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Imageability, familiarity, and age of acquisition ratings for Arabic abstract nouns, abstract verbs and adjectives

Tariq Khwaileh[1], Eiman Mustafawi[2], David Howard[3] and Ruth Herbert[4]

[1]Qatar University
[2]Qatar University
[3] University of Newcastle upon Tyne
[4] University of Sheffield

Address for correspondence: The Department of English Literature and Linguistics, College of Arts and Sciences, Qatar University, P.O Box 2713, Doha - Qatar

Email: tariq.khwaileh@qu.edu.qa

To date, normative psycholinguistics research has mainly focused on establishing norms for producing databases for concrete words using standardized pictures, while abstract words have been subject to much less attention. Understandably, the fact that the first can be represented visually helps in formulating picture-naming tasks to elicit verbal identification for pictures representing nouns and verbs, which greatly contributes to language experiments in both theoretical and clinical studies. The present study argues for the equal importance of studies that aim to develop databases for abstract words, as language use is not restricted to picturable/concrete concepts. We provide norms for a set of 165 abstract nouns, 56 abstract verbs and 109 abstract adjectives, collected from healthy speakers of Arabic. Using rating tasks, norms for imageability, age of acquisition, and familiarity are established. Linguistic factors such as syllable length and phoneme length are also accounted for. We also include orthographic frequency values (extracted from AraLex; Boudelaa and Marslen-Wilson, 2010). The norms for the processing of abstract words collected in the current study present a valuable resource for researchers and clinicians working with speakers of Arabic. To the best of our knowledge, this is the first dataset of abstract words for the Arabic language.

Keywords: Arabic; norms; imageability; familiarity; age of acquisition; abstract; nouns; verbs; adjectives;

Research in experimental and clinical linguistics makes use of normative databases when selecting stimuli for experiments or developing assessment tools for patients with speech and language disorders/impairment. The development of normative databases for different languages, varieties and regions is of essence due to the existing variation across varieties and languages in linguistic features as well as cultural norms. As per Bonin, Peereman, Malardier, Méot, & Chalard (2003), it is challenging to conduct experimental and clinical research on a language lacking such assessment tools, as this forces researchers to create idiosyncratic datasets, resulting in the inability to account for psycholinguistic variables, hence leading to erroneous conclusions. The use of idiosyncratic datasets hinders controlling for key factors to processing, such as age of acquisition, word familiarity and imageability. Furthermore, studies using stimuli with no information on these factors does not allow comparison between results from different studies (Khwaileh, Body and Herbert, 2014; Khwaileh, Mustafawi, Herbert and Howard, 2018).

Snodgrass and Vanderwart's (1980) set of 260 American English concepts/words and their pictorial representations was the first standardized normative database for English. Added to this dataset were 400 words/concepts (Cycowicz, Friedman, Rothstein, & Snodgrass, 1997). Many studies have used these two datasets, albeit with extension and adaptation to different languages and cultures (e.g. Boukadi, Zouaidi, & Wilson, 2016; Bonin et al. 2003; Bonin, Méot, Chalard, & Fayol, 2002). These studies also established norms for factors influencing the lexical retrieval process at various levels (e.g. Kosslyn and Chabris 1990; Barry et al. 1997; Bonin et al. 2003). The factors for which norms are established have been found to be determinants and predictors of lexical retrieval processing, and as a result, researchers have to control for them during stimuli selection. These factors include, but are not limited to, visual complexity of pictorial representations, name agreement, image agreement in relation to the concept or word in question, imageability of the word or concept,

age of acquisition of the word (AOA), and frequency and familiarity with the word in its spoken or written form. Controlling for such factors during the selection of stimuli for experimental paradigms is crucial.

Normative databases for many languages, such as Arabic (Tunisian Arabic: Boukadi, Zouaidi, & Wilson, 2016; Levantine Arabic: Khwaileh, Body & Herbert, 2014; Gulf Arabic: Khwaileh, Mustafawi, Herbert & Howard, 2018), Dutch (Shao, Roelofs, & Meyer, 2013), Portuguese (Cameirao & Vicente, 2010), Spanish (Alonso, Fernandez, & Díez, 2015), Russian (Akinina, Malyutina, Ivanova, Iskra, Mannova, Dragoy, 2014), French (Bonin et al., 2003; Bonin et al., 2003), Italian (Barca, Burani, & Arduino, 2002), and Turkish (Raman, Raman, & Mertan, 2014) do exist. However, these datasets share three specific features.

First, most of the published normative datasets for different languages, including but not limited to the following, are based on nouns: English (Cycowicz, Friedman, Rothstein, & Snodgrass, 1997), Dutch (Shao, Roelofs, & Meyer, 2014), French (Bonin et al., 2003), and Italian (Barca, Burani, & Arduino, 2002). Noun-based normative databases are formulated for object naming tasks to elicit verbal identification for pictures representing nouns. There are fewer verb-based normative databases as compared to noun-based (e.g. Russian: Akinina, Malyutina, Ivanova, Iskra, Mannova, & Dragoy, 2014; French: Schwitter, Boyer, Moet, Bonin, & Laganaro, 2004). Verb-based databases are developed for the purpose of assessing action-naming (Khwaileh et al., 2018). As for adjectives, to the best of our knowledge, not many adjective-based normative databases exist. Quadflieg, Michel, Bukowski & Samson (2014) created a French adjective-based normative database for human and non-human attributes. This was done through a rating task of concreteness, temporal stability and visibility. The task was performed by 20 participants for 875 adjectives, to produce a

reference for researchers when considering the lexical/grammatical properties of human and non-human stimuli for research.

Second, most previously published normative databases are based on English and Indo-European languages that are either lexically, typologically or structurally related e.g. Dutch (Shao, Roelofs, & Meyer, 2014), Portuguese (Cãmeirao & Vicente, 2010), Spanish (Alonso, Fernandez, & Díez, 2015), Russian (Akinina, Malyutina, Ivanova, Iskra, Mannova, Dragoy, 2014), French (Bonin, Peereman, Malardier, Mèot, & Chalard, 2003; Bonin, Mèot, Chalard, & Fayol, 2002), Italian (Barca, Burani, & Arduino, 2002), or on other languages such as Turkish (Raman, Raman, & Mertan, 2014).There are three published normative datasets for Arabic: the Levantine-Arabic database (Khwaileh et al.,, 2014), the Gulf Arabic nouns and verbs (Khwaileh et al., 2018) and the Tunisian-Arabic database (Boukadi, Zouaidi, & Wilson, 2016).

Third, published normative databases have focused on concrete words, whereas fewer studies have focused on abstract words (English: Gilhooly & Logie, 1980; Bird, Franklin & Howard, 2001; Italian: Rosa et al., 2010) or collected ratings for AOA, imageability, and familiarity. Databases have tended to focus on concrete words given that their main aims have been to standardize pictures for the use of experimental picture naming paradigms. This motivation is understandable. According to Glaser (1992) and Khwaileh et al. (2014), the picture naming task is the best experimental paradigm to yield spoken word production, as naming a picture is the first step towards using language. Nevertheless, language use is not restricted to pictureable/concrete concepts. Likewise, research experiments and language impairment test batteries are not restricted to the use of pictureable stimuli and/or concrete words. Experiments involving Arabic reading, writing and repetition have made use of abstract words (e.g. Prunet, Béland, & Idrissi, 2000; Idrissi & Kehayia, 2004; Idrissi et al.,

2008). This warrants the development of experimental tasks, assessments and therapeutic interventions targeted at abstract words, as opposed to concrete words. Abstract concepts have been reported to be predominantly acquired through language input and are represented by a verbal form, unlike concrete words/concepts which mainly rely on direct visual and sensory experience of objects in the real world (Paivio, 1991; 2013; 2014). Words (including nouns, verbs, and adjectives) can be classified as concrete or abstract depending on the level of operativity (number of senses involved in perception) and tangibility of the concept in question. Concrete words are often words referring to physical entities that can be seen, touched (e.g. chair and tree), and in some cases heard (e.g. car and violin) and smelt (e.g. apple and steak). These words are often highly imageable i.e. it is easy to build a mental image for the word/concept. However, abstract words are not often connected with senses and have very low or no imageability (e.g. truth, honor, and kindness). Thus, the difference between concrete words and abstract words is that the former exist as stable referents in the world, whereas the latter do not refer to objects in the world, and are thus realized as abstract concepts. The aim of the current study is to establish a database for abstract nouns, verbs and adjectives through collecting normative imageability, age of acquisition, and familiarity ratings for the Arabic language, a language that has been underrepresented in the field. In the following sections, an overview of abstract versus concrete words is presented, and then the factors influencing word processing are introduced. In addition, the Arabic language and dialects relevant to this dataset are introduced.

Concrete vs Abstract word differences

There has been extensive research into the difference between concrete words and abstract words regarding semantic processing and representation (Barber et al, 2013; Vigliocco et al, 2011; 2013; Rosa et al, 2010; Kousta et al, 2011; Binder et al, 2005; Hale,

1988; Schwanenflugel et al, 1989). The question of how these two concepts are represented and acquired in the brain remains unanswered. To account for this, two main theories have been introduced: (1) the dual coding theory, and (2) the context availability theory. The dual coding theory was put forth by Paivio, Yuille, & Madigan (1968). This theory posits that there is a dual system accountable for the semantic representation of concepts. One of the systems is based upon perceptual experience, and the other is based upon verbal information from language. The difference between concrete and abstract concepts according to the dual coding theory is that concrete concepts utilize both verbal and perceptual aspects, whereas abstract concepts utilize only verbal information input from language. However, the context availability theory (Schwanenflugel, Harnishfeger, & Stowe, 1988) proposes that there exists a single coding system responsible for both concrete and abstract concepts, and the information available for these concepts is dependent upon the quantity of contextual information available. More recent studies argue that the dual coding theory and the context availability theory alone do not explain the differences between concrete and abstract word processing (Barber et al, 2013; Rosa et al, 2010; Kousta et al, 2011); therefore, additional theories must be proposed. These studies have also found that through controlling specific variables, an opposite effect is found, where abstract words are actually processed faster than concrete words, a phenomenon that is called the abstractness effect.

The contrast between the representation of concrete and abstract words can be explained by their modes of acquisition. Concrete words are acquired through direct visual and sensory experience of objects in the real world, whereas abstract words are acquired through language input, and not direct experience. According to Paivio (2007), abstract concepts are predominantly represented by a verbal form. Schwanenflugel, Akin, & Luh (1992) found that the processing of abstract words is dependent on context availability,

suggesting that abstract words will be easier or more difficult to process depending on the amount of contextual information available. Therefore, it follows that concrete words are easier and quicker to process as they tend to evoke stronger mental imagery as demonstrated in results from electrophysiological studies. According to Barber et al. (2013), abstract words show a higher variability in this aspect. Furthermore, concrete words have an earlier age of acquisition than abstract words, meaning that they are learned at an earlier age and have formed more consolidated, rich semantic networks in the brain, leading to faster and easier processing. In a collection of age of acquisition norms, Stadthagen-Gonzalez and Davis (2006) found that 10% of the vocabulary of a 3-year-old is abstract, followed by 25% in 5-year-olds, and 60% in 11-year-olds. These statistics demonstrate the later age of acquisition of abstract words. Moreover, there is a link between imageability, age of acquisition, and familiarity. This link is demonstrated in the study by Stadthagen-Gonzalez and Davis (2006), where they found that highly imageable words are learned earlier and are therefore more familiar.

Factors influencing word processing

Overall, processing of abstract words can be affected by psycholinguistic factors such as word frequency, age of acquisition, imageability and familiarity. Since abstract words are difficult to depict, visual factors, variables relating to picture naming tasks such as name agreement, image agreement, and visual complexity were not applied to this study, given that non-picturable abstract words were evaluated.

