Degree Thesis

Teacher Education (Upper Secondary School), 300 credits

The effects of intrinsic and extrinsic factors on students' comprehension of idiomatic expressions in English as a second language

English for Students in Teacher Education, 15 credits

Halmstad, 2021-09-24

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Abstract

In the present investigation, 99 compulsory school students in Sweden were asked to define nine English idioms chosen for their variation in inherent transparency and frequency. The participants were divided into two groups, where Group 2 was provided with context of varying degrees of support, while Group 1 was not. All students answered a biographical questionnaire. Thus, the effects of intrinsic (transparency and frequency) and extrinsic factors (contextual support, extra-curricular activities (ECAs) and age) could be examined. Results show that transparency and frequency do affect idiom comprehension, but to a much lesser extent than context. A tentative correlation between more time spent on ECAs and high scores could be found as well as between active/passive activities and high/low scores. Age did not seem to affect the participants' idiom comprehension.

Keywords:

Age; Context; Extra-curricular activity; Frequency; Idiom comprehension; SLA, Transparency

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1 INTRODUCTION

Idioms can be defined in many different ways. It is their broad variation in structural and syntactic composition that have led researchers to disagree on how to characterise them, which has resulted in different definitions of idioms depending on how they meet different criteria (see table 1.1 in Liu, 2008, p. 14). Some researchers are vague and define them broadly as do Katz & Postal (1963), who define idioms as either lexical idioms (polymorphemic words like *tele+phone, bari+tone*) or phrase idioms (*kicked the bucket*), as their meaning cannot be inferred solely from their structure. Other researchers, like Grant & Bauer (2004), have narrowed their definition to specific attributes and differentiate between figurative expressions, *to kill two birds with one stone*, and core idioms such as *by and large*. Liu (2008) gives a third definition where he states that the term "idiom" is an umbrella term for ambiguous multi-word units, such as phrasal verbs, noun phrases, sayings, and proverbs. The definition centres around an idiom's semantically noncompositional aspect, i.e., how its individual parts, *kick+the+bucket*, do not lead to its figurative meaning *to die*, which conforms to the definition utilised by the Oxford English Dictionary (2020):

> A form of expression, grammatical construction, phrase, etc., used in a distinctive way in a particular language, dialect, or language variety; *spec.* a group of words established by usage as having a meaning not deducible from the meanings of the individual words. (OED, 2020)

This often cited and more traditional definition, according to Liontas (2017), is also the one most commonly associated with the term 'idiom' and is therefore the definition implemented in the present study.

Second language learners (L2) are often not taught figurative language in a structured way, as it is considered by many to be too difficult (Liu, 2008; Hubers, et.al., 2020; Macis & Schmitt, 2017) since it involves what Liontas (2017) calls "specialized lexicalized items" and so students have to acquire the knowledge on their own outside of school. This notion is reflected in the Swedish National Curriculum for English, as it scarcely mentions the learning of any kind of figurative language**,** which in turn likely leads to teachers disregarding idioms when they plan their lessons, even though idioms form such a vast part of any language. The curriculum focuses on making the learners competent writers, readers, listeners, and speakers, but the marks of a competent speaker, according to Liu (2008) and

Liontas (2017) also involves, idiomatic competency, as native speakers have a wide range of expressions at their disposal. Hubers et.al. (2020), though, caution against comparing non-native learners with native speakers as idioms are difficult to acquire and L2 learners have much less experience with the language than first language speakers (L1).

Hubers et.al. (2020) do, nevertheless, believe that the acquisition of idioms is affected by the similarity between the learners' L1 and L2, alongside frequency and transparency. Additionally, researchers have focused on factors such as contextual support and age (Abel, 2003; Beck & Weber, 2020; Hubers, Cucchiarini, & Strik, 2020; Karlsson, 2013, 2019; Levorato & Cacciari, 1992, 1995). The effects of extra-curricular activities (ECA) on idiom comprehension have, however, not been extensively examined. Most scholars have defined ECAs as structured activities learners engage in in school though this study, in accordance with Sundqvist (2009), utilises the term to distinguish between school related work and the activities learners undertake in their own time.

More precisely, the present study, applying the OED defintion of the term 'idiom', will focus on how intrinsic factors, e.g. transparency and frequency and extrinsic factors i.e., contextual support, ECAs, and age affect L2 idiom comprehension.

2 LITERATURE REVIEW

A great many hypotheses and models pertaining to the processing and comprehension of figurative language have been put forth over the years (Karlsson, 2019). The present study adheres mainly to two: The Global Elaboration Hypothesis (GEH) (Levorato & Cacciari, 1992) and the Model of Dual Idiom Representation (DIR Model) (Abel, 2003). The former posits that comprehension of figurative meanings are founded in the ability to search for a global and coherent meaning by going beyond the local and literal elaboration of an idiom (Levorato & Cacciari, 1995). This ability enhances with age, according to the hypothesis, which entails that younger children (those under the ages of nine or ten) are more likely than adolescents and adults to choose the literal meaning of an idiom if given insufficient contextual support, as they have yet to develop the cognitive abilities essential to comprehending figurative language (Levorato & Cacciari, 1992).

The GEH additionally infers that figurative understanding develops progressively in certain phases related to the learners' level of cognitive and linguistic abilities (Karlsson, 2019). The first three phases were confirmed by Levorato & Cacciari (1992) but as they only relate to children between the ages of six and eleven, they are not relevant to this study. The fourth phase, however, is of special interest. It states that fifteen-year-old adolescents have developed sufficiently cognitively to both understand and produce figurative language using what Levorato & Cacciari refer to as "the conventional repertoire of expressions" (2002, pp. 129-130). This repertoire is the sum of their acquired knowledge of figurative language and will continue to develop as their cognitive abilities mature.

The hypothesis original application was just to L1 learners but as L2 learners' comprehension is often addressed by how similar they are to native speakers, the hypothesis is valid in second language acquisition (SLA). This is supported by Karlsson (2019) who, when investigating the simultaneous effects of age, transparency, frequency, and various degrees of contextual support on L1 and L2 learners' idiom comprehension, found that L1 and L2 developed almost on par between the ages of 13 and 18. Karlsson examined the results from two parallel tests, one in the participants' L1 (Swedish) and one in their L2 (English), which consisted of 27 idiomatic expressions each, all of which had different levels of compositionality, commonality and contextual support (Karlsson, 2019). This resulted in the aforementioned outcome. However, in their L2, it did not happen in incremental stages, which Karlsson theorises was because of low L2 proficiency in some classes and mediocre individual L1 idiom comprehension.

Unlike the GEH, the DIR model examines and integrates the relationship between a learner's L1 and L2 idiom comprehension. It is based on four central assumptions:

(1) Idiom entries and constituent entries
(2) Frequency effects
(3) Conceptual representations
(4) Differences between the L1 and L2 lexicon.

The DIR model's first assumption denotes that learners create idiom entries in their mental lexicons depending on the type of idiom: nondecomposable idioms only require a single entry while decomposable ones might develop an additional idiom entry, one entry for the constituents and one for the idiomatic expression (Abel, 2003). This is due to the difference in their compositionality as a decomposable idiom is one whose figurative meaning can be

derived from its individual constituents. The idiom *play the market,* for instance, whose meaning *try to make money on the stock market by buying and selling stocks* can be figured out by understanding its individual constituents as the word play refers to 'try to make money' and market to the stock market (Abel, 2003). Nondecomposable idioms, on the other hand, give no indication to their figurative meaning: *chew the fat* which means *talk about affairs or events, especially those of others, in a careless way* does not in any way indicate its figurative meaning and so only require the learner to create one idiom entry (Abel, 2003). The reason for this difference, according to Karlsson (2019), is the clear link between the literal and figurative meanings of decomposable idioms, whereas nondecomposable ones have no such obvious connection.

The first assumption essentially refers to how transparent (decomposable) idioms' figurative meaning is more easily understood than opaque (nondecomposable) ones. This supposition has been confirmed by various researchers such as Elkiliç (2008) and Cucchiarini et.al. (2020), both of whom focus on L2 learners. Cucchiarini et.al examined how various variables (transparency among others) affected the idiom comprehension of 42 non-native speakers of Dutch. The participants were tasked with four learning exercises, which varied in their practise intensity (intense or limited) and resulted in the authors drawing the conclusion stated above. Similarly, Elkiliç, who tested Turkish English as a foreign language students' understanding of idioms of various degrees of transparency and commonality, observed that participants scored highest for those expressions deemed highly transparent followed by common and opaque idioms. Opaque and uncommon idioms were the most difficult to comprehend (Elkiliç, 2008), thus agreeing with the assumption.

