Conversational Mental Verbs in English Song Lyrics: A Corpus-Driven Analysis

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https://doi.org/10.24191/ajue.v17i1.12619

Received: 25 November 2020
Accepted: 25 January 2021
Date Published Online:8 March 2021
Published: 8 March 2021

Abstract: This corpus-driven study explores the linguistics phenomenon of mental verbs in English song lyrics from 1960s until 2000s. This study aims to identify the frequency distributions of lexical verbs, mental verbs, and to analyze the language uses of mental verbs in the Diachronic Corpus of English Song Lyrics (DCOESL). Quantitative and qualitative methods of analysis were applied. First, quantitative data covering frequency distributions of general verbs was produced via LancsBox. Top three mental verbs in song lyrics were selected for analysis and discussion. The frequency distributions of mental verbs and collocations were produced via LancsBox. Collocational patterns were illustrated through collocational graphs constructed via LancsBox. Frequency distributions of mental verbs were compared to reference corpus Contemporary Corpus of American English (COCA) for the purpose of generalizing the findings from this study as representative of English language. The statistical data were submitted for four statistical tests of significance namely Chi-square, Mutual Information, Log-likelihood, and t-score. Second, qualitative data was composed of corpus annotations. Corpus annotations were conducted via CLAWS for assigning part-of-speech C7 tagset to identify verbs. Semantic categories of mental verbs were identified via UCREL Semantic Analysis System (USAS). Findings uncovered significantly high frequencies of mental verbs *know*, *want*, and *love* in English song lyrics through 1960s until 1990s. These three mental verbs possess high inclination to occur alongside personal pronouns *I* and *you*, depict social actions, high predilection for simple present tense, and simple sentence structure. These attributes illuminate that song lyrics emulate spoken English, predominantly the informal conversation register.

Keywords: Corpus Linguistics, Corpus Driven, Computational Corpus Linguistics, Mental Verbs, Song Lyrics.

1. Introduction

This study analysed linguistics incidences of mental verbs in English song lyrics. According to Biber, Conrad and Leech (2002), mental verbs are verbs that refer to internal mental states and activities. In the Corpus of Longman Grammar of Spoken and Written English (LGSWE), the 12 most common

lexical verbs namely *say*, *get*, *go*, *know*, *think*, *see*, *make*, *come*, *take*, *want*, *give*, and *mean* occurs over 1000 times in the corpus. These verbs function to convey what speakers and writers feel or think through the expressions of cognition (*know* and *think*), emotion (*love*), desire (*want*), perception (*see* and *taste*), and receipt of communication (*read* and *hear*) as categorized by Biber, Connrad, Reppen, Byrd, Helt, Clark, Cortes, Csomay & Urzua (2004, p.30). Based on the descriptions, it can be inferred that mental verbs do not involve physical actions. The mental verbs in the current study were semantically tagged via USAS. This study views song lyrics as a source of authentic texts that are written and sung by native speakers, therefore reflect natural behaviours of mental verbs in English language.

Corpus investigations of verbs in song lyrics, including mental verbs, have been repeatedly cited to mirror linguistics phenomena in the English language. Corpus studies of English song lyrics by Logan, Kositsky, and Moreno (2004), Morrison (2012), Falk (2013), Motschenbacher (2016), and Eiter (2017) have included general verbs namely *like*, *know*, *think*, and *want* in their analyses. Logan, Kositsky, Ramalingam, Krishnan, Suppiah & Maruthai (2020) and Moreno (2004) uncovered that lexical words *know*, *like*, and *love* are in the top 10 most frequent words in their 15589 song lyrics corpus of five music genres namely Country, Reggae, Newage, Rap and Rock. Morrison (2012) analyzed top 20 most popular English karaoke songs in Japan, and found that similar lexical words such as *know*, *love*, *want*, and *like* were in the top 10 most frequent content vocabulary (p.80). The one syllable verbs in the corpus points to spoken rather than written language, concluding that the song lyrics contain high frequency of words common in spoken English (Morrison, 2012, p.80). On the other hand, Falk (2013) built a larger corpus of 300 lyrics of only Rock genre that spanned over 5 decades from years 1950 to 1999, called the Falk's Rock Lyrics Corpus (ROLC) which contains lexical words *like*, *love*, and *know* in the top 10 most common words (p.21). Although the absolute frequencies of verbs are not provided, the ranks present which words occur more frequently than the others. Compared to Logan, Kositsky and Moreno (2004), Morrison (2012) and Falk (2013) built smaller corpora that were easier to manage, but the generated data are insufficient for generalisation. For instance, Morrison (2012) stated that vocabulary effective for communication in his corpus cover only 1476 out of 2000 most frequent words from BNC and COCA (pp.80-81), which means that the corpus size is insufficient to represent the aspect of English language communicative vocabulary. Hence, the current study built DCOESL of approximately 1.2 million words, to be able to generate various findings for accurate representativity. Representativity is relative as it varies between corpora and never absolute (Lindquist, 2009; Ab Karim, 2015). By carrying out a comparative analysis of mental verbs in DCOESL with mental verbs in COCA, the researcher could investigate the usefulness of findings emerged from the current study. This includes the extent to which the findings can be generalized to the language. Consequently, making such analysis would certainly make findings more reliable (Lindquist, 2009, p.43).