According to Khwaileh et al. (2014; 2018), ‘word frequency’ is defined as “how frequent a word is used (spoken or written form) in a given language”. The assumption is that the higher the frequency of a given word, the faster the processing and the more accurate the response in picture naming (Martein,1995; Morrison, 1992; Nickels, 1997). Furthermore,

frequency and age of acquisition have been found to be highly related (Meschyan & Hernandez, 2002). The authors maintained that words acquired at an early age are higher in frequency, suggesting stronger lexical representations (Meschyan & Hernandez, 2002). According to Khwaileh et al. (2018), word frequency can be measured through extracting frequency values from corpora, such as in Khwaileh et al. (2018), or through rating tasks as done by Boukadi, Zouaidi & Wilson (2016), where participants rated the frequency of 348 words using a seven-point scale, "1" indicating the word is never encountered and "7" indicating that it is encountered several times a day.

Khwaileh et al. (2018) define the 'age of acquisition' as the age at which a given word is learned. They further state that words learned at an earlier age are processed faster and more accurately than later acquired ones (e.g. Akinina, Malyutina, Ivanova, Iskra, Mannova, Dragoy, 2014). This psycholinguistic variable is investigated to determine how it affects word processing as it is an important aspect to consider when compiling a normative database for assessment purposes. Age of acquisition can be established through a rating task, using a seven-point scale (i.e. 1= 0-2 years to 7= 13+ years). Age of acquisition has been reported to affect word processing (e.g. Akinina, Malyutina, Ivanova, Iskra, Mannova, Dragoy, 2014; Bonin, Mèot, Chalard, & Fayol, 2002; Bonin, Peereman, Malardier, Mèot, & Chalard, 2003; Cameirao & Vicente 2010). Khwaileh et al. (2014; 2018) reported that this variable is a significant predictor of successful lexical retrieval in Levantine Arabic and Gulf Arabic.

'Imageability' refers to the ease/difficulty of forming a mental image that corresponds to a word (e.g. Akinina, Malyutina, Ivanova, Iskra, Mannova, & Dragoy, 2014; Khwaileh, et al., 2014). This variable has proven to carry significant weight in word processing (Akinina et al, 2014; Khwaileh, et al., 2014; Nickels, & Howard, 1995). This can be attributed to the assumption that words higher in imageability may have stronger visual/verbal representations

(e.g. Stadthagen-Gonzalez, & Davis, 2006, among others). Imageability can be measured by a 1-7 rating scale ("1" indicating low imageability and "7" indicating high imageability).

'Familiarity' refers to how familiar a word is, within the sphere of a speaker's experience (Boukadi, Zouaidi & Wilson, 2016). It is reported that words with high familiarity are processed faster than their counterparts (Boukadi et al., 2016; Akinina et al., 2014; Barca, Burani, & Arduino, 2002). This variable has been found to influence lexical retrieval as reported in Levantine Arabic (Khwaileh et al., 2014), Gulf Arabic (Khwaileh et al. 2018) and Tunisian Arabic (Boukadi et al., 2016). Familiarity can be measured through a five-point rating scale ("1" indicating very unfamiliar; "5" indicating very familiar).

Khwaileh et al. (2014; 2018) define 'word length' as the number of syllables or phonemes in a given word. They also state that long words are more challenging to process in language production tasks than short words (Khwaileh et al. 2018).

The Arabic language

The current study is based on Arabic, a Semitic language that is spoken as a first language by more than 200 million speakers in South West Asia and North Africa, in addition to the millions of others who speak it as a second language. Arabic is characterized by diglossia, where two distinct varieties are spoken/used side by side in one speech community, each designated for distinct functions/contexts (Ferguson 1959). One of the two varieties is considered to be more prestigious, and is therefore characterized as a high variety, used for formal settings, official communications, and writing. The other, mainly a spoken variety, is considered to be a low variety, and is used for all other purposes. The high variety is learned formally at schools, and sometimes earlier through "exposure to mass media" whereas the low variety is learned naturally as a spoken variety at home. The high variety is called Standard Arabic or Modern Standard Arabic, while the low variety (spoken) varies from one

geographic location to another (Mustafawi & Shaaban 2018). These spoken varieties or vernaculars diverge from the high variety in terms of some phonological and morphosyntactic features. However, the main difference between the high and low varieties is in the lexicon. The spoken varieties are classified into six main dialect groups: Gulf Arabic (GA), Iraqi Arabic (IA), Levantine Arabic (LA), Yemeni Arabic (YA), Egyptian Arabic (EA), and Maghrebi Arabic (MA) (Mustafawi 2018), with the main differences between them being lexical and to some extent phonological (Al-Birini 2016). Although the data for the current study are obtained from Qatari Arabic, a variety of Gulf Arabic, the fact that the stimuli are abstract lexical items makes the results and conclusions applicable to other Arabic varieties, since abstract lexical items in Arabic vernaculars are borrowed from Standard Arabic. Table 1 below illustrates the overlap across dialects using examples taken from the dataset in this study.

Table 1

An illustration of overlap between major Arabic dialects in pronunciation of a sample of the nouns presented in the current dataset

Gulf Arabic	Egyptian Arabic	Iraqi Arabic	Meghrebi Arabic	Levantine Arabic	Yemeni Arabic	English
siħir	siħir	siħir	sħur	siħir	siħir	magic
ʕəmər	ʕəmr	ʕəmər	ʕmər	ʕəmər	ʕəmr	Age
taħəddi	taħəddi	taħəddi	taħəddi	taħəddi	taħəddi	challenge
ɣašš	ɣašš	ɣašš	ɣəšš	ɣəšš	ɣašš	cheating
fasa:d	fasa:d	fasa:d	fasad	fasa:d	fasa:d	corruption
Yo:m	Yo:m	Yo:m	yum or nhar	Yo:m	Yo:m	day
raħma	raħma	raħma	rəħma	raħma	raħma	mercy

Table 2

An illustration of overlap between major Arabic dialects in pronunciation of a sample of the verbs presented in the current dataset

GA	EA	IA	MA	JA	YA	English
yi-ttiħim	yi-ttiħim	yi-ttiħim	yə-ttaħəm	yi-ttaħim	yi-ttiħim	accuse
yi-xu:n	yi-xu:n	yi-xu:n	i-xun	yi-xu:n	yi-xu:n	betray
yi-ba:rik	yi-ba:rik	yi-ba:rik	i-barək	yi-ba:rik	yi-ba:rik	congratulate
yi-sa:miħ	yi-sa:miħ	yi-sa:miħ	i-samәħ	yi-sa:miħ	yi-sa:miħ	forgive
yi-tmanna	yi-tmanna	yi-tmanna	i-tmənna	yi-tmanna	yi-tmanna	wish
yi-ħlam	yi-ħlam	yi-ħlam	i-ħləm	yi-ħlam	yi-ħlam	dream
yi-nsa	yi-nsa	yi-nsa	i-nsa	yi-nsa	yi-nsa	forget

Table 3

An illustration of overlap between major Arabic dialects in pronunciation of a sample of the adjectives presented in the current dataset

GA	EA	IA	MA	JA	YA	English
xatˤi:r	xatˤi:r	xatˤi:r	xatˤir	xatˤi:r	xatˤi:r	dangerous
sˤaʕəb	sˤaʕb	sˤaʕəb	sˤʕib/ waʕər	sˤaʕəb	sˤaʕb	difficult
sahil	sahl	sahil	sahəl	sahil	sahl	easy
sˤari:ħ	sˤari:ħ	sˤari:ħ	sˤariħ	sˤari:ħ	sˤari:ħ	honest
bari:ʔ	bari:ʔ	bari:ʔ	bariʔ	bari:ʔ	bari:ʔ	innocent
ʕa:dil	ʕa:dil	ʕa:dil	ʕadəl	ʕa:dil	ʕa:dil	just
kiri:m	kari:m	kari:m	sxi/krim	kari:m	kiri:m	generous

These words exemplify the sort of differences that are found among Arabic varieties. As evidenced, lexical differences in the domain of abstract concepts is minimal. Phonologically, there might be some sound substitutions involving the GA phonemes /q/, /g/, /dʒ/, /θ/, /ð/ whose counterparts in some of the other varieties may be /ʔ/, /ʔ/, /ʒ/ or /g/, /s/, /z/ respectively. These can easily be adjusted when the need arises for expanding the use of our tool. For a detailed description of these sound substitutions the reader is referred to Mustafawi (2018).

The current study

The above mentioned differences between concrete and abstract words warrant further experimental investigation into the processing of these words in typical and atypical language, justifying the need for more abstract word databases for different languages, and especially Arabic, due to the limited availability of such resources for its varieties. To date, there are two published normative databases for Arabic which are based on concrete nouns: the Levantine-Arabic database (Khwaileh, Body, & Herbert, 2014) and the Tunisian-Arabic database (Boukadi, Zouaidi, & Wilson, 2016). A third database includes concrete nouns and concrete verbs for Gulf Arabic (Khwaileh, Mustafawi, Herbert, & Howard, 2018). Furthermore, normative databases for adjectives do not exist for any of the Arabic varieties. The aim of the current study is to collect normative imageability, age of acquisition and familiarity ratings for abstract nouns, verbs and adjectives in Arabic, a language that has been underrepresented in the field. Although the data were obtained from speakers of Gulf Arabic, care was taken to include in the analysis only the items that are shared by other varieties of Arabic, and the results are therefore applicable to the Arabic language in general.

It is worth mentioning that the data presented in this paper have been collected at the same time as the data presented in Khwaileh et al. (2018) Gulf Arabic nouns and verbs: A

standardized set of 319 object pictures and 141 action pictures, with predictors of naming latencies. Behavior Research Methods,50(6), 2408–2425. Therefore, the methods used for both studies overlap. While the previous study focuses on standardizing pictorial representations of Arabic nouns and verbs, the current study develops norms for abstract words (nouns, verbs and adjectives). Furthermore, the previous study looks into the determinants of successful lexical retrieval from pictorial representations through analysis of naming latencies. The current study reports the norms for imageability, familiarity and age of acquisition ratings.

Method

Participants

The participants were 116 (32% males; 68% females) native speakers of Arabic recruited from volunteering centres in Qatar. They were informed beforehand that in order to participate, they must be native speakers of Arabic, that they should be above 18 years of age, and that both their parents should be native Arabic speakers. All participants had gone through an Arabic schooling system. A questionnaire was used to gather demographic information about the participants and their linguistic backgrounds. All participants had normal or corrected-to-normal vision and no history of hearing or reading deficits. Participants were asked to sign informed consent forms, and were provided with an information sheet to explain their role in the current study. They were further informed that their participation was voluntary and that they could withdraw at any time. The study was ethically approved by the Qatar University IRB committee.

Materials

The original set of items that were included in the current study consisted of three lists of abstract words: 174 abstract non-pictureable nouns, 58 non-action/non-pictureable verbs (static), and 134 adjectives. These items were selected based on the most occurring nouns and verbs in Gulf newspapers and television programs. Other criteria were that all items must be in singular form and that each item must represent a distinct meaning (i.e. no homonyms). Similar to the recent study by Khwaileh et al. (2018), frequency was extracted from AraLex (Boudelaa and Marslen–Wilson 2010). Since only orthographic frequency databases for Arabic are available, the values were included as a compensatory measure for spoken frequency.

The selection criteria aimed to fulfill the idea of what an abstract concept constitutes, and as previously suggested by Paivio (2007) and Barber et al. (2013), should represent concepts which involve low levels of operativity and tangibility, and should have very low or no imageability (e.g. truth, honor, kindness). Words were also deemed as culturally appropriate by five Gulf Arabic speakers with whom a pilot task was carried out; however, their data has not been included in the analyses.