The second assumption, frequency effects, states that the higher the frequency of an idiom, the more likely it is to develop an idiom entry. This statement is considered true by many researchers (see Levorato & Cacciari, 1992; Libben & Titone, 2008; Liu, 2008). Native speakers, who encounter idioms more often, have additional idiom entries as compared to L2 learners since "frequency is responsible for the development of idiom entries at the lexical level" (Abel, 2003, p. 346). Though Abel (2003) showed that this holds true for some non-native speakers as well: those who read English texts daily develop a greater number of idiom entries rivalling native speakers'. By immersing themselves into their L2, their chances of encountering idioms increase and so does their familiarity with them. Though connected, the terms frequency and familiarity should not be confused as they refer to different aspects (Liu, 2008). Frequency is objective and can be statistically captured while

familiarity is subjective and cannot be measured in a mathematical way; a frequent idiom will be considered familiar, while familiar idioms are not necessarily frequent (Abel, 2003).

Research into the subject of frequency most often concludes that it is a notable variable in idiomatic SLA. In Nippold & Taylor's (2002) study, where they use the terms familiarity and frequency synonymously, the results were in the affirmative. The participants, 11-year-old children and 16-year-old adolescents, were tasked with judging the familiarity and transparency of 20 idioms and later defining them. Their results indicate that the more frequent the idiom, the less problematic it was to comprehend and vice versa. See Libben & Titone (2008) for similar results. There are, however, studies which show the opposite. Karlsson (2019, ch. 2) found that frequency did not affect her participants' idiom comprehension. This, she argues, happened since one can be acquainted with an idiom while not knowing its figurative meaning; that there is a difference between knowing what an expression means because of its frequency and disambiguating them based on the same (Karlsson, 2019).

When idioms are unknown to learners, they instead depend on their conceptual representation according to the DIR model's third assumption. Learners essentially use their pragmatic knowledge and metaphorical associations to try and comprehend the idiom, which does not always lead them to the correct meaning as some idioms are culturally bound, ill-formed, or simply not metaphorical (Liu, 2008). Idioms like *smoke was coming out of his ears*, *she was spitting fire*, or *he was fuming* can all be linked to the metaphor 'anger is fire' (Abel, 2003), and when learners connect the metaphor to the idioms it can lead them to use their already known associations (like that there is often smoke where there is fire) to understand the idioms. Liu (2008) discusses how one student comprehended the idiom *to give someone the cold shoulder* by analysing its individual constituents: 'cold', as the antonym to 'warm', represented 'unwelcome' which led the student to the conclusion that the idiom meant *to be unwelcome*. The learner essentially depends on their world knowledge to decipher the idiom, as they have yet to create an idiom entry.

One of those who have confirmed this assumption is Boers (2000), who examined the metaphorical awareness and vocabulary retention in L2 learners. Focusing on metaphorical awareness, he found that participants could successfully and with 89,5% accuracy identify to which metaphor the previously unknown idioms referred. The test included 15 figurative expressions which the 64 university students (French native speakers)

were to categorise as either belonging to: machinery, health, war, or other. The fourth category was supposed to be gardening, though the participants were to name it themselves, which the majority (75,4%) successfully identified as either gardening, nature, or vegetation.

Differences in the L1 and L2 lexicons, the DIR model's fourth assumption, is not independent of the second or third ones, and refers to how L2 learners have to rely on the idioms' constituent entries during idiom processing as they have not developed as many idiom entries as native speakers:

> In the biographical questionnaire, [nonnatives] 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. (Abel, 2003, p. 349)

This approach to learning confirms the assumption as non-native speakers have to rely on the lexical information (the literal meaning of the constituents) in chorus with the contextual and conceptional factors to comprehend previously unknown idiomatic expressions. Strategies of this variety is what Liu (2008) refers to as *heuristic* approaches, a series of strategies L2 learners utilise when processing unknown idioms. Age is often a deciding factor in these instances, as the older the person, the further they have developed their cognitive abilities and they have generally encountered more idioms than younger ones, though it is not set in stone. Some scholars have presented contradictory evidence such as Boers' (2000) study discussed above. The university students' most common mistakes were either related to misinterpreted words or L1 interference, such as with the idiom *the company will prune some of its branches*, as the French noun 'prune' means 'plum' or *to fine-tune inflation* which was mistakenly categorised under 'music' instead of machinery (to tune an instrument).

One aspect overlooked by both the GEH and the DIR model is the possible effect ECAs have on vocabulary knowledge. The majority of the scholars who have focused on extra-mural English (see Marsh, 1992; Sabeti, 2012; Yildiz, 2016) have investigated how structured ECAs have impacted SLA, but as this study defines ECAs as activities learners engage in outside of school, they were deemed irrelevant. The employed definition, however, is utilised by Sundqvist (2009), who investigated how L2 students' linguistic habits outside school affected their oral proficiency and vocabulary.

In her study, in which 74 students participated and completed the ten-month longitudinal study, she found a positive correlation between the total time spent on extra-mural English and their language skills. Thus, establishing ECAs as an independent variable affecting SLA. To do so both quantitative tests and qualitative interviews were used to collect data. The results highlight how those activities which require the learner to be active and produce language (gaming, reading books/magazines, or surfing the internet), are more important in regard to language acquisition than those activities which allow the learner to be passive (listening to music or watching TV or movies) (Sundqvist, 2009). Additionally, it found that boys were generally more proficient compared to their female counterparts, as they tended to spend more time engaging in active ECAs, more often than not through online gaming (Sundqvist, 2009).

Another noteworthy study pertaining to how ECAs affect SLA is a brief case study by Cho & Krashen (1994), where they examined how voluntary reading contributes to SLA. Their participants (four female immigrants to the United States) were given specific books to read (Sweet Valley Kids series), which they could read at their own pace, and the results were positive in all cases. During the few months of the experiment, all of the women had read multiple books (between eight and 23) and had acquired a much broader vocabulary compared to before the study began.

3 THE PRESENT STUDY

The present study is divided into two sections: research question addressed, and material and method, which describes the systematic approach chosen to reach the objective.

3.1 RESEARCH QUESTION ADDRESSED

In the present investigation, one main research question is addressed:

> How do intrinsic factors (frequency and transparency) and extrinsic factors (contextual support, ECAs, and age) affect students' comprehension of idiomatic expressions in English as a second language?

The question is intended to raise awareness of how L2 learners' idiom comprehension is affected by these factors as they are essential to begin the process of understanding how figurative language is acquired.

3.2 Material & Method

There were 116 participants in the present study, all of whom originate from the same compulsory school in a small municipality in Sweden. Of those 116 students, 17 were disregarded as they were not native Swedish speakers since the idiom's transparency was solely judged from a Swedish perspective. The majority of those 99 left belonged to grade seven (56%), followed by grade nine (29%), leaving grade eight in the minority with just 15% (see Figures 1, 2, and 3). Their ages thus range between 13 and 16, the difference in which, according to the GEH and the DIR model, could fundamentally influence their level of comprehension.

Figure 1: The division between grades

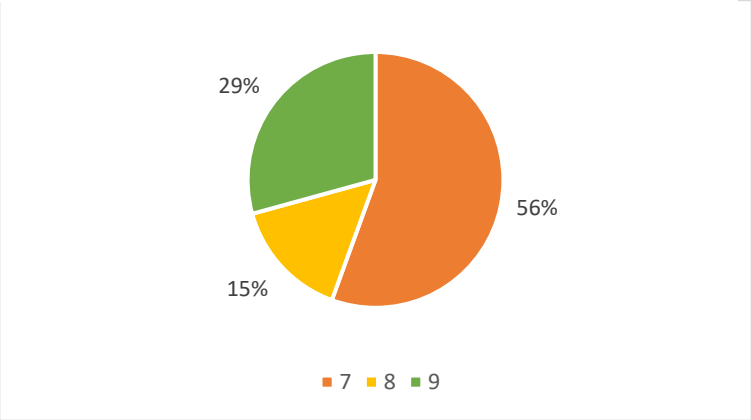


Figure 2: Number of participants in Group 1 divided by school year

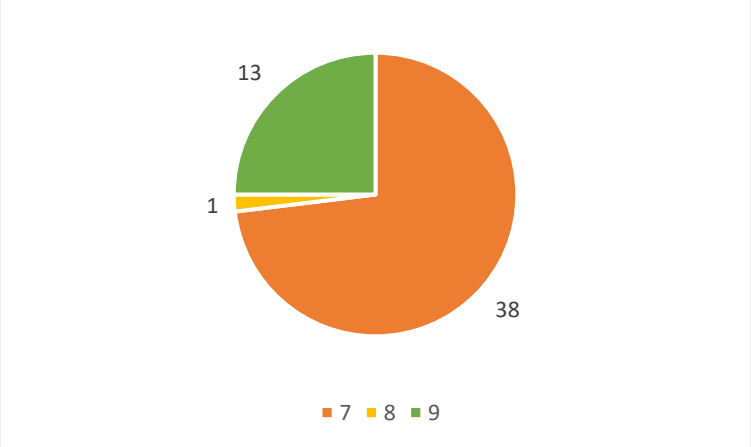
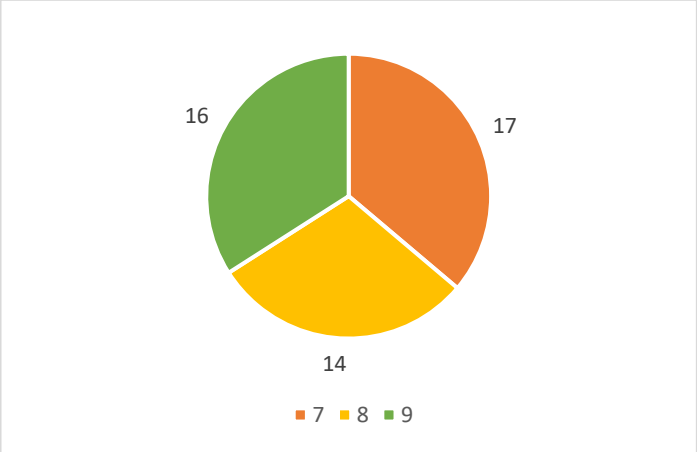