More recent larger corpora by Motschenbacher (2016) and Eiter (2017) offer more varied insights to linguistics phenomenon such as collocations, keywords or themes, semantic, sentence structures, and tenses. For example, Motschenbacher (2016) highlighted semantic fields in Eurovision lyrics corpus (ESC-ENG), a song lyrics corpus which amounts to approximately 205000-word tokens. Comparative analysis with G-charts revealed that *love* is the predominant topic in ESC-ENG, particularly in Pop lyrics. This is because the word *love* occurs 1170 times in ESC-ENG and 642 times in G-charts or 12463 and 5761 times pmw respectively (Motschenbacher, 2016, p.12). Eiter (2017) built the Innsbruck Corpus of English Pop Songs (ICEPS) of roughly 120000 words. The statistical results were submitted for significant tests against COCA and BNC using the Log-likelihood (G^2) test. Non-standard feature of English language like the contraction *don't* in ICEPS is very significant (G^2_{COCA}=168.1440, G^2_{BNC}=118.7063, df=1) with $p \leq 0.001$) (Eiter, 2017, p.27). Another interesting finding is the discourse marker of lexical item *like* as a verb occur 123 times. For example, in the phrase *classic thing that you like* (p.35). The researcher managed to draw a representative conclusion that Pop songs are written-to-be-sung language through the uses of non-standard feature and discourse marker. The results and analyses of the studies are not limited to statistical data, but also supported by qualitative data. Statistical data that are supported with statistical tests of significance and concordances attest the reliability and validity of claims and discussions made based on their research findings. In the current study, the quantitative data in the form of frequency distributions are supported with concordance, collocations, and semantic analyses.

This study is driven by the massively and freely accessible authentic corpus data that people globally listen and relate to everyday song lyrics. Previous work on song lyrics by Murphey (1992), Kuhn (1999), Kreyer and Mukherjee (2007), Saarinen (2013), Motschenbacher (2016) and Nishina (2017) have largely focused on common word forms and verbs in general found in English song lyrics. Recent studies of mental verbs in corpora that are built upon other registers of spoken and written English have been carried out (Nordlund, 2008, 2010; Sarudin, Faredza, Intan Safinas & Zulkifli, 2019; Verdaguer, 2010). However, a study that is directly focused on mental verbs in English song lyrics is yet to be executed. This study was carried out in view of this research gap and potential linguistic values of song lyrics in mirroring authentic use of English language by the native speakers.

2. Methodology

2.1 Corpus Description: DCOESL

To build the Diachronic Corpus of English Song Lyrics or DCOESL, 5000 song lyrics in the 1960s until 2000s comprising of 25 songs for every year of each genre, were compiled and organized. In total, the song lyrics comprised one million words. DCOESL is intended to be a massive corpus to be able to represent the aspects of English language. McEnery, Xiao and Tono (2006) stated that a specialized corpus has the tendency to be genre specific. DCOESL is a specialized song corpus, consisting of four popular music genres namely Country, Pop, Rock and Rhythm and Blues (R&B).

Table 1. Description of DCOESL

Genre	Year	No. of Song Lyrics for Every Year	No. of Word
Country	1960-2009	25	290 278
Pop		25	357 770
Rock		25	303 828
R&B		25	460 545
TOTAL	50	5 000	1 412 601

2.2 Corpus Compilation

Corpus compilation for this study involved selections of music genres, song lists and song lyrics. Four popular music genres namely Country, Pop, Rock and R&B were chosen primarily because popular music is widely listened to by people. Song lists were selected from Top 100 Billboard Charts, an online extension of the well-known Billboard Magazine. This specific platform was carefully chosen because among the many options of accessible songs, chart songs ranked highly in popularity (North, Hargreaves & Hargreaves, 2004). Lastly, song lyrics to build DCOESL were retrieved from the MetroLyrics (www.metrolyrics.com), a freely available online lyrics database of over more than one million song lyrics from 20000 artists. The song lyrics were stored electronically in the form of text (txt.) form metadata.