In line with the database previously developed for French (Quadflieg et al., 2013), adjectives derived from verbs were eliminated, as these can easily be mistaken for verbs/actions (e.g. focused); however, adjectives such as intelligent and loyal were kept. Adjectives which are associated with speed (e.g. fast, slow) or actions/movements (e.g. someone who is hurried) were also eliminated, as they can be mistaken for adverbs.

Design

Words were presented in written form, and each list of words (nouns, verbs, adjectives) appeared in a separate booklet. The same words from each list were presented in all three imageability, familiarity, and AOA tasks. They were, however, randomised to be presented in different orders across all tasks. These booklets were used to collect ratings from participants for the abovementioned three tasks.

To avoid patterns of presentation and priming effects, all items were randomised using the randomising function on Microsoft Office Excel. Three different lists were generated i.e. lists A, B, and C. Each of the three different word lists was checked to ensure that successive items did not share semantic features or initial phonemes. The randomisation process was repeated for all rating tasks. Each participant encountered a different order of the stimuli for each task presented. A given participant would have done list A in the imageability task, list B in the age of acquisition task, and list C in the familiarity task.

For each task, the booklet included written instructions that were specific to the task. In line with previous studies (e.g. Snodgrass and Vanderwart, 1980), different scales were used for different variables. Some variables, such as AOA and imageability, produce highly variable results, as opposed to familiarity, which has been shown to require fewer rating points (Alario et al., 2004; Bonin, Boyer, Méot, Fayol, & Droit, 2004; Paivio, Clark, Digdon, & Bons, 1989; Schwitter et al., 2004; Shao et al., 2015; Snodgrass & Corwin, 1988; Snodgrass & Yuditsky, 1996). Thus, a 5-point rating scale was provided next to each word stimulus for familiarity, and a 7-point rating scale was provided next to each word stimulus for both imageability and AOA.

Procedure

Two sessions were carried out in total to administer all three tasks (imageability, familiarity, AOA). The first session was designated for the imageability and AOA tasks, and the second session administered the familiarity task two weeks later. The rationale for separating the sessions was to prevent memory and priming effects which could influence the participants' judgement in determining how familiar a given word is, as they would have been exposed to the same words only shortly before.

All sessions were conducted in a quiet room. At the beginning of each session, participants were given instructions on each task sheet, as well as verbal instructions and five practice items prior to commencing the task in question. They were given feedback for each practice item. Instructions were given in Arabic, and all written material, including rating scales, were in Arabic script. Participants were given the opportunity to take a break whenever they requested one. A description of each task is reported below.

In the imageability task, participants were asked to indicate whether each word evoked a mental image with great difficulty (rated 1) or very easily (rated 7). In the age of acquisition task, the participants were asked to estimate the age at which they thought they had learned each word presented in the booklet. They were informed that the estimate should indicate not only when they had first heard the word, or when they had first learned to speak it, but should also indicate the age at which they had first understood the word when it was used in their presence. In this task, the values in the scale corresponded to 2-year age bands, with "1" corresponding to 0-2 years, and "7" corresponding to 13 years or after. In the familiarity task, participants were asked to rate the degree of familiarity of the item in terms of how usual/unusual the word was in their realm of experience, regardless of its meaning. Participants were informed that the rating had to be attributed to how often they come across

the word itself, rather than the concept it represents, either in its heard, spoken, or written form. A word they come across very often is rated as "5", and a word they never see or hear is rated as "1".

Results

Prior to analyzing the data, the rating scales were checked for internal consistency through Cronbach's alpha test (α). Table 4 below demonstrates the internal consistency of the scales for all noun, verb, and adjective ratings for imageability, age of acquisition and word familiarity, respectively.

Table 4

The Internal consistency of ratings (Cronbach's alpha)

	Imageability ratings	Age of acquisition ratings	Word familiarity ratings
Abstract nouns (n=165)	α =0.856	α =0.867	α =0.911
Abstract verbs (n=56)	α =0.764	α =0.732	α =0.675
Adjectives (n=109)	α =0.698	α =0.667	α =0.688

Cronbach's alpha revealed high internal consistency across noun and verb ratings. The rating for adjectives demonstrated above moderate levels of internal consistency. This indicates that the internal consistency of the rating scales was above moderate, meaning that participants rated every item in the set consistently**.**

Within each list there were problematic items, in that participants had conflicting views on the item in question; hence, these words were removed from the original list. For example, within the noun list, the word 'مربع', meaning 'square', was deemed by most participants as both concrete and abstract, depending on the context. The final noun set included 165 abstract non-picturable nouns, the verb set included 56 abstract verbs, and the adjective set included 109 adjectives. The descriptive statistics of the subsets were explored; Table 5 demonstrates the results.

Table 5

Means and standard deviations of rating tasks for abstract words

		Imageability	Age of acquisition	Word familiarity
Abstract nouns (n=165)	Mean	4.33	5.05	3.55
	Standard deviation	2.26	1.44	1.32
Abstract verbs (n=56)	Mean	5.20	4.65	3.97
	Standard deviation	2.22	1.36	1.19
Adjectives (n=109)	Mean	5.26	4.55	3.82
	Standard deviation	2.19	1.34	1.28

Table 5 presents the means and standard deviations for age of acquisition, imageability and word familiarity ratings. These ratings were established as norms for the abstract nouns, verbs, and adjectives. The normative database is shown in Appendix A. Results demonstrate that participants rated abstract adjectives to be the highest imageable items, followed by abstract verbs, and then abstract nouns. In terms of AOA, participants rated abstract verbs and adjectives to be the earliest acquired, followed by abstract nouns. Word familiarity was highest for abstract verbs, followed by adjectives and then abstract nouns.

Finally, the relationships between the variables were explored at two levels: the first among variables within each word category, and the second between word categories. The results are illustrated in Tables 6 and 7, respectively.

Table 6

Pearson Correlations among variables within each word category

	Within nouns							**Within verbs**							**Within adjectives**					
	Syl	Phon	Freq	AOA	Imag	Fam		Syl	Phon	Freq	AOA	Imag	Fam		Syl	Phon	Freq	AOA	Imag	Fam
Syl	1	.902**	-.042	-.088	-.015	-.144	Syl	1	.848**	-.323*	.206	.064	-.137	Syl	1	.852**	-.198*	-.077	.022	-.307**
Phon		1	-.038	-.042	-.035	-.202**	Phon		1	-.416**	.289*	-.070	-.177	Phon		1	-.231*	.026	.027	-.334**
Freq			1	.011	.064	.173*	Freq			1	-.343**	-.013	.115	Freq			1	-.106	-.014	.083
AOA				1	.002	-.228**	AOA				1	-.551**	-.238	AOA				1	.021	-.046
Imag					1	.254**	Imag					1	.012	Imag					1	.180
Fam						1	Fam						1	Fam						1

**. Correlation is significant at the 0.01 level (2-tailed); Syl: syllable number; Phon: phoneme number; Freq: frequency; AOA: age of acquisition;
*. Correlation is significant at the 0.05 level (2-tailed); Imag: imageability; Fam: word familiarity.

Table 7

Pearson Correlations among variables between word categories

	Noun AOA	**Noun Imag**	**Noun Fam**	**Verb AOA**	**Verb Imag**	**Verb Fam**	**Adj AOA**	**Adj Imag**	**Adj Fam**
Noun AOA	1	.002	**-.228****	.041	.113	-.060	.056	-.073	**-.223***
Noun Imag		1	**.254****	.014	-.078	**-.327***	.110	.090	.066
Noun Fam			1	-.195	.199	.180	.051	.078	-.143
Verb AOA				1	**-.551****	-.238	-.225	-.031	-.019
Verb Imag					1	.012	.098	.020	**-.265***
Verb Fam						1	-.107	.025	-.108
Adj AOA							1	.021	-.046
Adj Imag								1	.180
Adj Fam									1

**. Correlation is significant at the 0.01 level (2-tailed); Syl: syllable number; Phon: phoneme number; Freq: frequency; AOA: age of acquisition;
*. Correlation is significant at the 0.05 level (2-tailed); Imag: imageability; Fam: word familiarity.

A significant correlation was found between syllable number and phoneme number in all three sets of words—nouns, verbs and adjectives. This is self-explanatory as words with more syllables are likely to have more phonemes.

Within the noun set, familiarity had significant correlations with phoneme number (negative: the shorter the word, the more familiar it is), frequency (positive: the more familiar the word, the higher its frequency), age of acquisition (negative: the higher the age of acquisition, the lower the familiarity of the word) and imageability (positive: the higher the imageability, the more familiar the word). Within the verb set, verb phoneme number showed a significant negative correlation with frequency, as shorter verbs are higher in frequency. It also significantly correlated with age of acquisition, indicating that shorter words had lower age of acquisition ratings. Frequency of verbs showed a significant negative correlation with age of acquisition, which is in the expected direction as words learned at a later age are less frequently used. Age of acquisition also negatively correlated with imageability, indicating that verbs learned at an earlier stage have higher imageability ratings. Within the adjective set, both syllable number and phoneme number had significant negative correlations with frequency and familiarity, as shorter words are learned at an earlier age and have higher frequencies and familiarity in a given language.

All correlations were in the predicted direction and in line with the literature. The lack of anomalies in the direction of correlations supports the validity of the obtained ratings, giving credibility to the developed normative database. The correlations between the different word categories did not reveal any unpredicted direction. No remarkable patterns were identified when comparing correlations between word categories.

Finally, we ran a comparison between the abstract noun and verb norms reported in the current dataset and the ones reported on concrete nouns and verbs from Khwaileh et al. (2018). Adjectives were excluded from this analysis as Khwaileh and colleagues (2018) did not include adjectives in their dataset. Compared to results obtained from concrete nouns and verbs, imageability mean scores for abstract nouns and verbs are relatively low, suggesting semantic richness of concrete words compared to abstract words. Furthermore, mean scores of age of acquisition of abstract nouns and verbs are relatively higher than those of concrete words, indicating the abstract words are learned at a later age than concrete words. Finally, Familiarity scores showed similar values across categories. Table 8 demonstrates this comparison.

Table 8

Means and comparisons between ratings for abstract and concrete words.

	Abstract nouns	Concrete nouns	Abstract verbs	Concrete verbs
Imageability	4.33	6.10	5.20	5.93
Age of acquisition	5.05	3.63	4.65	3.91
Familiarity	3.55	3.71	3.97	3.96

A t-test was carried out comparing between word categories for each variable. In the age of acquisition tasks, results showed a significant difference between ratings for nouns and verbs ($p=0.002$), and nouns and adjectives ($p=0.000$), however no difference was found for verbs and adjectives ($p>0.05$). For Familiarity, a significant difference was found between verbs and adjectives ($p=0.021$), however no significant difference was found for nouns and

adjectives ($p>0.05$). For Imageability, no significant difference was found between nouns and verbs ($p>0.05$), verbs and adjectives ($p>0.05$), or nouns and adjectives ($p>0.05$).

Discussion

The present study was carried out to establish a normative database for abstract nouns, verbs and adjectives based on data obtained from healthy Arabic speakers. Norms for imageability, age of acquisition, and familiarity were established for a set of abstract concepts (165 nouns, 56 verbs, 109 adjectives). The database includes linguistic intrinsic features, such as syllable length and phoneme length. It also includes orthographic frequency values (extracted from AraLex; Boudelaa and Marslen-Wilson, 2010). To the best of our knowledge, this normative database is one of the few studies that have established norms for abstract words, as the vast majority of published studies to date are based on concrete words, and mostly nouns. Examples include English (Cycowicz, Friedman, Rothstein, & Snodgrass, 1997), Dutch (Shao, Roelofs, & Meyer, 2014), French (Bonin, Peereman, Malardier, Mèot, & Chalard, 2003), and Italian (Barca, Burani, & Arduino, 2002). It is also the first database of its kind for the Arabic language. The stimuli for the current database were developed to accommodate the demand for purposely-developed normative databases for both research and clinical fields. Linguistic and cultural appropriateness is of utmost importance to consider when developing a normative database; precision of cultural context must be maintained to ensure accuracy in data collection, and to cater to specific linguistic and cultural contexts.