Figure 3: Number of participants in Group 2 divided by school year



The study was conducted digitally using Google Forms and was anonymous. It was split into three sections, divided into a biographical questionnaire and two test sections (Appendices A and B), though each participant only answered the questionnaire and one test segment. The number of students belonging to each group was almost equal, with 52 participants answering test one while 47 answered test two (Tables 1 and 2). The numbers of participants in each age group varied.

Table 1: Number of participants in Group 1 divided by age

Age	Participants
13	22
14	16
15	12
16	2
Total	52

Table 2: Number of participants in Group 2 divided by age

Age	Participants
13	9
14	16
15	17
16	5
Total	47

Both test sections centre around nine idiomatic expressions chosen for their varying degrees of transparency (transparent, semi-transparent, and opaque), frequency (very frequent, frequent, and not frequent), and context (fully supportive, semi-supportive, and not

supportive). The idioms' qualities were spread, so no one was the same: one idiom had high transparency, high frequency, and fully supportive context, while another had high transparency, low frequency, and semi-supportive context and so on until all variations had been exhausted (see Table 3).

Table 3: The test items and their degrees of context, transparency, and frequency

Non-supportive context	**Semi-supportive context**	**Fully supportive context**
1) Transparent	**1) Transparent**	**1) Transparent**
b) Frequent: Leave a bad taste in mouth	c) Not frequent: Slippery as an eel	a) Very frequent: Keep a low profile
2) Semi-transparent	**2) Semi-transparent**	**2) Semi-transparent**
a) Very frequent: A fly on the wall	b) Frequent: Pop the question	c) Not frequent: All fingers and thumbs
3) Opaque	**3) Opaque**	**3) Opaque**
c) Not frequent: A snow job	a) Very frequent: Take pot luck	b) Frequent: Until the cows come home

All nine idioms were chosen from the *Collins Cobuild Idioms Dictionary* (2020) for their diversity in meaning and composition, while keeping their transparency and frequency in mind. The dictionary provided their context, though the wording was somewhat simplified so as to avoid unnecessary confusion and to establish the correct variation of support.

One group of students was presented the idioms in isolation (Group 1), while the other student group was offered the idioms in context (Group 2):

Test 1: All fingers and thumbs.

Test 2: All fingers and thumbs.

Example: "Can you open this for me? I'm all fingers and thumbs."

When an idiom was fully supported by its context, as exemplified above, the context aided the learner in deciphering its figurative meaning. It suggested in which circumstances the idiom could be used, while not explicitly stating the meaning behind it. Semi-supportive contextual support, on the other hand, hinted at the answer, while non-supportive context gave no clues whatsoever (see Table 4).

Table 4: Examples of different contextual support provided

Not supportive	Semi-supportive	Fully supportive
A fly on the wall: I would love to be a fly on the wall.	Pop the question: Stuart got serious quickly and popped the question six months later.	All fingers and thumbs: Can you open this for me? I'm all fingers and thumbs.

To establish the idiom's frequency the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA) were used, as was *Collins Cobuild Idioms Dictionary* (2020). The dictionary, offered some idioms a so-called "frequency star" which denoted the highly frequent ones, but did not categorise them further. The BNC and the COCA, which contain 100 million respectively one billion samples from various genres of texts including, but not limited to, spoken, fiction, popular magazines, newspapers, academic texts, and movie subtitles, contributed to the frequent and non-frequent categories. The two corpora designated each idiom with a number based on how frequent it was according to their extensive databases. As the corpora gave two different figures, the mean was used to establish a more accurate frequency (see Table 5).

Table 5: The idioms' mean frequency

	Transparent	Semi-transparent	Opaque
Very frequent	Keep a low profile 192(=(24+360)/2)	A fly on the wall 186(=(14+218)/2)	Take pot luck 5(=(7+3)/2)
Frequent	Leave a bad taste in mouth 15(=(1+29)/2)	Pop the question 68,5(=(6+131)/2)	Until the cows come home 40(=(1+78)/2)
Not Frequent	Slippery as an eel 6(=(5+7)/2)	All fingers and thumbs 3,5(=(6+1)/2)	A snow job 9(=(1+17)/2)
Note. The () disclose the number designated by each corpora, the BNC first, then the COCA, which are then divided by two so as to establish the mean.			

The BNC and the COCA, for instance, rated *all fingers and thumbs* as six and one which resulted in a mean of 3,5 which can be compared to *pop the question* which mean was 68,5 As both idioms are semi-transparent and the former idiom's mean is significantly lower, it was categorised as not frequent while the latter became frequent. For the transparent idioms, *leave a bad taste in mouth* and *slippery as an eel* were compared and though the difference was not as significant as between the other two categories, it was still notable. The

same method was used for the opaque idioms *until the cows come home* and *a snow job*. It should be noted that the very frequent idioms were exempt from this comparison, as their frequency was solely established using *Collins Cobuild Idiom Dictionary*, which is why *take pot luck* is not categorised as not frequent even though its mean is the lowest of the three opaque idioms.

There is no database or dictionary to establish an idiom's transparency as it depends on its semantic clarity i.e., its decomposability (Abel, 2003; Karlsson, 2019; Liu, 2008). The participants' L1 was also taken into consideration, as some of the idioms have a Swedish equivalent. The three idioms judged as transparent fulfil both of these criteria as *leave a bad taste in mouth* has the Swedish counterpart of *ge besk eftersmak* and irrespective of whether it is read figuratively and literally, the outcome is "unpleasant". The semi-transparent idioms, such as *pop the question*, are more ambiguous and depend on the participants' idiom entry. Its meaning, *to propose marriage*, could be deciphered from its constituents as there are not many questions referred to as 'the question' and its literal reading relates to asking an actual question. The meanings of opaque idioms, however, are completely ambiguous. The individual components of *a snow job* do in no way lead to the figurative meaning *to deceive someone by telling many lies or by giving praise that is not sincere*.

The biographical questionnaire comprised of questions regarding the participants' age, gender, previous experience with idiomatic expressions, and their extra-curricular habits relating to the English language. The questions were put together to examine if the participants' characteristics, overall familiarity with idioms, and level of immersion in the language affected their idiom comprehension, as it is established by researchers that a learner's quality and quantity of input strongly influences their acquisition of a language (see among others Ellis, 2008; Paradise, 2009; Sundqvist, 2009). To establish the correct correlation between the learners' habits and their level of competency, one must be made aware of the input's source; thus, the students were asked to rate their level of immersion in the English language (quantified in hours per week with five hour intervals: 1-5, 6-10, 11-15, 16-20, or 21+ hours) and to cite their sources. Here they could choose multiple answers: social media, gaming, reading, films and tv-series, plays, or other. Both active and passive activities were included, as the type of activity influences the language acquisition according to Sundqvist (2009).

The study was answered only by students but one of their teachers was informally asked if she had ever specifically taught her students about idioms in a structured way, to which she answered no. She had, however, taught specific idiomatic expressions as they appeared in the course book used.

4 RESULTS AND DISCUSSION

The aim of the present study was to examine if and how intrinsic (transparency and frequency) and extrinsic factors (contextual support, ECAs, and age) affect idiomatic SLA. This section will discuss the total results and how each variant affected idiom comprehension based on the data collected.