2.3 Instruments: Computational Corpus Tools

This study adopted five computational corpus analysis tools comprising of:
1) CLAWS Part-of-Speech (POS) Tagger (Rayson, Archer, Piao, & McEnery, 2004),
2) Lancaster Statistics Tools (B ezina, 2018).
3) LancsBox (B ezina, Timperley & McEnery, 2018), and
4) UCREL Semantic Analysis System (USAS) English Tagger (Rayson, Piao & Archer, 2004).

First, LancsBox is a fresh generation software package of corpora developed at Lancaster University. LancsBox was downloaded from its official website (corpora.lans.ac.uk/lancsbox) and installed for free. The current study utilized this toolbox for generating frequency counts, concordance

lines, collocations and collocational graph (collograph) of mental verbs in DCOESL. Second, CLAWS POS Tagger functions were used to tag words according to their parts of speech. In this study, the C7 tagset was used to tag parts of speech in song lyrics, including verbs, which are tagged as VV0 (base form of lexical verbs), VVD (past tense of lexical verbs), VVZ (-s form of lexical verb), VVG (-ing participle of lexical verb), VVN (past participle of lexical verb). Next, USAS English Tagger served to identify semantic categories of top 20 most frequent lexical verbs in DCOESL. Similar to CLAWS POS Tagger, USAS was developed with its own tagset of 21 major discourse fields. Last, Lancaster Statistics Tools online was accessed to automatically calculate the complex formulae of three statistical tests of significance namely Log-likelihood (G^2), Mutual Information (MI), and t-score. As asserted by McEnery, Xiao and Tono (2006), computers help to process and manipulate corpus data rapidly at minimal cost, avoid human biasness to achieve reliability and allow further automatic processing to be performed for various metadata enrichment.

2.4 Triangulation: Reliability and Validity

To guarantee the reliability and validity of statistical findings, five measures were taken:

1) normalization of frequency counts,
2) comparative frequency counts,
3) Log-likelihood (G^2),
4) Mutual Information (MI), and
5) T-score

Normalization of raw frequencies in DCOESL to per million words (pmw) as the total occurrences of verbs in every genre are different. It is more helpful to state how many times a verb occurs, in average, in every one million words. Normalized frequency also helps to accurately compare two different corpora of different sizes. For instance, frequencies of mental verbs in DCOESL were compared to the ones in the COCA, using normalized frequencies as per million words for both corpora.

Comparative frequency counts with general reference corpus COCA were carried out to ensure the representativeness of DCOESL to English language. Through conducting comparative frequency counts analysis, the usefulness of findings from this study was uncovered, allowing for generalisability to the target language. Subsequently, carrying out an analysis as such would result in more reliable findings (Lindquist, 2009, p.43).

Log-likelihood (G^2) test was carried out for comparison of frequency counts between DCOESL and COCA to know if the statistical differences were due to real world differences or just by chance. G^2 is broadly exploited as a measure of strength of associations (Moore, 2004). The G^2 for this study was calculated based on normalized frequencies. Number of occurrences of mental verbs in DCOESL were compared to the ones in COCA to recognize on a quantitative basis the most significant contrasts between the two lists (Allan, 2015).

To test collocational strength of mental verbs collocations, MI test was carried out. An MI score of 3 or higher is to be taken as an evidence that two items are collocates (Hunston, 2002, p.71). Thus, if MI = $<$ 3, H_0 is accepted, and if MI = $\geq$ 3, H_0 is rejected. Meanwhile, if MI = $\geq$ 3, H_a is accepted, and if MI = $<$ 3, H_a is rejected. Meanwhile, t-score is applied to validate MI scores by giving clearer understanding to which words have a strong attraction to the mental verbs and which do not occur frequently in DCOESL are not given a high significance. Collocations with t-score of 2 or higher should be considered as important (Hunston, 2002, p.72).

To be certain that the collocations in the current study are the results of more than vagaries, another collocation measurement was taken into measure; the T – score. T – score is utilized to analyze and validate MI scores by giving clearer insight to which words have a strong attraction to the lexical verbs and which do not occur frequently in DCOESL are not given a high significance. Collocations with T – score of 2 or higher should be considered as significant (Hunston, 2002, p.72).