The reliability of the normative database can be argued to be of good standard. Cronbach's alpha values were above moderate for all rating scales across the three word categories. The validity of the collected data can also be considered unproblematic. All correlations were in the predicted direction, lacking anomalies. This lends credibility to the data obtained.

The imageability, age of acquisition and familiarity ratings are of paramount importance to research on the lexical processing of Arabic. Previous research on Arabic lexical retrieval reported these factors to be significant determinants of successful retrieval. Khwaileh, Body and Herbert (2014) found that imageability and age of acquisition are the only two significant predictors in the retrieval of 186 Levantine Arabic nouns. They also report the significance of name agreement; however, this is irrelevant to the current paper, as we did not use pictorial stimuli. Furthermore, Boukadi, Zouaidi, and Wilson, (2016) report that familiarity was one of the significant predictors of 348 Tunisian Arabic nouns. In a more recent study on Gulf Arabic, Khwaileh et al. (2018) report that all three variables (familiarity, age of acquisition and imageability) were significant predictors of successful retrieval of 319 concrete nouns and 141 concrete verbs. All these studies were carried out with healthy participants. Data from atypical Arabic lexical processing is scarce. Only one study on Arabic lexical retrieval following aphasia reported that age of acquisition and imageability were the only two significant predictors of successful lexical retrieval in three patients (Khwaileh, Body, and Herbert, 2017). The results reported in these studies give the current database more warrant and need in the Arabic-speaking context, as researchers into typical and atypical language processing would need to control for key psycholinguistic factors. Since age of acquisition, imageability and familiarity have been found to have a robust effect on lexical processing, it is important to develop databases for abstract words with norms for these factors' ratings.

Cross-linguistically, imageability, age of acquisition and familiarity were reported to be crucial to lexical processing. Previous literature demonstrates that imageability has a robust effect on lexical processing (e.g. English: Barry et al., 1997; Gilhooly and Logie, 1980; French: Bonin et al., 2003). The importance of imageability in lexical processing can be understood under Plaut and Shallice's (1993) proposal, which states that words with higher imageability

have richer semantic representations, making them faster to process. An alternative interpretation was proposed by Paivio (1991), who postulated that words with higher imageability are coded using both a verbal and a non-verbal code and are faster to retrieve than words with low imageability which are coded using the verbal code only.

Age of acquisition has also been reported to be important for lexical processing in other languages (Belgian Dutch: Severens et al. 2005; English: Barry et al., 1997; Brysbaert, 1996; Carroll and White, 1973; Gilhooly and Gilhooly, 1979; Lachman et al., 1974; French: Bonin et al., 2002 and 2003; Icelandic: Pind and Tryggvadottir, 2002). This effect can be understood within the 'phonological completeness hypothesis' proposed by Brown and Watson (1987), in which they assume that early acquired words have more unitary phonological representations than words acquired at a later age. This is attributed to the frequency factor i.e. early acquired words are more frequent than late acquired ones (Ellis and Lambon-Ralph, 2000; Morrison et al., 1992; Morrison and Ellis, 1995). Alternatively, the effect of age of acquisition may reflect the fact that early acquired words tend to be highly imageable, highly frequent, short, highly familiar and concrete (Nickels, 1997), and are therefore more accessible and faster to retrieve.

Familiarity was also found to be important to lexical processing in languages other than Arabic (e.g. Russian: Akinina et al., 2014; Italian: Barca, Burani, & Arduino, 2002). The interpretation of the familiarity impact on lexical processing has been a matter of debate among scholars. Some studies interpret familiarity ratings as a measure of exposure frequency; others view it as an underlying effect of frequency that influences perception (Segui et al. 1982; Dupoux & Mehler 1990; Marslen-Wilson 1990). In spite of this, there are studies that advocate the use of familiarity acquired through ratings as a better predictor of word processing than frequency (Gernsbacher1984; Gordon 1985; Kreuz 1987; Nusbaum et al. 1984). Tanaka-Ishii & Terada (2011) maintain that while words with high familiarity are

not necessarily frequent, words with high frequency are necessarily familiar. Their findings also suggest that familiarity ratings highly correlated to those of spoken rather than written language, which is in support of the assumption that familiarity may be an alternative measure of spoken frequency.

While the above discussion highlights the importance of the current database, it is worth mentioning that the current database has its limitations and presents issues that are worth discussing. Firstly, there is variability in the internal consistency of rating scales for different word categories. The results yielded by Cronbach's alpha can be explained by the context dependency of verbs and adjectives. The internal consistency of the ratings was highest in nouns, then in verbs, and then in adjectives. Nouns tend to be more independent of context when retrieved than do verbs or adjectives. Verbs and adjectives co-occur with nouns and hence tend to create a variability of rating responses among participants depending on the context imaged by the participant when confronted with the verb or adjective in question. The results shown in Table 2 above support this argument. Participants rated abstract adjectives to be the highest imageable items, followed by abstract verbs, and then abstract nouns.

Furthermore, participants rated abstract verbs and adjectives to be the earliest acquired, followed by abstract nouns. This is in harmony with their ratings of word familiarity, which was highest for abstract verbs, followed by adjectives and then abstract nouns. This can be understood under the assumption that words acquired early in life tend to have higher familiarity ratings. This assumption is supported by the significant correlations between familiarity and age of acquisition demonstrated in Table 3 above.

Another limitation this database presents is the small number of abstract verbs, which is due to having depended more on dialectal Arabic than Modern Standard Arabic as a source of stimuli selection. Additionally, because we restricted our selection to the ones most

frequent in the vernaculars, we ended up with a rather smaller number of abstract verbs. This warrants the development of larger databases based on Modern Standard Arabic, which would include larger numbers of abstract verbs.

Nevertheless, the current database for abstract words contributes to psycholinguistic research and experiments involving linguistic material for the Arabic language. It enables researchers to control the experimental situation by matching (abstract) words across variables in experimental studies. This, in turn, enables investigators to draw accurate conclusions that are not biased by idiosyncratic choice of words. Furthermore, it forms a basis from which clinicians can select stimuli for word tests such as lexical judgement tasks, reading, repetition, and other tasks involving abstract concepts. Patients with word finding difficulties undergo clinical assessment as part of their screening, involving word production and comprehension tasks. Assessment developers and clinicians control for psycholinguistic factors to ensure accurate diagnosis unbiased by word properties. To enable matching word sets for these factors, clinicians and researchers make choice decisions based on normative databases. The current normative database is available for the use of clinicians and researchers in the Arabic-speaking world, and can be downloaded from http://qufaculty.qu.edu.qa/tariq-khwaileh/download-center/.

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Appendix A: Norms for nouns, verbs, and adjectives.

NOUNS

	Word			Intrinsic features							Normative data					
Item	English	Form in S	Target	matical Ge	Animacy	Rationality	tial Phone	llable Len	oneme Len	Form Fre	Age of Acquisition		Imageability		Word Familiarity	
											Mean	SD	Mean	SD	Mean	SD
1	Acceptance	قَبول	قَبول	M	NA	NA	M	2	5	29.91	5.56	1.39	4.62	2.45	3.28	1.40
2	Admiration	إعجاب	إعجاب	M	NA	NA	M	2	6	1.35	5.69	1.48	4.29	2.52	3.30	1.51
3	Age	عمر	عمر	M	NA	NA	M	1	4	128.79	3.56	1.31	4.62	2.49	4.00	1.27
4	Appreciation	تَقدير	تَقدير	M	NA	NA	S	2	6	19.04	5.49	1.47	4.00	2.60	3.58	1.20
5	Area	مَنطِقَة	مَنطِقَة	F	NA	NA	M	3	7	418.27	4.47	1.43	4.33	2.03	3.88	0.99
6	Balance	تَوازن	تَوازن	M	NA	NA	S	3	7	21.95	5.85	1.37	4.88	2.23	4.30	1.15
7	Beauty	جمال	جمال	M	NA	NA	M	2	5	27.39	3.84	1.47	4.21	2.04	3.90	1.51
8	Boosting	استعراض	استعراض	M	NA	NA	M	3	9	0.21	5.27	1.52	4.12	2.28	3.40	1.28
9	Call	نداء	يصوت	F	NA	NA	S	2	5	22.11	4.40	1.14	4.60	1.95	3.60	1.14
10	Challenge	تَحَدي	تَحَدي	M	NA	NA	S	3	6	30.04	4.69	1.35	4.38	2.35	3.48	1.20
11	Cheating	غش	غش	M	NA	NA	M	1	3	5.44	4.09	1.33	4.63	2.48	4.02	1.27
12	Civilization	حضارة	حضارة	F	NA	NA	M	3	6	55.68	6.04	1.19	4.13	2.15	3.34	1.02
13	Color	لون	لون	M	NA	NA	S	1	3	14.54	3.31	1.38	4.12	2.41	4.20	1.17
14	Community	مُجتمع	مُجتمع	M	NA	NA	M	3	8	324.77	5.42	1.43	4.17	2.20	3.86	1.40
15	Composition	لَحن	لَحن	M	NA	NA	S	2	5	4.47	5.36	1.31	4.71	2.34	3.34	1.33
16	Connection	واسطة	واسطة	F	NA	NA	M	2	5	1.87	6.11	1.27	3.46	1.77	3.72	1.18
17	Cooking	طَبْخ	طَبْخ	M	NA	NA	S	1	4	0.23	3.75	1.52	4.73	2.32	4.06	1.42
18	Coping	تأقلُم	تأقلُم	M	NA	NA	S	3	8	2.50	5.44	1.40	4.13	2.58	3.20	1.43
19	Corruption	فَساد	فَساد	M	NA	NA	M	2	5	9.88	5.80	1.27	3.83	2.46	3.28	1.51
20	Coup	انقِلاب	انقِلاب	M	NA	NA	M	3	8	20.05	6.16	1.36	4.10	2.23	2.88	1.25
21	Cruelty	قَسوَة	قَسوَة	F	NA	NA	M	2	5	6.35	5.45	1.37	4.54	2.60	3.20	1.29
22	Culture	ثقافة	ثقافة	F	NA	NA	S	3	6	6.16	5.91	1.36	4.06	2.73	3.76	0.70
23	Cycle	دورة	دورة	F	NA	NA	S	2	4	56.44	5.60	1.14	4.80	2.28	4.20	0.84
24	Day	يوم	يوم	M	NA	NA	M	1	3	680.23	3.60	1.42	4.29	1.99	4.60	1.25
25	Death	موت	موت	M	NA	NA	M	1	3	18.83	3.89	1.27	4.52	2.41	4.10	1.43
26	Debate	مُناظَرة	مُناظَرة	F	NA	NA	M	4	8	29.86	6.29	1.73	4.31	1.85	3.10	1.29
27	Decrease	نزلة	نزلة	F	NA	NA	S	2	5	49.34	4.44	1.64	4.52	2.10	3.06	1.44
28	Dialogue	حِوار	حِوار	M	NA	NA	M	2	5	171.08	5.29	1.46	4.98	2.21	3.20	1.36
29	Direction	توجّه	توجّه	M	NA	NA	S	3	7	53.58	5.84	1.58	4.10	2.30	2.68	1.30
30	Discussion	نِقاش	نِقاش	M	NA	NA	S	2	5	13.78	5.40	1.29	4.58	2.48	3.58	1.49
31	Distinction	تَميز	تَميز	M	NA	NA	S	2	6	29.91	5.40	1.40	4.06	2.29	3.16	1.36
32	Division	انقِسام	انقِسام	M	NA	NA	M	3	8	0.42	5.67	1.40	4.46	2.32	2.72	1.43
33	Effort	جُهْدْ	جُهْدْ	M	NA	NA	M	1	4	30.82	5.22	1.34	4.31	2.16	3.36	1.31
34	Embassy	سَفارَة	سَفارَة	F	NA	NA	S	3	6	87.68	5.84	1.37	4.69	2.39	3.38	1.36
35	Employment	عَمالَة	عَمالَة	F	NA	NA	M	3	6	48.82	5.91	1.33	4.62	2.19	3.46	1.43
36	Engineering	هندسَة	هندسَة	F	NA	NA	M	3	7	24.29	5.82	1.68	4.08	2.58	3.50	1.29
37	Enlightment	إهْداية	إهْداية	F	NA	NA	M	3	6	0.91	4.95	1.40	4.27	2.16	3.24	1.37
38	Enthusiasm	حَمَاس	حَمَاس	M	NA	NA	M	2	5	7.13	5.40	1.51	4.48	2.47	3.52	1.24
39	Envy	حَسَد	حَسَد	M	NA	NA	M	2	5	2.39	5.27	1.07	3.79	1.98	3.94	1.00
40	Exam	امتحان	امتحان	M	NA	NA	M	3	8	9.02	3.91	1.55	4.42	2.40	4.38	1.32
41	Faith	إيمان	إيمان	M	NA	NA	M	2	5	7.46	4.45	1.60	4.40	2.15	3.90	1.17
42	Fatigue	تَعَب	تَعَب	M	NA	NA	S	2	5	2.16	4.53	1.46	4.21	2.36	4.06	1.40
43	Fear	خُوف	خُوف	M	NA	NA	M	1	3	16.23	3.82	1.55	4.65	2.53	3.52	1.30
44	Flying	طيران	طيران	M	NA	NA	S	3	7	39.17	3.93	1.29	4.92	2.51	3.50	1.54
45	Forgery	تزوير	تزوير	M	NA	NA	S	2	6	7.33	5.75	1.37	4.40	2.25	2.92	1.37
46	Formality	رسمية	رسمية	F	NA	NA	M	3	7	136.86	5.95	1.40	4.25	2.47	3.26	1.47
47	Fortune	رزْق	رزْق	M	NA	NA	M	1	4	31.18	5.22	1.54	4.73	2.22	3.80	1.60
48	Foundation	أساس	أساس	M	NA	NA	M	2	5	96.88	5.25	1.37	4.52	2.33	3.44	1.04
49	Friendship	صداقة	صداقة	F	NA	NA	S	3	6	18.80	4.29	1.45	4.98	2.48	4.14	1.11
50	Good	خير	خير	M	NA	NA	M	1	3	35.16	4.29	1.40	4.35	2.25	4.18	1.28
51	Government	إحَكومَة	حكومة	F	NA	NA	M	3	6	956.86	5.47	1.80	4.52	1.94	3.62	1.44
52	Greeting	تحيّة	تحيّة	F	NA	NA	S	3	6	20.62	3.58	1.41	4.71	1.86	3.64	1.36
53	Group	مجموعة	مجموعة	F	NA	NA	M	3	7	167.60	4.64	1.53	4.54	2.47	3.70	1.36
54	Guess	ظَن	ظَن	M	NA	NA	S	1	3	6.79	5.33	1.30	3.54	2.45	3.28	1.31
55	Habit	عادَة	عادَة	F	NA	NA	M	2	4	6.16	5.15	1.58	4.23	2.52	3.62	1.22
56	Heresy	بِدْعَة	بِدْعَة	F	NA	NA	M	2	5	1.01	5.73	1.40	3.75	2.54	3.24	1.39
57	Hope	أمَل	أمَل	M	NA	NA	M	2	5	44.81	5.29	1.44	4.21	2.38	3.58	1.43
58	Hopelessness	يَأس	يَأس	M	NA	NA	M	1	4	2.60	6.04	1.71	4.21	2.50	2.92	1.46
59	Hostility	عِداء	عِداء	F	NA	NA	M	2	5	19.71	5.73	1.49	4.31	2.48	2.66	1.36
60	umanitarianisr	انسانية	انسانية	F	NA	NA	M	4	9	85.62	6.20	1.18	4.33	2.21	3.42	1.00