The total results illustrate how poorly the participants' idiom comprehension was (tables 6 and 7). Group 1, consisting of 52 participants who were not provided with contextual support, managed to answer just over 11% correctly, which was almost twice as high as Group 2's 6,15%. As the percentage of correct answers was so low, the incorrect and blank answers was numerous. The majority of answers in Group 1 was incorrect (52,78%), while blank answers were the most frequent variety in Group 2 (47,99%). These results, where students often misinterpret or leave blank answers, mirror the results of other studies such as Nippold & Martin (1989) and Karlsson (2013). Nippold & Martin investigated native speakers' comprehension of English idioms, not L2 learners as the present one, but their study resulted in very high failure rates (33 - 46% without context and 28 - 35% with context, including blank answers). Their participants varied in age, as did Karlson's. Karlsson investigated native and L2 speakers' idiom comprehension (native Swedish speakers with English as a second language), which resulted in a 9,57% failure rate in their L1 but reached 37,35% in their L2 (excluding blank answers).

Table 6: Group 1's total results

Group 1	Answers	Percentage
Correct	54	11,54% (=54/468)
Incorrect	247	52,78% (=247/468)
Blank	167	35,68 (=167/468)
Note. There were 52 participants in this group. There was no context provided to this group. 468 is the total number of answers possible (=52*9).		

Table 7: Group 2's total results

Group 2	Answers	Percentage
Correct	26	6,15% (=26/423)
Incorrect	194	45,86% (=194/423)
Blank	203	47,99% (=203/423)
Note. There were 47 participants in this group. Various degrees of contextual support were provided for this group. 423 is the total number of answers possible (=47*9).		

When Group 1's results are examined, it becomes clear that transparency is the key component, not frequency (Table 8). All three transparent idioms rank high, with the semi-transparent ones in the middle, and the opaque expressions at the bottom of the table, while no such pattern was discernable for frequency. The results are further confirmed when only the correct answers are isolated (Table 9): 72,22% of all correct answers in Group 1 involve transparent idioms, compared to the very frequent expressions which reached 42,59%. While not low, the figure is much lower than the one for transparency. This disparity allows for the interpretation that transparency is central to idiom comprehension and that while frequency does affect it, it does so to a lesser extent. These results align with the DIR model first and second assumptions which state that the more transparent or frequent the idiomatic expression, the easier it is to comprehend. They also align with researchers such as Elkiliç (2008), Cucchiarini et.al. (2020), and Nippold & Taylor (2002).

There are, however, two notable discrepancies. Firstly, the opaque expressions scored higher than the semi-transparent ones (16,67% compared to 11,11%), and secondly, the not frequent idioms scored higher than the frequent ones (31,48% vs. 25,93%). The higher percentage in the opaque and not frequent categories can be traced to two different expressions, namely *until the cows come home* and *slippery as an eel.* In the case of transparency and the former idiom, six of the nine correct answers were concerned with it, while 14 of the 17 correct answers relate to the not frequent idiom *slippery as an eel*. As these idioms scored the majority of the correct answers in their respective categories, it can be assumed that exchanging them for other opaque or not frequent idioms could alter the results considerably.

Table 8: Results from Group 1, idiom for idiom

Idiomatic expression	C	I	N	T	F
Keep a low profile	38,46% (=20/52)	51,92% (=27/52)	9,62% (=5/52)	T	VF
Slippery as an eel	26,92% (=14/52)	40,38% (=21/52)	32,69% (=17/52)	T	NF
Until the cows come home	11,54% (=6/52)	32,69% (=17/52)	55,77% (=29/52)	O	F
Leave a bad taste in mouth	9,62% (=5/52)	63,46% (=33/52)	26,92% (=14/52)	T	F
Pop the question	5,77% (=3/52)	55,77% (=29/52)	19,23% (=10/52)	ST	F
A fly on the wall	3,85% (=2/52)	53,85% (=28/52)	42,31% (=22/5)	ST	VF
A snow job	3,85% (=2/52)	55,77% (=29/52)	40,38% (=21/52)	O	NF
All fingers and thumbs	1,92% (=1/52)	50% (26/52)	48,08% (=25/52)	ST	NF
Take pot luck	1,92% (=1/52)	51,92% (=27/52)	16,15% (=24/52)	O	VF

Note. The expressions are listed after number of correct answers, not in appearance. 52 refers to the number of participants.

C = percentage of correct answers

I = percentage of incorrect answers

N = percentage of no answers

T = degree of transparency (**T**ransparent, **S**emi-**T**ransparent, or **O**paque

F = degree of frequency (**V**ery **F**requent, **F**requent, or **N**ot **F**requent)

Table 9: Percentage of Group 1's correct answers regarding transparency and frequency

Group 1	Percentages
Transparency	
Transparent	72,22% (=39/54)
Semi-transparent	11,11% (=6/54)
Opaque	16,67% (=9/54)
Frequency	
Very frequent	42,59% (=23/54)
Frequent	25,93% (=14/54)
Not frequent	31,48% (=17/54)
Note. The figures divided by 54 are the total number of correct answers given for each of the three idioms from each category (transparency: 20+14+5=39). 54 is the total number of correct answers.	

When the results from Group 2 are examined, it becomes clear that they are not consistent with Group 1's (Table 10). The addition of contextual support overshadows the effects of both transparency and frequency. The data confirms the GEH —that the more supportive the context, the easier it is to comprehend— as the idioms fully supported by their context scored high, the semi-supported ones ranked in the middle, with the ones not supported at the bottom (with the exception of *a fly on the wall*). When the correct answers are isolated and examined, the same results become even more apparent. Table 11 discloses how much the different degrees of contextual support affected idiom comprehension, affirming again how effective it is. Note that the not supportive context percentage is slightly higher than those idioms which had semi-supportive context (30,77% compared to 23,08%). This discrepancy is solely caused by the idiom *a fly on the wall* as it is accountable for all eight correct answers in that category, indicating that if it was exchanged for another expression (as with the transparent and frequent cases discussed above), the figures would most likely alter significantly.

Further deviating from Group 1's results, frequency is the second most influential variable, not transparency (see Table 10). If the three idioms without any correct answers are disregarded (which coincidentally happened to be one from each degree of frequency), frequency's effect becomes very discernable: the top ranked are very frequent, followed by the frequent ones, with the not frequent ones ranked last. In fact, when the correct answers are isolated and regarded in terms of frequency and transparency, the difference in effect becomes apparent; over 50% of all correct answers were categorised as very frequent, while only 30,77% related to transparent idioms (Table 12). However, it

Table 10: Results from Group 2, idiom for idiom

Idiomatic expression	**C**	**I**	**N**	**T**	**F**	**CS**
A fly on the wall	17,02% (=8/47)	31,91% (=15/47)	51,06% (=24/47)	ST	VF	N
Keep a low profile	12,77% (=6/47)	72,34% (=34/47)	14,89% (=7/47)	T	VF	F
Until the cows come home	10,64 (=5/47)	36,17% (=17/47)	53,19% (=25/47)	O	F	F
Pop the question	8,51% (=4/47)	48,94% (=23/47)	42,55% (=20/47)	ST	F	S
Slippery as an eel	4,26% (=2/47)	53,19% (=25/47)	42,55% (=20/47)	T	NF	S
All fingers and thumbs	2,13% (=1/47)	42,55% (=20/47)	55,32% (=26/47)	ST	NF	F
A snow job	0%	29,79% (=14/47)	70,21% (=33/47)	O	NF	N
Take pot luck	0%	40,43% (19/47)	59,57% (=28/47)	O	VF	S
Leave a bad taste in mouth	0%	57,45% (=27/47)	42,55% (=20/47)	T	F	N

Note. The expressions are listed after number of correct answers, not in appearance. 47 refers to the number of participants.

C = percentage of correct answers

I = percentage of incorrect answers

N = percentage of no answers

T = degree of transparency (**T**ransparent, **S**emi-**T**ransparent, or **O**paque

F = degree of frequency (**V**ery **F**requent, **F**requent, or **N**ot **F**requent)

CS = degree of contextual support (**F**ully, **S**emi-, or **N**on-supportive)

should be noted that the semi-transparent idioms scored higher than the transparent ones (50%), and as with the not frequent idioms scored three times less than the frequent ones, and even the opaque idioms scored considerably lower than the transparent and semi-transparent expressions. No pattern was distinguishable in regard to transparency, though it should be noted that the transparent idioms scored considerably lower that the semi-transparent (30,77% vs. 50%). As with Group 1's results, this discrepancy can be traced to one particular idiom, in this case *a fly on the wall*, which accounted for eight of the 13 correct answers the semi-transparent idioms acquired.

Table 11: Percentage of Group 2's correct answers in regard to contextual support

Group 2	**Percentages**
Context	
Fully supportive	46,15% (=12/26)
Semi-supportive	23,08% (=6/26)
Not supportive	30,77% (=8/26)
Note. The figures divided by 26 are the total number of correct answers given for each of the three idioms from each category (fully supportive: 6+5+1=12). 26 is the total number of correct answers.	