3. Results

The investigation comprises of four types of findings: frequency list, collocations, concordances and comparative analysis. First, the frequency list contained 20 most common general verbs in DCOESL.

Secondly, the general verbs were semantically tagged to identify mental verbs and to select the top three mental verbs. Next, the selected mental verbs were submitted for comparative analysis with Corpus of Contemporary American English (COCA). Last, the collocations of the mental verbs were identified, and tests for collocational strength were performed. These data was utilized to form discussion and to draw conclusion for the current study.

3.1 General Verbs

Table 2 presents the generated top 20 general verbs in DCOESL and their respective G^2 test values against COCA.

Table 2. G^2 Test Results of Top 20 General Verbs in DCOESL against COCA

DCOESL			vs. COCA	
Rank	Word	NF	G^2	Sig. Level
1	know	3562	1447.02	<0.0001
2	want	2372	1292.53	<0.0001
3	love	2206	2239.10	<0.0001
4	come	1928	1496.65	<0.0001
5	get	1806	998.36	<0.0001
6	say	1449	594.54	<0.0001
7	let	1428	981.47	<0.0001
8	go	1347	690.08	<0.0001
9	take	1085	610.10	<0.0001
10	see	1063	277.06	<0.0001
11	tell	993	751.86	<0.0001
12	make	973	495.65	<0.0001
13	think	853	0.01	<0.1
14	like	811	459.60	<0.0001
15	give	753	524.37	<0.0001
16	keep	733	537.65	<0.0001
17	look	519	83.01	<0.0001
18	hold	411	319.54	<0.0001
19	shake	408	504.28	<0.0001
20	call	383	150.61	<0.0001

Note. Values of significance as given by McEnery, Xiao, and Tono (2006, p.55): Null hypothesis, H_0 = There exists no significant association between the occurrences of general verbs in DCOESL with those in COCA. Alternative hypothesis, H_a = There exist a significant association between the occurrences of top 20 general verbs in DCOESL with those in COCA ($G^2 \geq 6.63$ at $p < 0.01$ or 1% level, $G^2 \geq 10.83$ at $p < 0.001$, $G^2 \geq 15.13$ at $p < 0.0001$).

3.2 Mental Verbs

Table 3. Semantic Categories of *Know, Want,* and *Love* in DCOESL

Word	POS Tag	USAS Semantic Tag	Category
know	VV0	X2.2+	Mental actions and processes: Knowledge/Perception/Retrospection
		S3.2	Relationship: Intimate/ Sexual
		B1%	Anatomy and physiology
want	VV0	X7+	Depicts desire or aspiration.
		S6+	Obligation and necessity.
		A7+	Definite (+ modals). Abstract term of modality to show possibility, necessity, certainty, etc.
		S3.2	Terms relating to relationships that are intimate and/or sexual.
		A9-	General or abstract terms relating to allocating/ relinquishing/ acquiring/ receiving, etc.
love	VV0	E2	: Liking
		E2+	: Fondness/affection/partiality/attachment

Note. Antonymity of conceptual classifications is indicated by +/- markers on tags, whereby "+" refers to positive meanings and "–" refers to negative meanings.

Mental verb *know* in DCOESL is ranked first among the top 20 general verbs in base forms with 3562 instances pmw (see Table 2). This verb also demonstrates high G^2 values against COCA (G^2_{COCA} = 1447.02, G^2 COCASPOKEN = 2061.55, and G^2 COCAWRITTEN = 3132.11 at $p < 0.0001$) denoting significant relationship between *know* in DCOESL and in COCA. Semantically tagged via USAS English Tagger, lexical verb *know* in DCOESL is mainly coded as 'mental activity which is knowledge (X2.2). This semantic meaning of *know* is similar to the descriptions of the lexical verb given by general reference grammars such as Biber et al. (1999), Hornby, Turnbull, Lea, Parkinson, Phillips, Francis, Webb, Bull and Ashby (2010), and Stevenson (2010) whereby summarized, these linguists described the verb *know* as an individual's mental activity of having information about something (see Table 3). Other semantic categories of the verb are relationship (S3.2) and human body (B1). Many songs are about romantic relationships between romantically involved individuals (Paxson, 2013, p.35), family relationship (Homan, 2006), and contain sexual related contents (Galician & Merskin, 2007, p.125). Thus, it makes sense that the verb *know* in DCOESL somehow carries meanings of relationships and human body.