61	Hunger	جوع	يوع	M	NA	NA	M	1	3	-	2.78	1.46	4.04	0.80	4.36	1.26
62	Hygiene	نظافة	نظافة	F	NA	NA	S	3	6	8.56	3.40	1.50	4.31	2.39	4.22	1.16
63	Idea	فكرة	فكرة	F	NA	NA	M	2	5	29.62	4.45	1.53	4.52	2.23	4.10	1.36
64	Idiocy	بَلاهة	بَلاهة	F	NA	NA	M	3	6	0.31	4.93	1.50	4.58	2.00	3.12	1.54
65	Illusion	ظلال	ظلال	M	NA	NA	S	2	5	0.47	4.67	1.71	4.27	2.51	3.38	1.63
66	Imitation	تقليد	إمَّعيَّة	F	NA	NA	M	3	7	9.91	4.77	1.50	3.79	2.42	2.32	1.41
67	Immigration	هجْرة	هِجْرة	F	NA	NA	M	2	5	37.61	5.04	1.37	4.44	2.21	3.02	1.45
68	Industry	صناعة	صناعة	F	NA	NA	S	3	6	127.26	5.64	1.51	4.42	2.55	3.46	1.39
69	Injustice	ظِلْم	ظِلْم	M	NA	NA	S	1	4	18.23	5.29	1.46	4.21	2.60	3.50	1.35
70	Intention	نيّة	نيّة	F	NA	NA	S	2	4	15.50	5.40	1.41	3.77	1.46	3.60	1.11
71	Job	وظيفة	وظيفة	F	NA	NA	M	3	6	13.99	4.95	1.61	4.17	2.48	4.20	1.50
72	Journey	رِحلَة	رِحلَة	F	NA	NA	S	2	5	35.79	3.56	1.30	4.08	2.32	3.38	1.17
73	Justice	عدالة	عدالة	F	NA	NA	M	3	6	7.54	5.75	1.64	4.15	2.59	3.26	1.44
74	Kinship	قَرابَة	قَرابَة	F	NA	NA	M	3	6	2.42	4.76	1.48	4.04	2.50	3.34	1.39
75	Knowledge	مَعْرِفَة	مَعْرِفَة	F	NA	NA	M	3	7	58.21	5.73	1.31	3.83	2.53	3.62	1.40
76	Language	لُغة	لُغة	F	NA	NA	S	2	4	139.30	4.37	1.55	4.44	2.15	3.64	1.25
77	Length	طول	طول	M	NA	NA	S	1	3	43.04	3.84	1.41	4.38	2.29	3.94	1.44
78	Liberty	حرِّيَّة	حرِّيَّة	F	NA	NA	M	3	6	93.55	5.73	1.48	4.77	1.62	3.22	1.15
79	Life	حَياة	حَياة	F	NA	NA	M	2	4	113.97	4.51	1.74	4.44	2.32	3.98	1.28
80	Literature	أدب	أدب	M	NA	NA	M	2	5	46.11	4.42	1.43	4.54	1.13	3.84	1.22
81	Loss	ضَياع	ضَياع	M	NA	NA	S	2	5	4.50	4.67	1.59	3.27	2.35	2.80	1.34
82	Loss	خَسارة	خَسارة	F	NA	NA	M	3	6	20.52	5.09	1.45	4.50	2.30	3.68	1.31
83	Luck	حَظ	حَظ	M	NA	NA	M	1	3	8.58	4.58	1.39	4.25	1.63	3.74	0.91
84	Mastering	إتقان	إتقان	M	NA	NA	M	2	6	1.46	6.04	1.34	4.02	2.58	3.26	1.17
85	Media	إعلام	إعلام	M	NA	NA	M	2	6	172.80	5.53	1.41	4.75	1.45	3.70	1.33
86	Memory	ذكرى	ذكرى	F	NA	NA	S	2	5	6.35	5.22	1.64	4.48	2.45	3.72	1.19
87	Mercy	رَحمة	رَحمة	F	NA	NA	S	2	5	7.85	4.40	1.49	4.38	2.48	3.74	1.22
88	Mind	عَقْل	عَقْل	M	NA	NA	M	1	4	66.76	3.93	1.38	3.77	1.81	4.14	1.47
89	Minute	دقِيقَة	دقِيقَة	F	NA	NA	S	3	6	40.73	3.91	1.51	4.04	2.29	4.54	1.42
90	Multiplicity	إتِّعدُّد	إتِّعدُّد	M	NA	NA	S	3	7	4.97	5.13	1.50	4.00	2.39	3.00	1.38
91	Municipality	بَلَدِيَّة	بَلَدِيَّة	F	NA	NA	M	4	8	38.60	5.18	1.47	4.33	2.24	3.58	1.26
92	Nation	أُمّة	أُمّة	F	NA	NA	M	2	4	17.01	5.93	1.39	4.17	2.46	3.62	1.35
93	Negativity	سَلبيَّة	سَلبيَّة	F	NA	NA	S	3	7	35.40	6.18	1.47	3.88	2.38	3.36	1.29
94	Obedience	طاعَة	طاعَة	F	NA	NA	M	2	4	2.24	4.42	1.53	4.60	2.26	3.60	1.44
95	Opposition	معارضة	معارضة	F	NA	NA	M	4	8	291.43	6.56	1.21	4.19	1.03	2.96	1.52
96	Organization	مُنَظَّمَة	مُنَظَّمَة	F	NA	NA	M	4	8	69.60	6.27	1.71	3.88	2.51	3.18	1.57
97	Pain	ألم	وَجَع	M	NA	NA	M	2	5	23.93	3.44	1.55	4.63	2.26	3.78	1.35
98	Participation	إمشارَكَة	إمشارَكَة	F	NA	NA	M	4	8	9.78	4.82	1.43	4.58	1.32	3.40	1.51
99	eceOfInformati	معلومَة	معلومَة	F	NA	NA	M	3	7	7.23	4.91	1.62	4.23	2.20	4.08	1.49
100	Plan	خِطَة	خِطَة	F	I	IR	M	2	4	19.87	5.02	1.59	4.96	2.34	3.44	1.23
101	Positivity	ايجابيَّة	ايجابيَّة	F	NA	NA	M	4	8	7.20	5.84	1.58	4.44	1.66	3.84	1.40
102	Pride	فَخر	فَخر	M	NA	NA	M	2	4	2.29	5.20	1.25	4.27	2.60	3.50	1.34
103	Priority	أوْلَوِيَّة	أوْلَوِيَّة	F	NA	NA	M	4	9	13.26	6.16	1.37	3.85	2.39	3.56	1.41
104	Profession	مِهْنَة	مِهْنَة	F	NA	NA	M	2	5	14.46	5.45	1.54	4.35	2.50	3.56	1.35
105	Profit	رِبْح	رِبْح	M	NA	NA	S	1	4	5.93	5.00	1.48	4.46	2.32	3.38	1.37
106	Racism	عنصرية	عنصرية	F	NA	NA	M	4	9	6.89	6.25	1.47	4.27	2.61	3.48	1.46
107	Reformation	إصلاح	إصلاح	M	NA	NA	M	2	6	-	5.71	1.91	4.13	2.36	3.26	1.53
108	Rejection	رَفْض	رَفْض	M	NA	NA	S	1	4	23.20	4.49	1.38	4.31	2.32	3.46	1.37
109	Resilience	هِمّة	هِمّة	F	NA	NA	M	2	4	1.87	5.53	1.74	3.92	1.03	3.36	1.40
110	Revolution	ثورة	ثورة	F	NA	NA	S	2	5	63.64	5.71	1.56	4.54	2.34	3.26	1.30
111	Reward	مُكافَأة	مُكافَأة	F	NA	NA	M	4	8	9.94	4.75	1.45	4.71	2.41	3.56	1.53
112	Rhythm	ايقاع	ايقاع	M	NA	NA	M	2	5	0.39	5.42	1.64	4.40	2.57	2.92	1.32
113	Right	حق	حق	M	NA	NA	M	1	3	114.23	4.07	1.55	4.31	2.44	3.74	1.34
114	Secularism	علمانيّة	علمانيّة	F	NA	NA	M	4	9	13.58	6.76	1.59	3.62	2.22	2.76	1.35
115	Segmentation	تَقسيم	تَقسيم	M	NA	NA	S	2	6	20.75	5.07	1.36	4.88	2.20	3.08	1.41
116	Size	حجْم	حجْم	M	NA	NA	M	1	4	27.07	4.62	1.40	4.27	2.23	3.42	1.06
117	Smell	ريحَة	ريحَة	F	NA	NA	S	2	4	2.31	3.29	1.33	4.62	2.42	4.34	1.13
118	Sound	صوت	صوت	M	NA	NA	S	1	3	29.05	3.15	1.33	4.63	1.29	4.26	1.41
119	Strength	قوة	قُوَّة	F	NA	NA	M	2	4	172.52	3.56	1.42	4.73	2.52	3.82	1.14
120	Stubbornness	إعناد	إعناد	M	NA	NA	M	2	6	1.82	4.78	1.45	4.23	2.22	4.04	1.36