Table 12: Transparency and frequency of the correct answers from Group 2

Group 2	**Percentages**
Transparency	
Transparent	30,77% (=8/26)
Semi-transparent	50% (=13/26)
Opaque	19,23% (5/26)
Frequency	
Very frequent	53,85 (=14/26)
Frequent	34,62% (=9/26)
Not frequent	11,54% (3/26)
Note. The figures divided by 26 are the total number of correct answers given for each of the three idioms from each category (transparency: 6+2+0 = 8). 26 is the total number of correct answers.	

The deduction that frequency is more significant than transparency is in contrast with Karlsson (2019), who found that frequency did not affect idiom comprehension as strongly as transparency when she investigated the simultaneous effects of transparency, frequency, context, and age. According to her results from the L2 test (as she tested both the participants L1 and L2 idiom competency), context is the most influential variable followed

by transparency and then frequency, but she hypothesises that frequency's minimal effect was caused by the participants' low familiarity with the idiomatic expressions. A hypothesis which might also be relevant in the present study.

Additional patterns emerge if one delves into the Group 2's incorrect answers. It appears that as helpful context is, it can also have a negative influence. The answers often included words or phrases from the context provided, i.e., the answers for *keep a low profile* repeatedly referred to dating as the context given was 'they have been dating for a month and have kept everything very low profile'. The same results can be seen with *take pot luck* ('we would take potluck at whatever restaurants might still be open') and *leave a bad taste in mouth* ('they leave a bad taste in the mouth') as answers regarding choosing restaurants and buying food were prevalent in the former while answers concerning mouths and bad or rotten food dominated the latter. Furthermore, in such cases, the degree of contextual support did not seem to be significant. The implications of these context-based answers indicate that the participants only thought locally and depended on the lexical information as well as the contextual clues provided. The *heuristic* learning approach (Liu, 2008), Group 2 utilised aligns with the DIR model's fourth assumption as the participants decomposed the expressions so as to comprehend them. They unfortunately relied too heavily on the context which led them to the wrong conclusions.

Moreover, the most frequent errors made, by both groups, concerned incorrectly interpreted constituent entries. Participants in Group 1 associated *slippery as an eel* with being small and slippery, while both groups correlated *a fly on the wall* with being small and irritating. Interestingly, the majority of participants in both groups recognised that the 'pop' in *pop the question* refers to (suddenly) asking a question but many left it at that, not identifying the whole phrase as 'proposing marriage'. Errors of this variety suggest either that the participants had insufficient information to interpret the idiom correctly or that their L2 proficiency is low.

In addition to the effects of context, the GEH also posits that the age of the learner will affect idiom comprehension. It states that the older the learner, the better they understand figurative language as they have more advanced cognitive skills compared to those younger than themselves. The present study's data, however, does not support of this statement (Figures 4 and 5). Figure 4 presents data from Group 1, where the effects of age is non-existent. The highest scoring age group should be the oldest, according to the

GEH, but in this case they scored second lowest. Furthermore, the difference between the 13-, 15-, and 16-year-olds' percentage of correct answers is not significant, at 13,13%, 15,74%, and 11,11% respectively, while the 14-year-olds' score was almost half as low at 6,25%.

Group 2's results mirror Group 1's to a certain degree, though the ranking of age groups differ somewhat and the difference between them is more prominent (figure 5). The highest scoring age group, the 13-year-olds, totalled at 12,35% correct answers, while the lowest (the 14-year-olds) only answered correctly in 2,08% cases.

This discrepancy with the GEH might stem from various differences, for instance that the experiments executed by Levorato & Cacciari (1992; 1995; 2002) focused on other age groups (ages 7-11 and 18-year olds), omitting these exact ages from their age range. Karlsson (2019, ch. 2), on the other hand, did include the exact same ages (in addition to older ones) but the leap in progression she observed is notably absent in this study.

Even when differences in the number of students were considered and the average idioms known per student were calculated, it was clear that age was not a determining factor as to whether an idiom was known or not. The low number of students in some of the groups, as well as the low number of correct idioms, may have affected the calculations in unwanted ways. In order to achieve statistically confirmable results, more students and more idioms need to be tested. This may mean that age is still a determining factor but did not turn out to be this in this specific study.

Figure 4: Distribution of respective age in Group 1

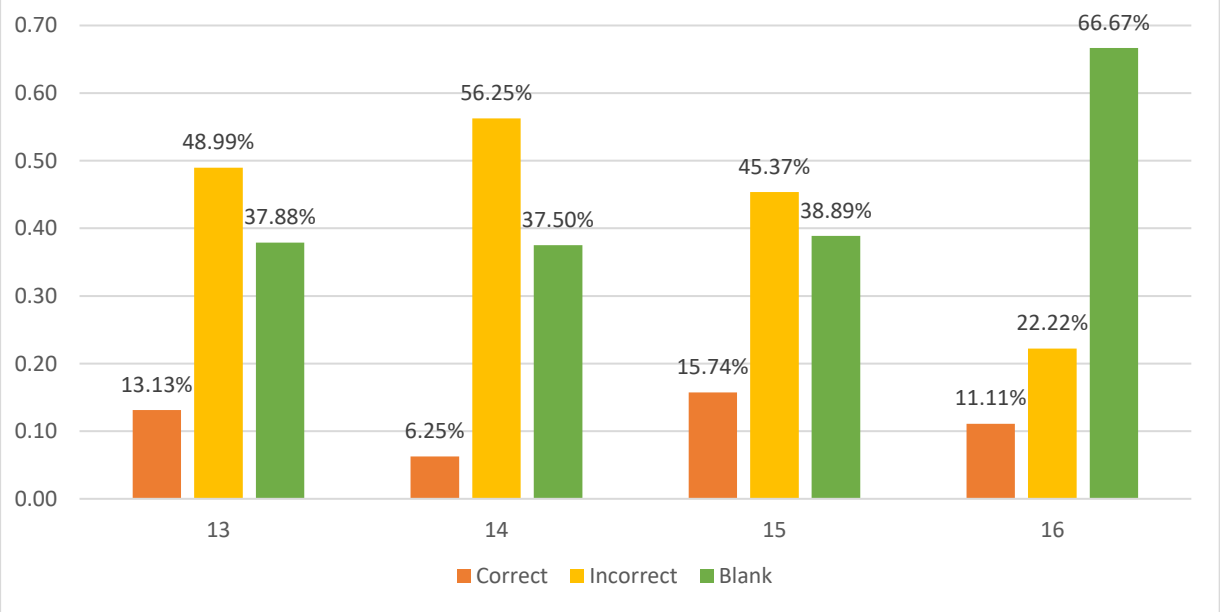
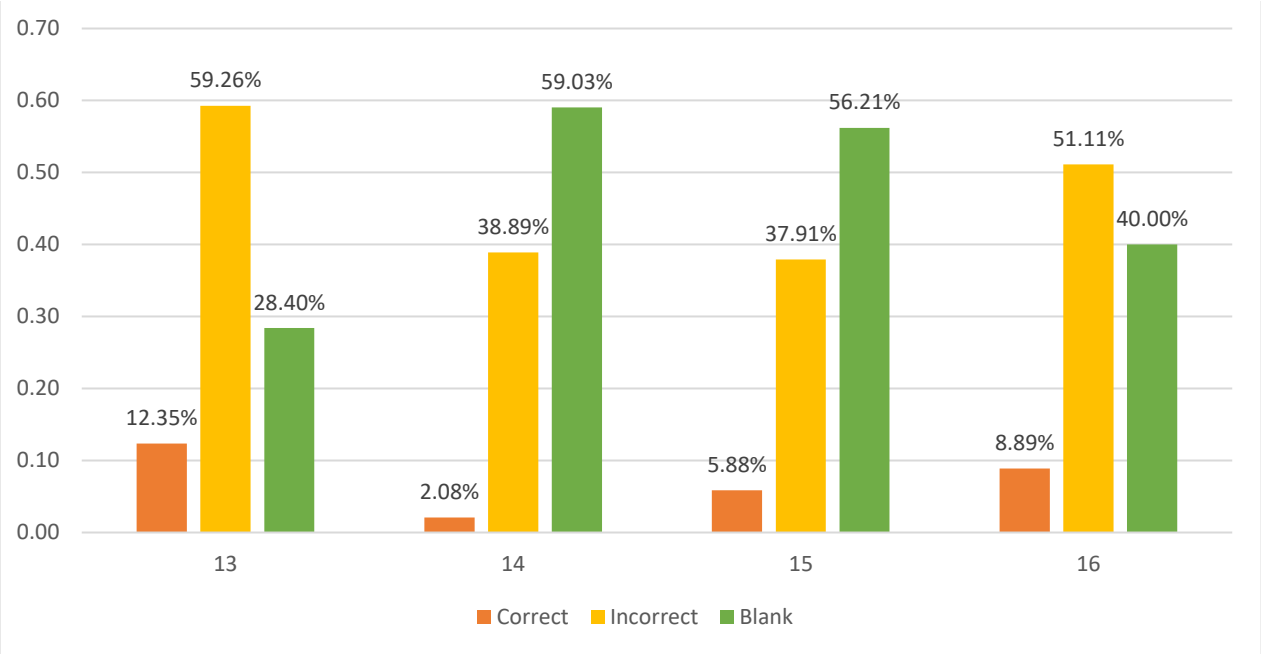
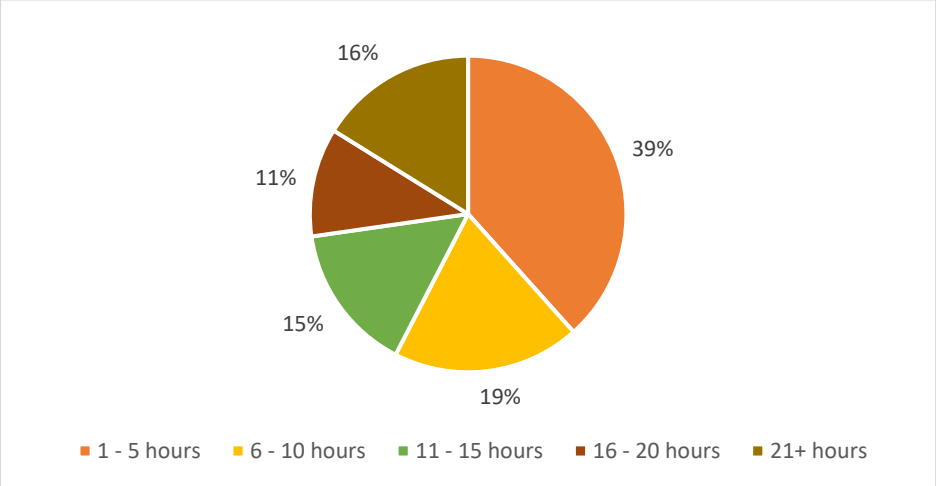