Mental verb *want* in DCOESL is ranked second with 2372 instances pmw (see Table 2). This mental verb possesses high G^2 values (G^2_{COCA} = 1292.53, G^2 COCASPOKEN = 2045.24, and G^2 COCAWRITTEN = 1872.61at $p < 0.0001$). Lexical verb *want* in DCOESL is generally used to express positive desire or aspiration (X7+). Other semantic uses of *want* in DCOESL are to demonstrate social actions, states and processes (S6+ and S3.2), act as an abstract term of modality to show necessity (A7+), and act as a

general or an abstract term to show possession (A9-). Social function of *want* relates to intimate or sexual, or both in relationships (S3.2). *Want* in DCOESL is a social expression to show obligation, necessity, and/ or desire, particularly those related to relationships. This resounds general reference grammars of English like Biber et al. (1999, p.378) and Hinkel (2004, p.191) who asserted that *want* is a common emotive or mental verb which expresses meanings such as obligation and necessity. Pinna and Tortorici (2010, p.404) also stated that lexical verb *want* is categorized as one of the common verbs that relates to the meaning of desire. Song lyrics are a medium of expression to express emotions such as anger, calmness, happiness and sadness (Jamdar, Abraham, Khanna & Dubey, 2015, p.42), as well as desire as reported by Bridle (2018, p.26) in his corpus analysis of R&B lyrics. Note that *want* is found to be predominant in the R&B genre of DCOESL (966 instances pmw). Considering this, it is not random that song lyrics in DCOESL also express the same emotion as identified through semantic tagging of the emotive or mental verb *want*.

Mental verb *love* is ranked third with 2206 instances pmw (see Table 2), with significant G^2 values (G^2_{COCA} = 2239.10, $G^2_{COCASPOKEN}$ = 2629.14, and $G^2_{COCAWRITTEN}$ = 2496.97 at $p < 0.0001$). Based on the generated results, it is clear that mental verb *love* in DCOESL is mainly used to express liking, which relates to the feeling or emotion of affection.

