert and Moates, 1988) distinguished between highly familiar, less familiar and unfamiliar idioms. However, she used a different definition of familiarity and did not consider decomposability.
3 Conceptual representations

Third assumption: If decomposable idioms lack an idiom entry at the lexical level, conceptual representations are accessed during comprehension. Conceptual representations are nonlinguistic entities that organize world knowledge and are represented at a general cognitive level. With regard to the language system they are autonomous, which means that in spite of links that may exist between conceptual and lexical representations, there is no direct analogy or one-to-one correspondence between the two. The separability of lexical meaning and conceptual knowledge is supported by many empirical studies, especially in the context of bilingual memory (e.g., Potter et al., 1984; Potter and Kroll, 1987; de Groot 1992; Kroll and Sholl, 1992; Kroll, 1993; Kroll and Stewart, 1994). Conceptual representations do not have to be retrieved as a whole. Partial access is possible, depending on the aspects relevant in each context.

As far as idiom processing is concerned, it is assumed that at least for some idioms conceptual metaphors in the sense of Lakoff and Johnson (1980) are activated, such as ‘anger is heated fluid in a container’ or ‘anger is fire’, which motivate the meaning of idioms like smoke was coming out of his ears, she was spitting fire, he was fuming, etc. Other idioms, e.g., miss the boat or pass the hat, where one constituent has a metaphorical reading, probably activate conceptual information with regard to this reading. Some idioms are not conceptually motivated at all, e.g., kick the bucket. This shows that conceptual or metaphorical motivation cannot be automatically equated with predictability of idiomatic meaning.

Gibbs (e.g., 1990; 1992; 1995), Gibbs and O’Brien (1990), Nayak and Gibbs (1990), Glucksberg et al. (1993), Cacciari and Glucksberg (1995), among others, have conducted empirical studies in order to determine the degree to which conceptual structures or metaphors motivate the meaning of idioms (but, for an opposing approach, see Keysar and Bly, 1999). Results lead to two different perspectives: on the one hand, Gibbs and his colleagues assumed that conceptual structures motivate the meaning of idioms. Their reaction time studies have shown that conceptual metaphors are automatically activated during idiom comprehension. On the other hand, Glucksberg and his colleagues have not found evidence for automatic activation; they claim that ‘conceptual analogies play little, if any, role in idiom comprehension unless people have the time (and motivation) to make considered judgements’ (Glucksberg et al., 1993: 711).

The DIR Model can clarify this ambiguous situation in that it
specifies the conditions under which conceptual representations have to be activated. It predicts that there is no need to activate the conceptual level if an idiom entry exists at the lexical level. A lexical entry provides all the information necessary to process the idiom. Conceptual knowledge has to be activated only if there is no idiom entry at the lexical level. Then the constituent entries of the idiom activate the concepts linked with them. The higher familiarity score for decomposable idioms seems to indicate this ease of connection with conceptual representations. The partial compositional nature of decomposable idioms might create a closer semantic and conceptual connection between the individual constituents and the idiomatic meaning of decomposable idioms, which probably contributes to their familiarity. However, not enough is known yet about the parallel activation of idiom entries and conceptual representations. Future research is needed here.\(^9\)

The first three assumptions are the main claims made by the DIR Model, and they refer in a general way to the lexical and the conceptual level. The comparison of native and nonnative judgements has indicated differences in the organization of the L1 and L2 lexicon. The underlying assumption is that speakers’ judgements about the decomposability of idioms reflect the different underlying representations in the native and the nonnative lexicon.

4 Differences between the L1 and L2 lexicon

Fourth assumption: Nonnative speakers do not develop as many idiom entries as native speakers, because the frequency with which nonnatives encounter idioms is lower. Therefore, they more often have to rely on the constituent entries and their corresponding conceptual representations during idiom processing.

Naturally, the fourth assumption is not independent of the second one. However, it seems important to state it as a separate point, thus stressing that the differences between native and nonnative representations are not always due to interlanguage problems, but are also determined by other, more general factors such as frequency. As research on the L1 and L2 lexicon has shown, they are qualitatively similar in nature (e.g., Singleton, 1993; 1994; 1996a; 1998a).

\(^9\)The assumption that nonnatives necessarily rely more on conceptual representations is in accordance with results from neurolinguistic studies, which have shown that bilinguals show greater right-hemisphere participation than monolinguals (e.g., Paradis, 1998a). In particular, these studies show that the conceptual aspects of idioms are related to pragmatic competence, which is located in the right hemisphere (Paradis, 1998b).
Therefore, the same factors should account for their specific representations.

The differences described in the fourth assumption have been empirically supported. In Studies 1 and 2, nonnatives showed a general tendency to judge idioms as being decomposable, whereas natives more often judged them as being nondecomposable. Nonnatives who read English texts daily and thus come across idioms more frequently, which leads to the development of idiom entries, start to judge idioms as nondecomposable, just as natives do. Furthermore, the fourth assumption is supported by statements given by the nonnative participants. In the biographical questionnaire, they were asked what they do if they encounter an unknown idiom in an English text. The majority answered that they consider the literal meaning of the constituents and then try to put together the idiomatic meaning of the whole phrase. In this process, contextual and conceptual factors play an important role. These utterances show that nonnatives actually ‘decompose’, whereas natives do not have to consider the constituent meaning, because they activate their existing idiom entry. In terms of Giora’s graded salience hypothesis (Giora, 1997; 1999; Giora and Fein, 1999) this can be interpreted as a difference in salience for the two groups. Giora (1999: 919) assumes that ‘the salient meaning of a word or an expression is its lexicalized meaning, i.e., the meaning retrievable from the mental lexicon rather than from the context’. This indicates that for natives, the figurative meaning of an idiom is highly salient, which is reflected in the existence of an idiom entry, whereas for nonnatives it is less salient and leads them to activate their constituent entries.10