Figure 5: Distribution of respective age in Group 2



Examining the effects of ECA's involved asking the participants about their habits in their personal time, as the definition employed in the present study defines ECAs as activities engaged in outside the classroom and school. Questions regarding the amount of time spent using English outside school and in what way they did so are the basis for this examination. Figure 6 illustrates the differences in time (hours per week), where it becomes apparent that the majority of participants only do so for 1 – 5 hours a week (39%). If those who answered 6 – 10 hours are added to it, the percentage climbs up to 58%. As learners are motivated to learn English for themselves if it figures into their day-to-day life (Sundqvist, 2009), these results clearly indicate a generally low personal motivation to do so.

Figure 6: Time spent on ECAs



Additionally, when asked if they had ever been especially taught about idiomatic expressions in school (Figure 7), 54 participants answered negatively and over 70% of those 45 who answered positively could not specify when they had done so (Figure 8). These figures indicate that even if the participants have learnt of idiomatic expressions in a school setting, they have not retained what they have learnt. These two factors, low personal motivation and idioms' absence in the classroom, give credibility to the theory that ECAs affect L2 acquisition, as learners cannot acquire and understand idiomatic expressions if they never or seldom encounter them.

Figure 7: Answers regarding if participants had learnt of idioms in school or not

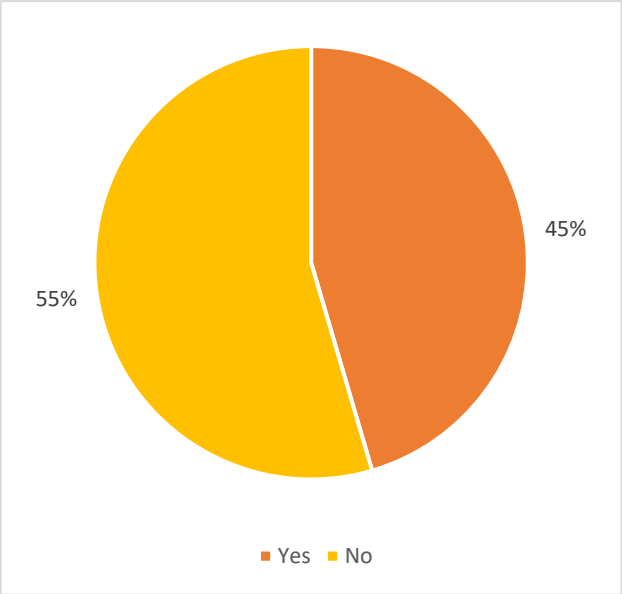
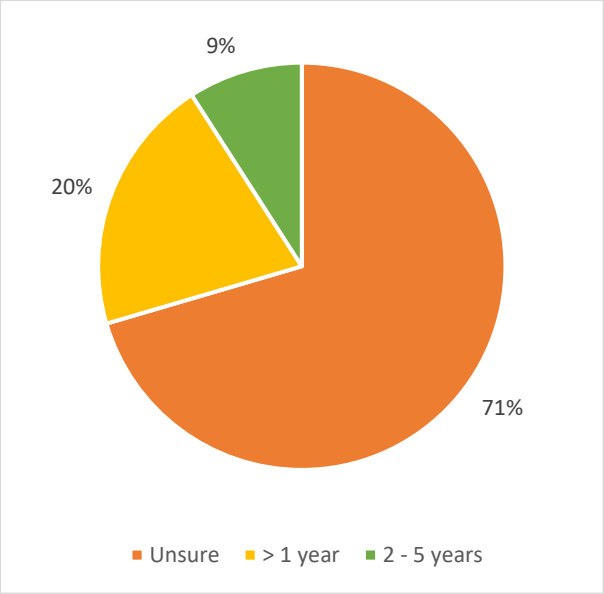


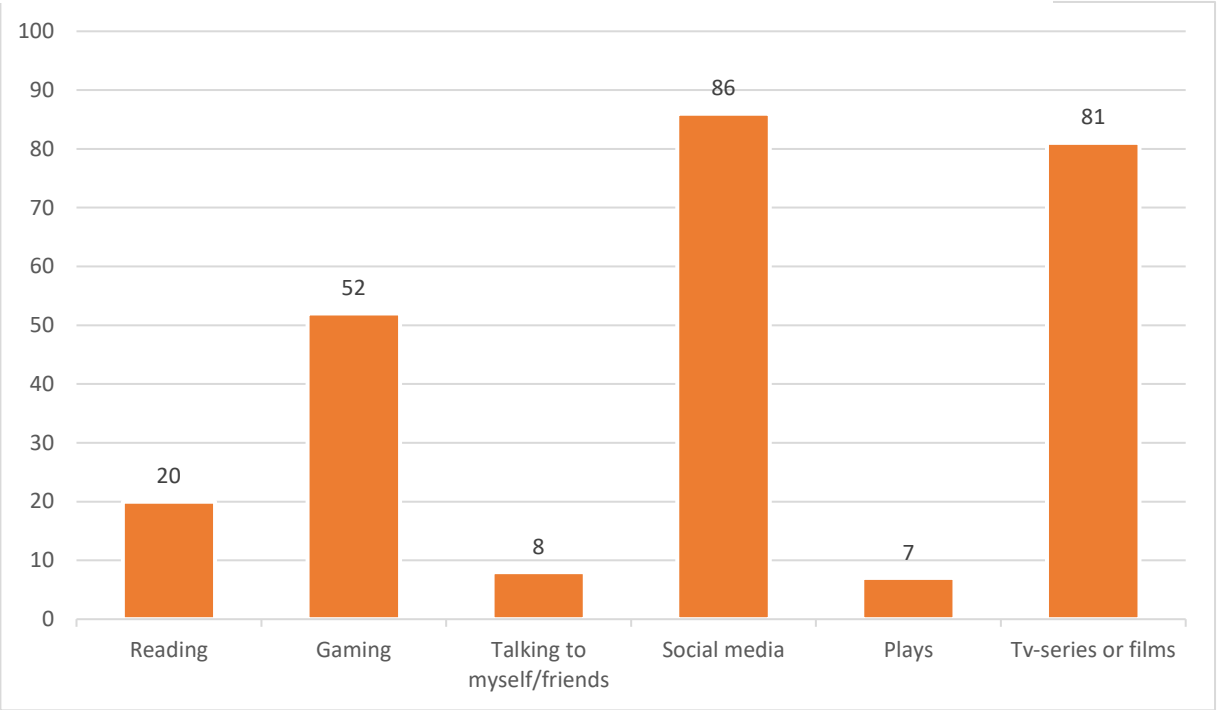
Figure 8: Answers to when the participants last learnt about idioms in school



As not only quantity but also quality reflects on SLA, the participants were asked to specify which activities they engage in (Figure 9). Note that their answers were edited for brevity and clarity. The data presented makes it apparent that most partake of some kind of active activity (reading, gaming, social media[1], and talking) though more often than not it coincided with a passive activity (watching tv-series, films, or plays). Of the 99 participants only 13 chose a single activity with most choosing two or three, even four.