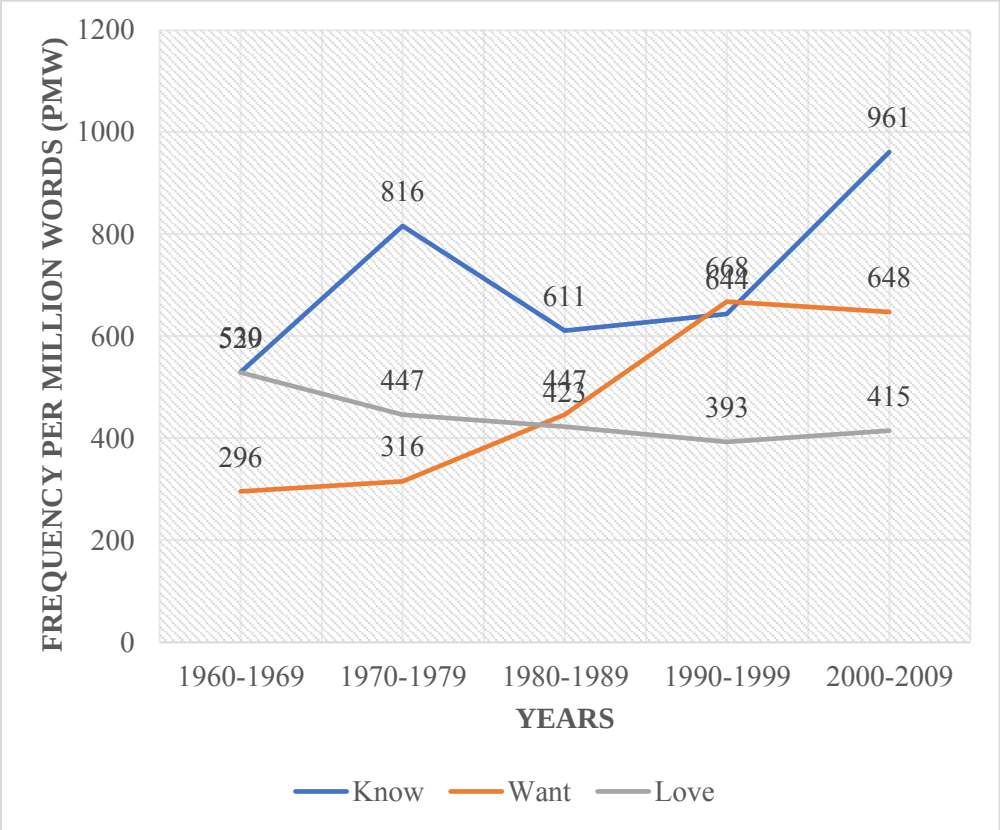

Fig. 1 Occurrences of ***Know, Want,*** and ***Love*** across Time in DCOESL

The overall frequencies of lexical verb *know* increase approximately 81.32 per cent over time from 1960s to 2000s in DCOESL. The occurrences of *know* increase by about 35.04 per cent in 1970s but decrease by about 25.12 per cent in 1980s, and then slightly increase by about 5.4 per cent in 1990s. From 1990s, instances of *know* increase by about 49.22 per cent. The chi-square (X^2) test confirms that the differences in frequencies of *know* in DCOESL across genre and time are highly significant (X^2 = 508.054, with *p*-value=0.0001, the result is significant at $p<0.01$). The Log-likelihood (G^2) test for *know* in DCOESL against reference corpus COCA and their subcorpora also confirms that the occurrences of *know* among the corpora are not due to randomness. A total of approximately 36.36 per cent of *know* occurs in RnB of DCOESL, followed by Pop, Rock, and Country with 27.65 per cent, 20.58 per cent, and 15.41 per cent respectively.

For mental verb *want,* there is a noticeable difference in the frequencies of lexical verb *want* over time for the four popular music genres in DCOESL. The occurrences of *want* gradually increased from 1960s by approximately 6.76 per cent in 1970s, 41.46 per cent in 1980s, 49.44 per cent in 1990s, and slightly decrease by about 2.99 per cent in 2000s. X^2 of 142.67 shows highly significant result at $p < 0.001$. The G^2 scores against the reference corpora and their subcorpora also gives results as highly significant particularly for the spoken register of COCA (G^2_{COCA}=1292.53 at p<0.0001, $G^2_{COCASPOKEN}$ = 2045.24 at p<0.0001, and $G^2_{COCAWRITTEN}$=1872.61 at p<0.0001). The occurrences of lexical verb *want* is very dominant in RnB with 40.73 per cent from the total occurrences of the verb, followed by Pop (29.43 per cent), Rock (15.89 per cent), and Country (13.95 per cent).

The frequencies of *love* show that there is a discernible difference in the overall use of the lexical verb *love* over time in DCOESL. The occurrences of *love* gradually decrease at an average 9.32 percent from the 1960s until 1980s, and then slightly increase by 5.6 percent in the 2000s. The chi square (X^2) test verifies that the differences over time are highly significant (X^2 = 118.8215 at p < 0.00001). Log-likelihood (G^2) test of DCOESL against the COCA and its sub corpora also reveals that the occurrences of *love* in the corpora are highly significant (G^2_{COCA} = 2239.10 at p < 0.0001).

To investigate the linguistics structures of mental verbs *know*, *want*, and *love* in DCOESL, the adjacent collocations immediately to the left (window span: -1) and right (window span: +1) of the verb were identified via Lanscbox and the submitted for statistical tests of significance to calculate for Mutual Information (MI) scores and T-scores. This is to access the importance of the collocations and show a clearer picture of the relationship between words than that given by a simple collocation list itself.

4. Discussion

Hornby et al. (2010) defined the lexical verb *know* as "to have information in your mind as a result of experience or because you have learned or been told it" and also refers to "realize, feel certain, be familiar, recognize, distinguish, skill or language, and experience" (p.826). In other words, to know something is to have information in one's mind about that matter in context as in sample lyrics (1) and (2). For *want*, Waite (2013) described the lexical verb as "to feel a need or desire to have or do" (p.1044), and Hornby et al. (2010) interpreted it as "to have a desire or wish for something" (p.1672). Simply put, to want something means to have desire or longing to possess that specified thing one has in mind as in sample lyrics (3) and (4). Lexical verb *love* is interpreted as to "feel a deep romantic or sexual attachment to" and "like or enjoy very much" (Stevenson & Waite, 2011, p.845). Otherwise stated, to love is by having a relationship or connection, which brings meaning to the people in that liaison as shown in sample lyrics (5), (6), and extreme feeling of liking towards someone or something as in (7).