121	Target	هَدَف	هَدَف	M	NA	NA	M	2	5	128.33	4.19	1.38	4.87	2.46	3.60	1.20
122	Taste	طَعَم	طَعَم	M	NA	NA	S	2	5	0.78	3.33	1.30	4.56	2.48	4.10	1.42
123	Terrorism	إرهاب	إرهاب	M	NA	NA	M	2	6	-	6.20	1.36	4.46	2.44	3.32	1.26
124	Test	ابتلاء	ابتلاء	F	NA	NA	M	3	8	0.62	5.71	1.64	3.87	2.28	3.62	1.42
125	Tone	نَغمَة	نَغمَة	F	NA	NA	S	3	6	1.01	5.23	1.35	4.60	2.48	3.32	1.16
126	Traditions	تِقاليد	تِقاليد	M	NA	NA	S	3	7	10.82	5.56	1.47	3.92	2.39	3.96	1.23
127	Treatment	مُعامَلة	مُعامَلة	F	NA	NA	M	3	7	14.10	5.75	1.53	4.42	2.16	3.60	1.41
128	Tribe	قَبيلة	قَبيلة	F	NA	NA	M	3	6	7.83	4.75	1.52	4.19	0.80	3.60	1.33
129	Trust	ثقة	ثقة	F	NA	NA	S	2	4	42.97	5.22	1.59	4.31	2.49	3.64	1.28
130	Truth	حق	صِدْج	M	NA	NA	S	1	3	211.87	3.93	1.71	3.47	2.25	3.92	1.53
131	Vision	رُؤيَة	رُؤيَة	F	NA	NA	S	2	5	47.65	4.16	1.44	4.33	2.39	3.58	1.39
132	Warning	إنذار	إنذار	M	NA	NA	M	2	6	-	5.20	1.45	4.79	2.34	3.44	1.23
133	Wasteful	اسراف	اسراف	M	NA	NA	M	2	6	0.68	5.20	1.51	4.58	2.20	3.76	1.53
134	Weakness	ظعف	ظعف	M	NA	NA	S	1	4	48.04	4.80	1.70	4.27	2.44	3.40	0.77
135	Week	أسبوع	أسبوع	M	NA	NA	M	2	6	107.96	3.93	1.70	4.71	2.20	4.60	1.27
136	West	غرب	غرب	M	NA	NA	M	1	3	60.26	6.40	0.89	3.80	2.39	3.40	0.89
137	Win	فوز	فوز	M	NA	NA	M	1	3	42.78	3.98	1.70	4.92	2.47	3.54	1.34
142	Opposer	معارض	إمْعَارظ	M	A	R	M	3	7	24.11	5.06	1.28	4.16	2.49	3.39	1.46
143	Supporter	مؤيد	مُؤَيِّد	M	A	R	M	3	7	6.22	5.04	1.30	4.40	2.39	3.30	1.35
144	Route	طريق	طِرِيج	M	I	IR	S	2	5	311.74	3.24	1.30	4.96	1.39	4.38	0.96
145	Conference	مؤتمر	مُؤَتَمِر	M	NA	NA	M	3	8	241.33	6.09	1.30	4.92	2.22	3.30	1.42
146	War	حرب	حَرْب	M	NA	NA	M	1	4	239.77	4.84	1.31	4.12	2.17	3.52	1.35
147	Credit balance	رصيد	رَصِيد	M	NA	NA	S	2	5	19.14	5.45	1.45	4.17	2.09	2.98	1.51
148	Advertisement	أعلان	اعلان	F	NA	NA	M	2	6	0.55	5.45	1.36	4.25	2.15	3.84	1.21
150	Certificate	شهادة	شَهادَة	F	I	IR	S	3	6	37.97	4.27	1.35	4.48	1.93	3.70	1.25
151	Electricity	كَهْرباء	كَهْرِبا	F	NA	NA	M	3	7	21.12	4.13	1.45	4.27	2.15	4.24	1.00
152	Rotation	تدوير	تدوير	M	NA	NA	S	2	6	1.22	5.64	1.38	4.63	2.23	3.04	1.51
154	Energy	طاقة	طاقَة	F	NA	NA	S	2	4	30.27	5.44	1.52	4.17	2.18	3.56	1.57
155	Evil	شر	شر	M	NA	NA	S	1	3	7.20	4.62	1.26	4.44	2.58	3.78	1.44
156	Frequency	تردد	تَرَدُّدْ	M	NA	NA	S	3	7	33.37	5.91	1.54	4.60	2.37	3.28	1.34
157	Soul	روح	روح	M	NA	NA	S	1	3	47.44	4.56	1.44	3.83	2.42	3.58	1.47
158	Tilt	إمالة	مَيَلان	M	I	IR	M	2	8	-	4.98	1.67	4.13	0.91	3.12	1.38
159	Weight	وزن	وَزِن	M	NA	NA	M	1	4	35.55	4.33	1.36	4.81	2.33	3.94	1.25
160	Acid	حمض	حمض	M	I	IR	M	1	4	0.21	5.73	1.57	4.25	2.43	2.80	1.56
161	Acoustics	صُوتيات	صُوتيات	F	NA	NA	S	3	7	0.42	5.76	1.37	3.92	2.40	2.66	1.39
162	Chemical	كيماوي	كيماوي	M	I	IR	M	3	6	4.11	6.29	1.28	4.21	2.46	2.96	1.47
163	Gene	جين	جِين	M	I	IR	M	1	3	3.10	5.85	1.47	3.23	2.32	2.18	1.47
164	Hormones	هرمون	هِرمون	M	NA	NA	M	2	6	0.75	6.38	1.46	3.71	2.63	2.96	1.54
165	Mineral	معدن	مَعدِن	M	NA	NA	M	2	6	18.73	5.35	1.34	4.79	2.39	3.00	1.49
166	Philosophy	فلسفة	فَلسِفة	F	NA	NA	M	3	7	35.79	6.20	1.16	3.98	2.59	3.14	1.42
167	Physics	فيزياء	فيزِيا	F	NA	NA	M	2	5	6.89	6.18	1.26	4.52	1.22	3.16	1.62
168	Vitamin	فيتامين	فيتامِين	M	NA	NA	M	3	7	1.27	5.53	1.24	4.67	2.28	3.86	1.27
169	God	الله	إله	M	NA	NA	S	2	4	2.18	2.93	1.61	3.75	2.65	4.40	1.04
170	Hell	جهنم	جهنم	M	NA	NA	M	3	7	3.64	3.85	1.46	4.58	1.97	3.92	1.20
171	Islam	إسلام	إسلام	M	NA	NA	M	2	6	-	3.73	1.48	4.08	2.30	4.32	1.10
172	Magic	سحر	سحر	M	NA	NA	S	2	5	7.78	4.87	1.41	4.81	2.30	3.28	1.46
173	Heaven	جنّة	جَنَّة	F	NA	NA	M	2	4	9.78	3.69	1.42	4.27	2.49	4.18	1.18
174	Sin	مَعْصِيَة	مَعْصِيَة	F	NA	NA	M	3	7	0.55	5.00	1.54	4.08	2.56	3.48	1.29