[1] Sundqvist (2009) defines 'surfing the internet' as an active activity and as the two actions are alike, this study defines 'social media' as the same.

Figure 9: How participants utilised extra-curricular English



When the highest and lowest scoring participants from Group 1 are examined (Table 13), the link between time spent using English and the participants' idiom comprehension becomes clear: the two highest scoring participants spend the most time using English outside of school while the lowest scoring participants, with the exception of participants number 30, only use the language for between 1-5 hours per week. No correlation could be found between idiom comprehension and type of activity in Group 1, as all of the participants participate in some kind of active activity (social media, gaming and/or speaking with others), with the exception of participants number 22, who only chose passive ones. As participant 22 was not the only one who left all nine questions blank (also number 30 and 39), no connection could be found between passive ECAs and the inability to answer or low idiom comprehension.

Group 2's results somewhat mirror Group 1's (Table 14). The highest scoring participants in Group 2 also spend quite a bit of time using English in their private life (11-20 hours per week) and those who answered all the questions incorrectly only do so for 1-5 hours per week. The difference between the two groups lies in those who left all nine questions blank: Group 2's participants were twice as many and most spent between 11-15 hours per week on extra-mural English, while the majority in Group 1 only do so for 1-5 hours. In regard to type of activity, contrary to Group 1's results, a tentative correlation

Table 13: Group 1's results in regard to ECA:

Group 1's participants	Correct	Incorrect	Blank	ECA	Time spent in hours per week
50	5	4	0	Social media, tv-series or films, gaming	21+
46	4	3	2	Social media, Tv-series, reading, thinking	16-20
31	0	9	0	Social media, Tv-series, gaming	1-5
29	0	9	0	Social media, Tv-series or films, gaming, speaking w/friends	1-5
25	0	9	0	Social media, gaming	1-5
22	0	0	9	Social media, Tv-series or films, plays	1-5
30	0	0	9	Gaming	11-15
39	0	0	9	Gaming	1-5

Note. Participants were anonymous and the number designated them was in ordered by time and group: the first to answer in Group 1 is numbered first, the second two, and so on. The first 52 participants belonged to Group 1 and are therefore numbered between those figures.
Those who scored the highest in group 1 are marked in white.
Those who scored nine incorrect are marked as light grey.
Those who left nine blank are marked as dark grey.

can be found. Seven participants engage in both active and passive ECAs, but two participants (77 and 80) only engage in a single passive activity and one (59) only participates in an active one. If those participants who only engage in either type are examined, a cautious connection can be established as number 59 was the highest scoring participant in Group 2 while participants number 77 and 80 left nine blank answers. Participation in a single active ECA may have contributed towards participant's 59 higher score while engaging in a single passive activity might have impacted participants 77 and 80 negatively.

The results from both groups suggest that as in Sundqvist (2009) and Cho & Krashen (1994), the ECA's quantity affects SLA, in that the highest scoring participants were the ones who spend the most time utilising English for their own purposes. The link between low scoring participants and little time spent using English, however, cannot be fully

Table 14: Group 2's results in regard to ECA

Group 2's participants	Correct	Incorrect	Blank	ECA	Time spent in hours per week
59	3	6	0	Gaming	16-20
60	3	6	0	Social media, tv-series or films, gaming	11-15
55	0	9	0	Social media, gaming, reading	1-5
65	0	9	0	Social media, tv-series or films	1-5
57	0	0	9	Social media, tv-series or films, gaming	11-15
70	0	0	9	Social media, tv-series or films	11-15
77	0	0	9	Tv-series or films	1-5
78	0	0	9	Social media, tv-series or films	16-20
79	0	0	9	Social media, tv-series or films	11-15
80	0	0	9	Tv-series or films	1-5

Note. Participants were anonymous and the number designated them was in ordered by time and group: the first to answer in Group 1 is numbered first, the second two, and so on. The last 47 participants belonged to Group 2, so they are numbered between 53-99.
Those who scored the highest in group 2 are marked in white.
Those who scored nine incorrect are marked as light grey.
Those who left nine blank are marked as dark grey.

established as Group 2's lowest scoring participants spend up to 20 hours per week on English outside school. The same amount of time as the highest scoring participants in the same group. The ECAs' quality can also only be tentatively connected to the participants' score as most participants engage in both active and passive ECAs.

The pedagogical implications of these results are immense. As students have a low chance of encountering idiomatic expressions for themselves, as per the evidence presented above, students' idiom competency and the positive effects their acquisition has on L2 comprehension (Liu 2008; Liontas 2017) chiefly rests on the school system. In regard to the acquisition and understanding idiomatic expressions the most important factor is, as the GEH posits, unequivocally context. While other factors do affect idiom comprehension, none can be compared to the positive effects of contextual support according to the findings of the present study. These results thus indicate that if teachers wish to promote deeper learning of

the language, as idioms encourage (Liontas, 2017), then the best way to succeed would be to introduce idiomatic expressions in fully supportive context.

As idioms are omnipresent in every language (Liontas, 2017), their application in classrooms could be seamless. Students are to learn how to enrich their communicative skills with language phenomena such as " …fixed language expressions… " according to the Swedish National Agency for Education (2018, p. 37), and as idiomatic expressions vary in both their composition and meaning and therefore span a wide variety of themes, they can easily be incorporated into almost all lessons. The nine idioms chosen for the present study could be used when teaching various themes such as animals (*slippery as an eel*, *a fly on the wall*, and *until the cows come home*) or the human body (*all fingers and thumbs* or *leave a bad taste in your mouth*).

5 CONCLUSIONS

The study's aim was to examine the effects of intrinsic (transparency and frequency) and extrinsic factors (contextual support, ECAs, and age) on L2 idiom comprehension. To do so, 99 students in grades seven through nine in a small municipality in Sweden were asked to answer a test in which they were to define nine idiomatic expressions and answer a biographical questionnaire. The students were divided into two groups: Group 1 which answered a test without context and Group 2 which test was provided with contextual support of varying degrees. The idioms also varied in their inherent transparency and frequency. Their answers were then examined in relation to relevant theories, hypotheses, and research (see section above).

The test results were compared to the DIR model's four assumptions and the GEH, with predominantly affirmative correlations. The DIR model assumed that transparency, frequency, conceptual representations, and differences in L1 and L2 would affect idiom comprehension, and while they were all found relevant, their influence was not equal. Group 1, which was not provided with context, was more affected by the idiom's degree of transparency than its frequency, while Group 2's results indicated the opposite. Context, however, overshadowed both variables when included, thus establishing it as a significant variant in accordance with the GEH.

In regard to age, the results from both the test and the questionnaire were compared to the GEH, but the hypothesis could not the affirmed in the present study. The positive effect of ECAs on the participants' idiom comprehension, observed in Sundqvist (2009), could not be confirmed either, though a link between high scores and more time spent on ECAs was ascertained. A tentative connection between the type of activity and idiom comprehension could be found in Group 2, as the highest scoring participant in that group participated in a single active activity and two of the lowest scoring ones only participated in a single passive activity. No such correlation could be found in Group 1, but further research into the subject is necessary.

There are, however, some substantial differences between Abel's (2003) and Levorato & Cacciari's (1992) studies and the present one, such as the participants' age. Abel's participants were graduate and undergraduate students (no exact age stated, but one can assume that they are at least 18 years old), which means that she only incorporated adults in her study. Levorato & Cacciari, on the other hand, originally only tested children between the ages of six and eleven. Neither study included adolescents which might have led to the discrepancies discovered in the present study as the participants' age ranged from 13 to 16. Broadening the age range might have benefitted the present study as the GEH has been affirmed by other researchers such as Karlsson (2019), who incorporated adolescents aged between 13 and 18.

The test itself also varied significantly from both Abel (2003) and Levorato & Cacciari (1992). Abel gave her participants a booklet filled with 190 idiomatic expressions, which they were to judge either as decomposable or nondecomposable, but not to state their meaning. Levorato & Cacciari, on the other hand, presented the idioms either with or without context, as in the present study, but the context given was a narrative and did not vary in its degree of support. The participants were also given both the metaphorical and literal meaning of the idiom, which they were to choose between. The present study's results might have altered considerably if the participants had been given multiple choice questions, as they might have been more willing to take a guess.