(1)	I ***know*** a girl, She puts the color inside my world	(Pop_2000s)
(2)	I ***know*** that you don't believe me	(Country_1990s)
(3)	Just ***want*** a chance to be myself	(Country_1980s)
(4)	I ***want*** a love that's serious	(RnB_1980s)
(5)	You felt like you'd never ***love*** again	(Pop_1990s)
(6)	Darling, I ***love*** you	(Pop_1990s)
(7)	I ***love*** your way	(Rock_1970s)

Fig. 2 Concordance Lines of Selected Lyrics for *Know, Want, and Love* in DCOESL

Verbs *know*, *want*, and *love* are classified as mental or emotive activity verbs apart from *think* and *see* (Hinkel, 2004, p.189; Pearce, 2012, p.113). Song lyrics play a massive role in music as a vessel to express emotions, evaluations, and values to the mass audiences (Kennedy & Gadpaille, 2014, p.50). Hence, there is no surprise that in DCOESL, lexical verbs *know*, *want*, and *love* are ranked first, second and third respectively.

4.1 Language Uses of Mental Verbs

Instead of merely focusing on the three mental verbs alone, their adjacent collocations assist in giving insights on the language uses of *know, want,* and *love*. For instance, the *to*-infinitive in DCOESL occurs immediately to the right of verb *want,* which gives characteristic to *want* from typical lexical and active verb to semi modal. Real linguistic structure could be identified for the prominent verbs, instead of focusing solely on their 'statistical phenomenon' (Lindquist, 2009, p.78).

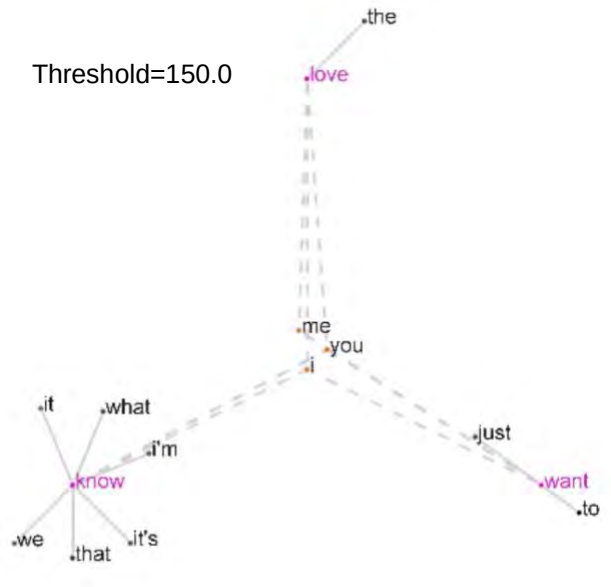

Fig. 3 Collograph of *Know, Want,* and *Love*

Table 4. Top Three Adjacent Collocations of *Know, Want, and Love*

Mental Verbs	Rank	Collocate at -1	NF	MI	T	Collocate at +1	NF	MI	T
Know	1.	I	1779	3.577	38.643	i	812	2.445	23.263
	2.	you	1654	3.635	37.395	you	675	2.342	20.855
	3.	don't	740	5.020	26.364	that	594	5.550	23.852
Want	1.	I	1316	3.728	33.54	to	1080	4.991	31.830
	2.	you	760	3.099	24.352	you	410	2.209	15.869
	3.	don't	580	5.255	23.452	me	220	2.451	12.119
Love	1.	I	1117	3.597	30.659	you	812	3.3	25.602
	2.	you	367	2.154	14.852	me	355	3.246	16.855
	3.	really	50	7.339	7.027	the	156	4.217	11.818

Note. The raw frequencies have been normalized to as per million words (pmw) for uniform representation. The formula applied is $(N_{RF} \times 10^6) / T = N_{NF}$ whereby, N_R = value of the raw frequency of base form of lexical verb, **T** = total tokens of the corpus (1412601) and N_{NF} = value of the normalized frequency. The statistical test values are significant at MI ≥ 3 and T ≥ 2 (Hunston, 2002, pp.71-72).

To further investigate the phenomena of pronouns *I* and *you*, with mental verbs *know, want,* and *love* in DCOESL, top three collocations in DCOESL and COCA were searched for and the findings are as shown in **Table 5.**

Table 5. *Top Three Adjacent Collocates to the Left (Window Span -1) and Right (Window Span +1) of Personal Pronouns* ***I*** and ***You*** *in DCOESL*

	Rank	DCOESL	COCA	COCA SPOKEN	COCA WRITTEN
Window Span -1					
	1	and	when	wish	When
	2	that	because	whenever	If
	3	when	guess	interpreter	Think
	1	if	if	if	If
	2	love	when	thank	When
	3	that	thank	when	What
Window Span +1					
	1	know	think	think	Think
	2	want	know	mean	Know
	3	love	want	want	Want
	1	know	know	know	Know
	2	want	think	want	Want
	3	love	want	need	Think

Note. Auxiliary and modal verbs have been excluded from the collocation search function for all the corpora, as the items are not of main interest in this research.