VERBS

	Word			Intrinsic features						Normative data					
Item	English	Form in S	Target	matical G	Animacy	eversivene	llable Leng	oneme Len	Form Fre	Age of Acquisition		Imageability		Word Familiarity	
										Mean	SD	Mean	SD	Mean	SD
1	Accuse	يتّهم	يتّهم	M	A	I	3	7	12.9	5.10	1.24	4.88	2.24	3.47	1.35
2	Betray	يخون	يخون	M	A	I	2	5	1.14	5.68	1.29	5.10	2.25	4.02	1.17
3	ongratulat	يبارك	يبارك	M	A	I	3	7	1.56	4.74	1.35	5.43	2.09	3.83	1.23
4	Convince	يقنع	يقنع	M	A	I	2	6	4.24	5.34	1.42	4.67	2.51	4.15	1.22
5	Defeat	يهزم	يقهر	M	A	I	2	6	2.96	4.94	1.37	5.31	2.21	3.33	1.40
6	Do	يفعل	يسوي	M	A	I	3	6	35.06	3.85	1.56	5.25	2.27	4.09	1.22
7	Exonerate	يبرّئ	يبرّئ	M	A	I	3	7	0.55	5.76	1.26	4.76	2.38	4.72	0.74
8	Forgive	يسامح	يسامح	M	A	I	3	7	0.21	4.35	1.40	5.24	2.32	3.78	1.22
9	dResponsi	يحاسب	يحاسب	M	A	I	3	7	2.89	5.17	1.31	5.20	2.27	4.20	1.09
10	mplement	ينفذ	ينفذ	M	A	I	3	7	19.79	3.49	1.48	4.82	2.35	4.33	1.03
11	Initiate	يبادر	يبادر	M	A	I	3	7	5.25	5.98	1.22	4.53	2.43	3.57	1.30
12	Invite	يدعو	يدعو	M	A	I	2	5	62.45	4.62	1.34	5.28	2.19	3.98	1.32
13	Lie	يكذب	يكذب	M	A	I	2	6	3.56	3.66	1.28	5.22	2.23	3.96	1.26
14	Market	يسوّق	يسوّق	M	A	I	3	7	1.82	4.04	1.50	6.26	1.72	3.35	1.27
15	Monitor	يراقب	يراقب	M	A	I	3	7	4.79	4.85	1.35	5.92	1.66	4.22	1.14
16	Nurture	يرعى	يرعى	M	A	I	2	5	3.56	4.19	1.23	5.67	2.07	3.85	1.27
17	Occupy	يحتل	يحتل	M	A	I	2	6	16.46	5.49	1.39	4.76	2.32	4.43	0.92
18	Order	يطلب	يطلب	M	A	I	2	6	38.96	3.94	1.34	5.37	2.09	4.02	1.29
19	Plan	يخطط	يخطط	M	A	I	3	7	7.26	5.49	1.37	5.41	2.09	3.85	1.31
20	Prevent	يمنع	يمنع	M	A	I	2	6	34.33	4.70	1.39	5.47	2.14	4.32	1.23
21	Punish	يعاقب	يعاقب	M	A	I	3	7	6.87	3.92	1.29	5.69	1.94	4.24	1.09
22	Resist	يقاوم	يقاوم	M	A	I	3	7	3.98	5.22	1.28	5.33	2.21	3.80	1.11
23	unAMachin	يشغّل	يشغّل	M	A	I	3	7	21.43	3.35	1.60	5.83	1.96	4.34	1.18
25	Thank	يشكر	يشكر	M	A	I	2	6	2.03	3.96	1.33	5.92	1.89	4.53	0.88
26	Wish	يتمنى	يتمنى	M	A	I	3	7	4.14	4.40	1.38	5.02	2.23	4.02	1.22
27	Believe	يصدق	يصدق	M	A	I	3	7	12.07	4.02	1.38	5.08	2.41	4.26	1.03
28	BelieveIn	يؤمن	يؤمن	M	A	I	2	6	28.06	5.04	1.44	4.64	2.44	3.93	1.28
29	BeRight	يصيب	يصيب	M	A	I	2	5	8.61	4.91	1.33	5.12	2.29	3.24	1.31
30	Care	يهتم	يهتم	M	A	I	2	6	16.13	4.98	1.28	5.02	2.39	4.19	1.20
31	Cheerup	يبهج	يبهج	M	A	I	2	6	0.21	5.53	1.36	4.71	2.35	3.57	1.27
32	Compete	يتنافس	يتنافس	M	A	I	3	8	3.56	4.98	1.41	4.94	2.26	3.61	1.36
33	Compose	يؤلف	يؤلف	M	A	I	3	7	2.96	5.36	1.45	5.00	2.23	4.28	1.06
34	ontemplat	يتأمل	يتأمل	M	A	I	3	8	3.38	5.15	1.32	5.57	2.04	3.98	1.17
35	Control	يتحكم	يتحكم	M	A	I	3	8	5.31	5.30	1.36	5.12	2.32	3.71	1.31
36	Control	يسيطر	يسيطر	M	A	I	3	8	24.92	5.26	1.41	4.92	2.42	3.87	1.24
37	Create	يبدع	يبدع	M	A	I	2	6	1.48	5.57	1.33	4.76	2.37	3.50	1.39
38	Decide	يقرر	يقرر	M	A	I	3	7	18.88	5.09	1.32	5.08	2.34	4.15	1.06
39	Die	يموت	يموت	M	A	I	2	5	11.70	4.28	1.64	5.73	2.00	3.80	1.23
40	Dream	يحلم	يحلم	M	A	I	2	6	9.42	3.91	1.49	5.45	2.06	4.70	0.77
41	Forget	ينسى	ينسى	M	A	I	2	5	6.71	3.81	1.36	5.06	2.33	4.15	1.15
42	Hate	يكره	يكره	M	A	I	2	6	4.42	4.28	1.57	4.84	2.43	4.41	0.94
43	Imagine	يتخيل	يتخيل	M	A	I	3	8	1.90	4.47	1.40	5.06	2.28	3.67	1.28
44	Innovate	يبتكر	يبتكر	M	A	I	3	8	0.99	5.74	1.22	4.88	2.24	3.87	1.22
45	Learn	يتعلم	يتعلم	M	A	I	3	7	7.10	3.85	1.30	5.80	1.97	3.79	1.39
46	Lose	يخسر	يخسر	M	A	I	2	6	7.20	4.06	1.33	5.14	2.34	4.42	1.04
47	Love	يحب	يحب	M	A	I	2	5	17.11	3.77	1.61	5.38	2.28	3.89	1.18
48	Need	يحتاج	يحتاج	M	A	I	2	6	78.29	4.49	1.35	5.22	2.46	3.33	1.40
49	Pretend	يتظاهر	يتظاهر	M	A	I	3	8	1.27	5.66	1.32	4.61	2.50	4.04	1.15
50	ShowOff	شايف نفسه	شايف نفسه	M	A	I			6.71	4.90	1.47	5.41	2.12	3.96	1.23
51	Sin	يكفر	يكفر	M	A	I	2	6	1.20	5.49	1.26	4.54	2.53	3.58	1.42
52	Surrender	يستسلم	يستسلم	M	A	I	3	9	2.99	3.65	1.21	5.27	2.07	3.72	1.28
53	TakePride	يفتخر	يفتخر	M	A	I	3	8	0.99	5.43	1.30	4.84	2.52	4.04	1.18
54	Think	يفكر	يفكر	M	A	I	3	7	22.97	3.98	1.35	5.86	1.67	3.80	1.41
55	Tolerate	يتحمل	يتحمل	M	A	I	3	8	19.82	4.83	1.34	4.96	2.20	3.94	1.28
56	Want	يريد	يبي	M	A	I	2	4	111.03	3.19	1.44	4.86	2.40	4.49	1.03
57	Win	يفوز	يفوز	M	A	I	2	5	12.33	3.72	1.30	5.66	1.97	3.98	1.20
58	Wonder	يتسائل	يتسائل	M	A	I	3	8	0.05	4.85	1.47	5.35	2.30	3.45	1.37

ADJECTIVES

	Word			Intrinsic features					Normative data					
Item	English	Form in S	Target	matical G	tial Phone	llable Len	oneme Len	Form Fre	Age of Acquisition		Imageability		Word Familiarity	
									Mean	SD	Mean	SD	Mean	SD
1	New	جديد	يديد	M	M	2	5	310.2	5.77	1.32	5.42	2.22	4.33	1.17
2	Old	قديم	يديم	M	M	2	5	20.13	4.51	1.27	5.02	2.34	4.41	1.48
3	Black	أسوَد	أسوَد	M	M	2	6	7.8	4.55	1.41	6.04	1.93	4.26	1.22
4	Blue	أزرَق	أزرَق	M	M	2	6	1.92	3.23	1.22	5.78	2.14	4.00	1.17
5	Brown	بُني	بُني	M	M	2	4	43.15	4.68	1.44	5.94	1.98	3.93	1.21
6	Green	أخضَر	أخضَر	M	M	2	6	2.86	5.60	1.37	5.66	2.21	4.00	1.22
7	Maroon	عِنابي	عِنابي	M	M	3	6	0.18	3.21	1.14	6.04	1.94	3.22	1.20
8	Orange	بُرتُقالي	بُرتُقالي	M	M	4	9	0.39	5.15	1.35	5.98	1.93	3.38	1.23
9	Pink	وَردي	وَردي	M	M	2	5	1.43	4.17	1.47	5.98	1.96	3.15	1.18
10	Red	أحمَر	أحمَر	M	M	2	6	4.97	4.63	1.39	5.84	2.04	3.89	1.23
11	Yellow	أصْفَر	أصْفَر	M	M	2	6	1.17	4.66	1.36	5.98	2.03	4.13	1.20
12	Dangerous	خَطِير	خَطِير	M	M	2	5	18.8	4.45	1.24	5.26	2.18	3.17	1.34
13	Difficult	صَعَب	صَعَب	M	S	2	4	24.06	4.47	1.43	5.18	2.46	4.47	1.16
14	Easy	سَهَل	سَهَل	M	S	2	5	14.82	3.87	1.36	5.12	2.35	3.29	1.08
15	Tough	قاس	قَاسِي	M	M	2	4	2.5	5.62	1.33	5.28	2.16	3.66	1.28
16	Big	كبير	تشبير	M	M	1	4	332.96	5.33	1.44	5.50	2.16	3.58	1.51
17	Deep	عَمِيق	عَمِيق	M	M	2	5	16.59	3.04	1.25	5.42	2.15	3.30	1.32
18	Diagonal	قطري	مَايِل	M	M	2	5	2.5	2.91	1.23	5.76	2.01	4.27	1.36
19	Long	طويل	طِويل	M	S	2	5	51.24	5.57	1.23	6.22	1.62	2.44	1.25
20	Oval	بَيضاوي	بَيضاوي	M	M	3	7	0.1	4.89	1.19	5.96	1.83	2.80	1.31
21	Parallel	موازي	مِتْوازي	M	M	3	8	0.26	5.62	1.24	5.36	2.24	3.59	1.45
22	Round	مُسْتَدير	مُسْتَدِير	M	M	3	8	0.26	6.02	1.21	5.96	1.78	3.80	1.45
23	Short	قصير	اِقصَيِّر	M	M	2	5	16.65	3.83	1.27	5.92	1.86	3.70	1.25
24	Small	صغير	صِغير	M	S	1	4	26.68	5.13	1.31	6.02	1.69	4.39	1.03
25	Straight	مُسْتَقيم	مُسْتَقيم	M	M	3	8	1.92	6.15	1.15	4.36	2.36	2.91	1.40
26	treamline	اِنْسِيابي	اِنْسِيابِي	M	M	4	9	0.03	4.30	1.43	6.04	1.64	3.59	1.53
27	Thick	كَثِيف	كَثِيف	M	M	2	5	5.41	5.13	1.36	5.58	2.12	3.36	1.37
28	Thin	رفيع	ارفيع	M	S	2	5	28.82	3.72	1.41	5.20	2.32	3.85	1.35
29	Wide	عريض	عَرِيظ	M	M	2	5	4.66	4.94	1.33	5.26	2.06	3.93	1.34
30	Afraid	خائف	خَايف	M	M	2	5	1.35	4.70	1.45	5.60	2.04	4.39	1.03
31	Aggressive	عدواني	عِدْوَانِي	M	M	3	7	2.11	3.15	1.12	5.14	2.18	3.50	1.29
32	Athletic	رياضي	رِيَاظِي	M	S	3	6	6.79	5.60	1.31	5.78	1.95	4.13	1.17
33	Brave	شُجَاع	شُجَاع	M	S	2	5	2.11	3.45	1.27	5.30	2.33	3.85	1.26
34	Careless	مُهمِل	مُهمِل	M	M	2	6	0.88	5.57	1.42	5.18	2.39	4.13	1.13
35	oward-lik	جبان	خَوَاف	M	M	2	5	1.4	4.66	1.34	5.30	2.22	3.65	1.08
36	Curious	فُضُولي	فُضُولِي	M	M	3	6	0.52	4.66	1.34	4.72	2.40	3.83	1.30
37	Depressing	كَئِيب	كَئِيب	M	S	2	5	0.49	3.60	1.37	5.22	2.09	3.56	1.41
38	Funny	مضحك	اِيظَحَك	M	M	3	7	0.83	3.26	1.33	5.80	1.89	3.54	1.03
39	Guilty	مذنب	مِذْنِب	M	M	2	6	1.43	5.53	1.40	4.68	2.25	3.57	1.39
40	Happy	سعيد	مِسْتَانِس	M	M	3	8	117.64	5.11	1.49	5.94	1.90	4.42	0.99
41	Honest	صَريح	صَرِيح	M	S	2	5	9.88	5.65	1.62	4.76	2.57	3.78	1.35
42	lonourabl	نَزيه	نَزِيه	M	S	2	5	3.56	3.70	1.43	3.66	2.45	3.17	1.36
43	Innocent	بَريء	بَرِيء	M	M	2	5	5.38	4.95	1.32	5.12	2.35	3.76	1.34
44	ntelligent	ذَكي	ذَكِي	M	S	2	4	3.04	3.89	1.40	5.42	2.18	4.30	1.12
45	Just	عادل	عَادِل	M	M	2	5	72.36	3.83	1.34	4.66	2.55	4.00	1.26
46	Kind	كريم	كَرِيم	M	M	2	5	22.03	3.57	1.40	5.16	2.44	3.98	1.24
47	Liar	كَذّاب	كَذّاب	M	M	2	5	2.39	5.66	1.27	4.80	2.55	4.15	1.28
48	Lonely	وَحيد	وَحِيد	M	M	2	5	16.13	5.91	1.15	5.96	1.62	4.32	1.23
49	Loyal	مِخْلِص	مِخْلِص	M	M	2	6	-	4.11	1.35	4.72	2.43	3.28	1.35
50	Malicious	خَبيث	خَبِيث	M	M	2	5	0.91	5.74	1.27	4.56	2.56	4.02	1.48
51	Peaceful	مسالم	اِمْسَالِم	M	M	3	7	0.99	5.91	1.32	4.54	2.52	4.04	1.37
52	Polite	مؤدب	اِمأدَب	M	M	3	7	0.08	5.60	1.42	5.74	1.93	3.83	1.33
53	Popular	محبوب	مَحْبُوب	M	M	2	6	1.66	5.38	1.35	5.20	2.23	3.46	1.36
54	esponsibl	مسؤول	مَسْؤُول	M	M	2	6	103.93	5.23	1.47	4.66	2.45	3.91	1.23
55	Ridiculous	سخيف	مَلغ	M	M	1	4	1.14	5.36	1.22	4.35	2.43	3.22	1.22
56	Sad	محزن	حِزين	M	M	2	5	0.99	5.15	1.33	6.06	1.75	4.04	1.25
57	Satisfied	راض	قَنُوع	M	M	2	5	0.32	3.51	1.53	4.44	2.60	4.33	1.27
58	Sensitive	حَسّاس	حَسّاس	M	M	2	5	2.18	3.83	1.35	4.70	2.54	3.96	1.14
59	Serious	جِدّي	جِدّي	M	M	2	4	15.37	5.51	1.18	4.68	2.42	3.93	1.19
60	Shy	خجول	خَجول	M	M	2	5	0.83	4.98	1.42	5.90	1.81	4.28	1.39