The pedagogical implications of these results are, as mentioned in the section above, immense. The present study's results indicate that if teachers want to introduce their students to idiomatic expressions and have them retain the acquired knowledge, then the idioms should be incorporated in fully supportive context. Teachers should also bear in mind

the effect transparency and frequency have on idiom comprehension and retention; while not as comprehensive as contextual support, transparency and frequency also play a significant role in whether an idiom is successfully comprehended. The amount of time students use English outside school seems to have affected their idiom comprehension and students should therefore be encouraged to use the language in their personal time.

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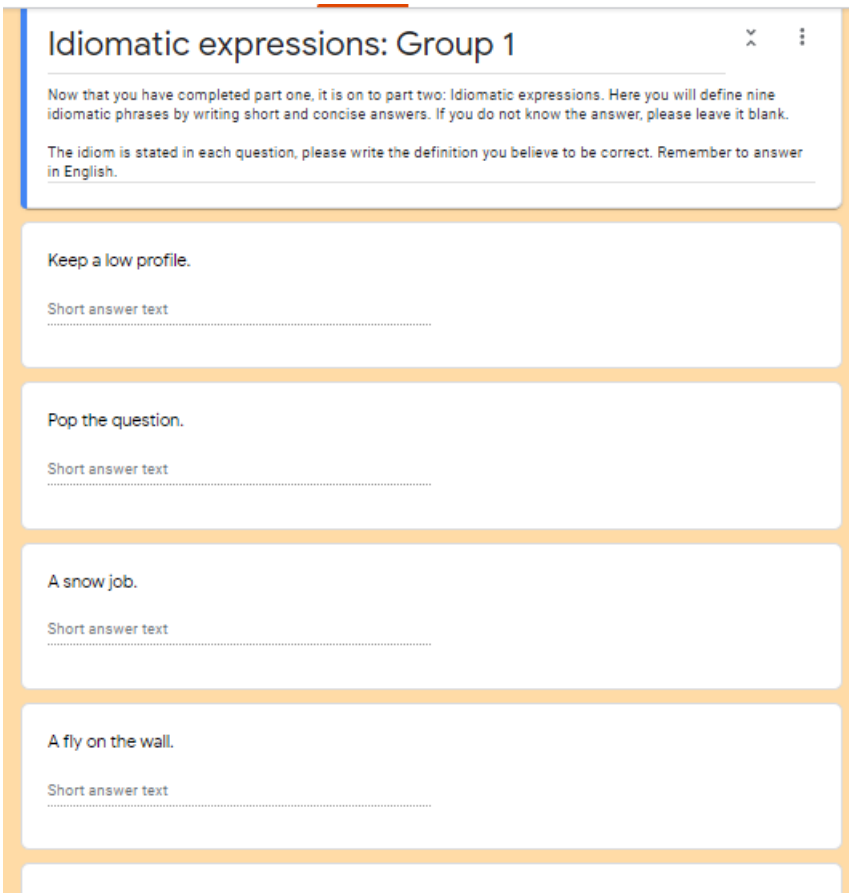
7 APPENDICES

Appendix A: Test 1, answered by Group 1:



Idiomatic expressions: Group 1

Now that you have completed part one, it is on to part two: Idiomatic expressions. Here you will define nine idiomatic phrases by writing short and concise answers. If you do not know the answer, please leave it blank.

The idiom is stated in each question, please write the definition you believe to be correct. Remember to answer in English.

Keep a low profile.

Short answer text

Pop the question.

Short answer text

A snow job.

Short answer text

A fly on the wall.

Short answer text

Take pot luck.

Short answer text

All fingers and thumbs.

Short answer text

Leave a bad taste in the mouth.

Short answer text

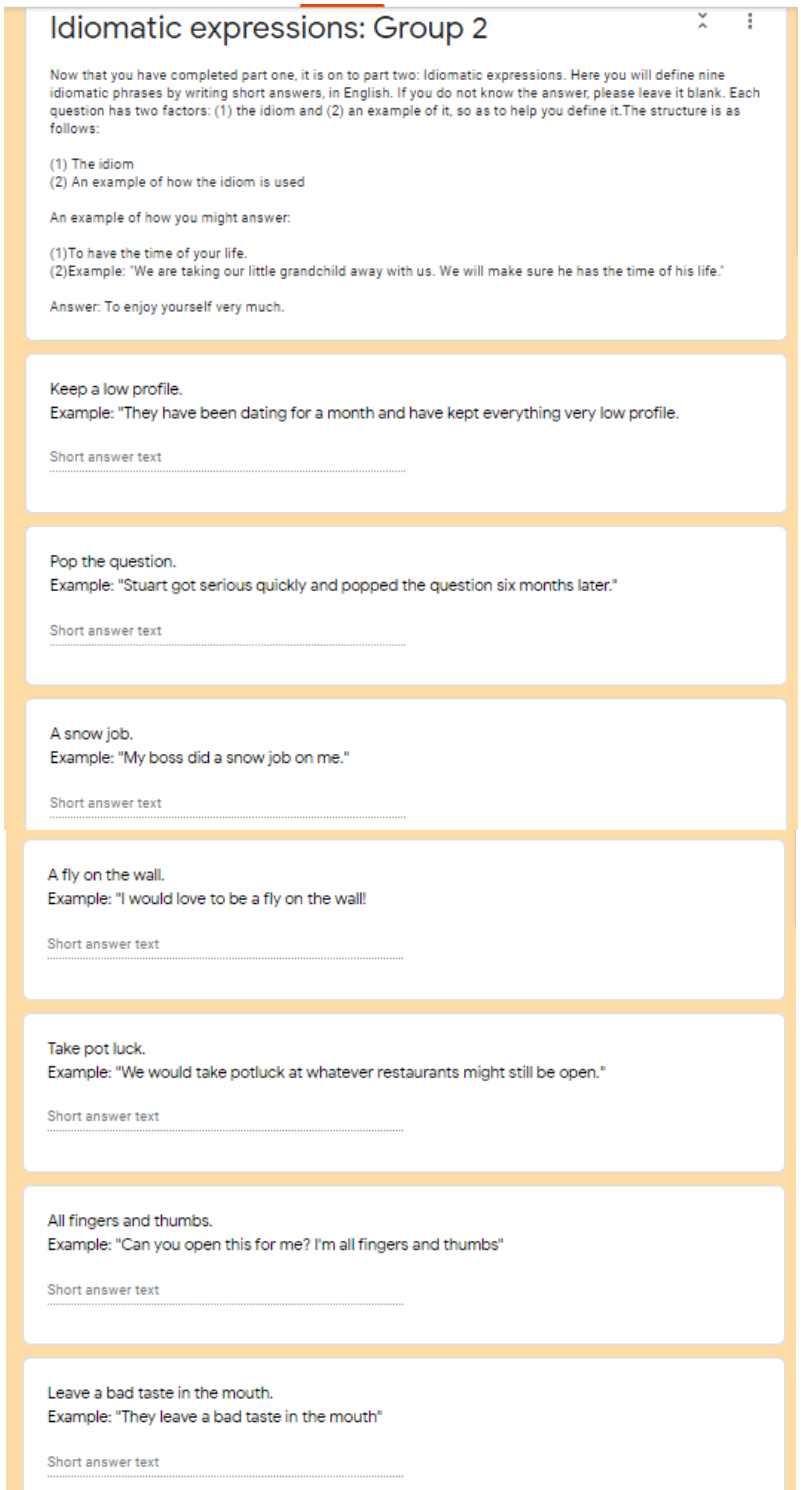
Until the cows come home.

Short answer text

Slippery as an eel.

Short answer text

Appendix B: Test 2, answered by Group 2:



Idiomatic expressions: Group 2

Now that you have completed part one, it is on to part two: Idiomatic expressions. Here you will define nine idiomatic phrases by writing short answers, in English. If you do not know the answer, please leave it blank. Each question has two factors: (1) the idiom and (2) an example of it, so as to help you define it.The structure is as follows:

(1) The idiom
(2) An example of how the idiom is used

An example of how you might answer:

(1)To have the time of your life.
(2)Example: 'We are taking our little grandchild away with us. We will make sure he has the time of his life.'

Answer: To enjoy yourself very much.

Keep a low profile.
Example: "They have been dating for a month and have kept everything very low profile.

Short answer text

Pop the question.
Example: "Stuart got serious quickly and popped the question six months later."

Short answer text

A snow job.
Example: "My boss did a snow job on me."

Short answer text

A fly on the wall.
Example: "I would love to be a fly on the wall!

Short answer text

Take pot luck.
Example: "We would take potluck at whatever restaurants might still be open."

Short answer text

All fingers and thumbs.
Example: "Can you open this for me? I'm all fingers and thumbs"

Short answer text

Leave a bad taste in the mouth.
Example: "They leave a bad taste in the mouth"

Short answer text

Until the cows come home.
Example: "We could argue till the cows come home, but we would still not know for sure why he did what he did"

Short answer text

Slippery as an eel.
Example: "He was as slippery as an eel and got away. "

Short answer text

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