The DIR Model makes more assumptions than the four discussed above (see Abel, 2003). For example, it considers the general organization and structure of the lexicon. In accordance with Tabossi and Zardon (1993), it is assumed that access to the idiom entry is only possible after the first constituent entry has been activated. Furthermore it postulates that lexical redundancy rules (Jackendoff, 1975) link the constituent and idiom entries and that for decomposable idioms the semantic links between the various lexical entries are stronger than in the case of nondecomposable

10The compatibility between the model suggested here and Giora’s graded salience hypothesis is due to the factors that influence decomposability and salience. Giora (1997: 185) states that ‘[t]he salience of a word or an utterance is a function of its conventionality . . ., familiarity . . ., frequency . . ., or givenness status in a certain (linguistic or nonlinguistic) context.’ As has been argued here, these factors determine judgements about decomposability as well (for a similar approach, see Titone and Connine, 1999).
idioms (see Bybee, 1985; 1988; 1995a; 1995b). Additionally, the DIR Model postulates that the representation of idioms via constituent or idiom entries is variable, which means that the representations can change through time. This implies that the lexicon should be regarded as a dynamically organized structure and not as a static list, as generative approaches usually assume.

V Summary and conclusions

On the whole, the present study conducted with nonnative speakers of English confirmed the results for native speakers reported by Titone and Connine (1994), although some systematic differences between the two groups were identified. Existing hypotheses of idiom processing are not extensive enough to cover the requirements of idiom representation, especially with regard to the role of concepts and the integration of the L1 and the L2 lexicon. The DIR Model was developed to provide these requirements. The central assumptions and advantages of the DIR Model can be stated as follows: First, the model considers not only a lexical, but also a conceptual level of representation. Secondly, at the lexical level the duality refers to the parallel existence of both constituent and idiom entries. The development of an idiom entry depends on the idiom’s decomposability – nondecomposable idioms definitely need an idiom entry – and its frequency. The more frequent an idiom, the more likely it will develop an idiom entry.

One of the DIR Model’s advantages is its compatibility with regard to the L1 and the L2 lexicon. The differences between the native and the nonnative lexicon, which are mainly due to differences in the frequency of exposure to idiomatic configurations, can be described and explained by gradual variation of the same theoretical assumptions. For decomposable idioms, idiom entries should be regarded as additional pieces of information about frequently-occurring linguistic entities and not as a mandatory prerequisite to idiom processing.

The claim of dual representations qualifies the special status that has been attributed to idioms in, for example, generative models of grammar and which has been responsible for their treatment as exceptions. But, considering the abundance of idioms in language, it is not justifiable to treat them as something special. What is needed is a representational model such as the one introduced in this article that, on the basis of the same theoretical assumptions, is able to describe and explain expressions located at various points on the continuum of compositionality and decomposability.
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Appendix 1
The appendix gives a list of 20 idioms and their paraphrases for each study. The first 20 in alphabetical order were chosen. For a complete list, see Abel, 2003.

Study 1

• argue the toss: oppose or argue with a decision that has already been taken and that cannot be changed
• balance the books: determine through accounting that accounts are in balance, that all money is accounted for
• bang the drum: give one’s vigorous support to something
• beg the question: fail to deal with or answer effectively the point that is being discussed
• bite the bullet: face something unpleasant
• bite the dust: die
• blaze the trail: be the very first in doing something; show the way in some new activity or area of knowledge
• blow a fuse: suddenly become very angry; lose one’s temper
• blow the gaff: reveal a secret (about a person or thing), e.g., to the police
• break the bank: win all the money that is being risked at a game of chance, especially in a casino
• break the ice: ease the nervousness or formality in a social situation by a friendly act, conversation, etc.
• break the record: go faster, be greater, do better, etc. than was ever the case before
• bury the hatchet: agree to be friends after having a quarrel, especially a long one
• bust a gut: make a great effort (to do something)
• call a meeting: ask that people assemble for a meeting
• call the shots: control events or a situation, decide what should be done and when
• call the tune: control affairs, events, etc.; be in a powerful and controlling position
• carry the can: accept the responsibility (for someone or for something that someone else has done)
• cause a stir: shock or alarm people
• cause an uproar: cause an outburst or sensation

Study 2
• a fish out of water: awkward because in a situation one is not accustomed to
• a piece of cake: something that can be done or obtained very easily
• add fuel to the fire: make an already difficult situation, e.g., an argument, worse by one’s action or words
• against the grain: in opposition to a natural tendency, custom, etc.
• armed to the teeth: fully armed with the necessary weapons, tools, etc.
• as like as two peas in a pod: very or exactly alike
• at the back of one’s mind: in a person’s thoughts
• back to square one: back to the original starting point, especially because a situation has been reached in which no further progress is possible and the work, activity, etc., must be begun again
• be a wet blanket: be a dull or boring person who spoils other people’s happiness
• be on cloud nine: be very happy
• be the cat’s whiskers: be the person or thing most highly approved of or regarded
• be the spitting image: look very like (another person, especially a relative)
• beat to the punch: do or obtain something before (someone)
• behind the times: old-fashioned; not fashionable, usual, etc. at the particular time
• below the belt: (of an attack, blow, remark, etc.) not in accordance with rules; unfair or unfairly
• bet your bottom dollar: be completely certain (or prepared to bet everything one has because one is completely certain)
• bite someone’s head off: shout at someone angrily; scold
• blow someone’s mind: experience or cause someone to experience great mental excitement
• blow to kingdom come: kill (a person), especially by using explosives or another very violent method
• blow your top: become very angry