61	Social	اجتماعي	اجْتِمَاعِي	M	M	4	8	21.12	4.21	1.39	5.12	2.13	3.91	1.20
62	pontaneou	عفوي	عَفْوِي	M	M	3	6	0.94	3.49	1.37	4.80	2.48	3.87	1.30
63	Stingy	بخيل	بَخِيل	M	M	2	5	0.29	4.64	1.48	5.22	2.34	3.84	1.29
64	Stubborn	عنيد	عَنِيد	M	M	2	5	1.77	4.91	1.32	5.00	2.42	4.07	1.14
65	Stupid	غبي	غَبِي	M	M	2	4	1.35	4.74	1.52	5.12	2.35	4.07	1.28
66	Thankful	شكور	شَكُور	M	S	2	5	0.36	4.77	1.36	4.24	2.62	3.64	1.40
67	Traitor	خائن	خَايِن	M	M	2	5	2	5.81	1.27	4.80	2.56	3.74	1.40
68	rustworth	أمين	أَمِين	M	M	2	5	77.77	3.48	1.21	4.36	2.70	3.87	1.33
69	nemotion	متبلد	بَلِيد	M	M	2	5	0.03	4.13	1.53	4.36	2.42	4.33	1.37
70	Unjust	ظالم	ظَالِم	M	S	2	5	2.18	4.91	1.32	4.40	2.65	3.53	1.39
71	Violent	عنيف	عَنِيف	M	M	2	5	9.08	3.72	1.34	5.02	2.20	3.58	1.27
72	Wreckless	متهور	مِتْهَوِّر	M	M	3	8	0.6	5.77	1.19	4.88	2.32	3.98	1.15
73	Active	نشيط	نِشِيط	M	S	2	5	2.05	5.28	1.61	5.24	2.12	4.20	1.17
74	utumnLik	خريفي	خَرِيفِي	M	M	3	6	0.08	4.45	1.33	4.58	2.47	3.13	1.49
75	Bitter	مُر	مُر	M	M	1	3	29.83	5.13	1.50	4.88	2.26	3.70	1.27
76	Broken	مَكْسُور	مَكْسُور	M	M	2	6	0.75	4.45	1.46	6.18	1.67	4.02	1.23
77	Clean	طاهر	طاهر	M	S	2	5	14.28	3.98	1.38	4.90	2.30	3.60	1.49
78	Cold	بارد	بَارِد	M	M	2	5	4.27	3.89	1.39	5.96	1.90	4.51	0.93
79	omfortabl	مريح	مُرِيح	M	M	2	5	2.44	4.32	1.38	5.16	2.34	4.24	1.04
80	Complex	معقد	مُعَقَّد	M	M	3	7	3.88	3.57	1.32	4.71	2.31	3.89	1.14
81	oneShape	مخروطي	مَخْرُوطِي	M	M	3	7	0.05	2.89	1.21	5.37	2.05	2.64	1.29
82	ontaminat	ملوث	مُلَوَّث	M	M	3	7	0.7	4.26	1.27	5.18	2.25	3.44	1.30
83	DayLike	نهاري	نَهَارِي	M	S	3	6	0.36	3.68	1.20	4.90	2.45	3.70	1.48
84	Deformed	مشوه	مُشَوَّه	M	M	3	7	0.78	4.15	1.32	5.26	2.18	3.61	1.46
85	Empty	فارغ	فَارِغ	M	M	2	4	2.68	5.64	1.25	5.58	2.03	3.62	0.97
86	Fat	سمين	دُب	M	S	1	3	0.18	4.55	1.41	6.14	1.67	3.09	1.20
87	Fluid	سَلِس	سَلِس	M	S	2	5	0.55	4.32	1.38	4.74	2.34	4.15	1.48
88	Full	ممتلئ	مَلْيَان	M	M	2	6	0.6	5.15	1.23	5.48	2.04	4.37	1.16
89	Garnished	مزخرف	مِزَخْرَف	M	M	3	8	0.16	4.66	1.48	5.54	2.09	3.78	1.35
90	Glass	زجاجي	زُجَاجِي	M	S	3	6	1.01	3.11	1.29	6.12	1.66	4.38	1.33
91	Harmful	مضر	مُظِر	M	M	2	5	1.61	3.51	1.35	4.96	2.31	3.38	1.30
92	Healthy	صحي	صِحِّيّ	M	S	2	4	9.52	2.89	1.14	5.48	2.04	4.46	0.99
93	Heavy	ثقيل	ثِقِيل	M	S	2	5	4.14	4.85	1.43	5.54	2.06	4.27	1.09
94	Hot	ساخن	حَار	M	M	1	3	3.41	5.62	1.35	6.14	1.48	4.44	0.97
95	ntersectin	متقاطع	مِتْقَاطِع	M	M	3	8	0.16	3.32	1.09	4.90	2.31	3.61	1.40
96	Isolated	إنعزالي	إِنْعِزَالِي	M	M	4	9	0.42	4.36	1.43	4.74	2.34	3.78	1.52
97	htWeight	خفيف	خَفِيف	M	M	2	5	4.86	5.62	1.10	5.64	2.03	3.80	1.08
98	Metallic	معدني	مَعْدِنِي	M	M	3	7	1.43	4.94	1.39	5.54	2.28	3.33	1.42
99	NightLike	ليلي	لَيْلِي	M	S	2	5	8.69	3.79	1.28	5.12	2.26	4.28	1.44
100	Plastic	بلاستيكي	إِبْلَاستِيكِي	M	M	3	8	0.18	3.96	1.41	5.52	2.13	3.80	1.23
101	Poisonous	سام	سَام	M	S	1	3		5.07	1.41	4.73	2.40	3.78	1.57
102	Radiant	مشع	مِنْور	M	M	2	6	0.26	4.81	1.36	5.34	2.20	4.09	1.19
103	Rough	خشن	خَشِن	M	M	2	5	0.29	5.47	1.29	5.70	1.99	3.93	1.29
104	Sharp	حاد	حَاد	M	M	1	3	14.1	5.66	1.22	5.80	1.92	4.22	1.39
105	Skinny	ضعيف	اضعِيف	M	S	2	4	0.29	5.45	1.27	6.00	1.78	4.24	1.14
106	Smooth	أملس	أَمْلَس	M	M	2	6	0.34	4.70	1.26	5.52	1.97	3.43	1.36
107	Soft	ناعم	لَيِّن	M	S	2	5	1.14	4.13	1.36	5.78	1.90	3.82	1.26
108	SpringLike	ربيعي	رَبِيعِي	M	S	3	6	0.55	5.35	1.21	5.12	2.33	3.20	1.38
109	Stone	حجري	حَجَرِي	M	M	3	6	0.88	2.91	1.18	5.08	2.23	3.00	1.61
110	Striped	مخطط	مِخَطَّط	M	M	3	7	13.26	4.28	1.34	5.72	2.15	3.91	1.22
111	Strong	قوي	قُوِي	M	M	2	4	58.73	4.26	1.35	5.72	2.14	4.20	1.17
112	ummerLik	صيفي	صِيفِي	M	S	2	4	1.09	4.60	1.45	5.57	2.12	3.78	1.32
113	Unclean	نجس	نَجِس	M	S	2	5	0.03	3.95	1.50	4.65	2.33	3.32	1.54
114	WinterLike	شتوي	شَتْوِي	M	S	2	5	0.47	4.80	1.38	5.72	1.94	3.76	1.23
115	Wooden	خشبي	خَشَبِي	M	S	3	6	1.25	5.30	1.29	6.00	1.78	3.69	1.30
116	Zigzag	متعرج	مِتْعَرِّج	M	M	3	8	0.26	4.40	1.52	5.68	2.01	3.56	1.32
117	High	مرتفع	مِرْتِفِع	M	M	3	8	6.92	3.13	1.33	5.61	2.11	3.96	1.29
118	Low	منخفض	طَامِن	M	S	2	5	5.36	4.83	1.34	3.59	2.38	3.47	1.54
119	Mastered	متقن	مُتْقَن	M	M	2	6	0.68	5.00	1.36	4.50	2.39	3.76	1.48
120	Practical	عملي	عَمَلِي	M	M	3	6	18.26	4.39	1.25	4.74	2.56	3.96	1.30

121	Pure	نقي	نَقِي	M	S	2	4	1.09	4.50	1.38	5.06	2.46	4.16	1.53
122	Beautiful	جميل	جَمِيل	M	M	2	5	44.14	3.00	1.11	6.10	1.58	4.28	1.25
123	Cheap	رخيص	اِرخِيص	M	S	2	5	2.34	6.19	1.27	5.32	2.24	4.40	1.03
124	Expensive	غالي	غالِي	M	M	2	4	47.93	3.74	1.38	5.94	1.86	4.31	1.19
125	oodhearte	طيب	طَيِّب	M	S	2	5	15.27	4.02	1.15	5.06	2.24	3.29	1.05
126	Halal	حَلال	حَلال	M	M	2	5	3.33	4.80	1.47	4.57	2.43	4.02	1.51
127	Holy	مقدّس	مقدّس	M	M	3	7	3.82	5.45	1.45	4.06	2.60	3.04	1.38
128	Normal	طَبيعِي	طَبيعِي	M	S	3	6	30.20	3.87	1.10	4.70	2.48	3.67	1.16
129	Official	رَسْمِي	رَسْمِي	M	S	2	5	3.82	5.15	1.25	5.06	2.33	3.54	1.35
130	Sweet	حِلو	حِلو	M	M	2	4	9.62	5.87	1.26	5.90	1.76	4.74	0.80
131	Taboo	حَرام	حَرام	M	M	2	5	4.6	4	1.66	4.48	2.46	4.26	1.09
132	Useful	مُفيد	مُفيد	M	M	2	5	24.89	3.80	1.49	4.76	2.59	4.30	0.98
133	Fast	سَرِيع	سَرِيع	M	S	2	5	22.71	4.34	1.27	6.30	1.53	3.98	1.33
134	Slow	بَطِيء	بَطِيء	M	M	2	5	2.55	4.74	1.39	5.44	2.20	4.07	1.16