DCOESL and the reference corpus emphasize on patterns *and* + *I* (*conjunction* + *pronoun*), *that* + *I* (*conjunction* + *pronoun*), *when* + *I* (*conjunction* + *pronoun*), *if* + *you* (*conjunction* + *pronoun*), *love* + *you* (*verb* + *pronoun*), *that* + *you* (*conjunction* + *pronoun*), *I*/ *you* + *know* (*pronoun* + *verb*), *I*/*you* + *want* (*pronoun* + *verb*), and *I*/you + *love* (*pronoun* + *verb*). As can be seen in Table 5, some of these patterns are found in the reference corpus. The *pronoun* + *verb* pattern is very significant in DCOESL and elucidated in the succeeding paragraphs.

Murphey (1992) stated that songs reflect what some listeners want to say by literally placing the words into their mouths as they sing along. This is because songs are relatable to listeners and the lyrics carry stories from the artists to be shared or sung with listeners, permitting them to engage in the songs (Griffee, 1992, p.4). Below are five examples of lyrics in DCOESL containing personal pronouns *I* and *you*.

(1)	Maybe ***you*** don't know me any more than ***I*** know ***you***	(Country_1980s)
(2)	Say ***you*** feel it too, ***I*** know ***you*** do	(Pop_2000s)
(3)	***I*** know ***you*** don't feel appreciated	(RnB_2000s)
(4)	***I*** love ***you***	(Rock_1960s)

Fig. 4 Concordance Lines of Selected Lyrics for *I* and *You* in DCOESL

According to Murphey (1992), the fact that *I* in song lyrics is anonymous, it becomes easier for listeners to "appropriate the words" (p.171). In other words, listeners seize to be the subject *I*, just as if he or she is communicating with the object you, in a context such as conveying perception (know) in (1), (2), and (3), and emotional connection (love) between the subject and object in (4). In other words, personal pronouns *I* and *you* are used by the subject and object in an interaction regarding their views and feelings (Ha, Ariffin & Ma'rof, 2018). This finding is almost similar to the linguistics construction of Eurovision Song Contest (ESC) found by Motschenbacher (2016) which involved three components namely the desiring subject (I), the desired object (you), and the relationship between the two (*love*) (p.203). The listeners identify themselves with the lyrics, wherein the personal pronouns serve as a basic form of personal reference (Sanchez-Stockhammer & Schubert, 2016; Baharum, Ariffin & Abd Wahab, 2019).

Table 6. Samples Sentences Involving Pronouns ***I*** and ***You*** with Lexical Verb ***Know***

No.	**Sample Sentence/Phrase**	**DCOESL**		**COCA**			
				Spoken		**Written**	
		RF	**NF**	**NF**	G^2	**NF**	G^2
1.	I know	2513	1779	80	1917.29	113	1766.89
2.	You know	2337	1654	584	533.10	134	1526.61
3.	I don't know	542	384	3	501.36	0.2	529.19
4.	I know you	439	311	9	361.59	9	361.59
5.	I know I	375	265	3	338.61	7	312.02
6.	I know that	275	195	11	199.72	10	204.28
7.	You don't know	225	159	0.3	216.47	0.04	219.73
8.	I know what	149	105	3	122.30	7	102.90
9.	I know the	69	49	2	53.83	4	45.11
10.	I know how	64	45	2	48.61	4	40.22
11.	I don't even know	35	25	0.1	33.49	0	34.66
12.	I know why	32	23	0.3	29.09	1	24.96
13.	I know where	19	13	0.4	14.98	1	12.20
14.	I don't know you	3	2	0.01	2.66	0	2.77
15.	I don't know that	2	1	0.2	0.58	0	1.39
16.	You don't know that	2	1	0.01	1.29	0	1.39
Average Man G^2 Scores					273.436		324.119

Previous studies on song lyrics corpus data by Kreyer and Mukherjee (2007) and Falk (2013) focusing on Pop and Rock genres respectively, discovered extremely high frequencies of personal pronouns *I* and *you* in song lyrics. Kreyer and Mukherjee (2007) explored their Giessen-Bonn Corpus of Popular Music (GBoP) and uncovered that personal pronouns *I* and *you* have relative frequencies of 3.78 per cent and 3.87 per cent respectively (p.44). Falk (2013) built the Rock Lyrics Corpus (ROLC) to compare the corpus with GBoP and found that ROLC also contains extremely high frequencies of personal pronouns *I* and *you* covering 7.31 per cent and 5.99 per cent correspondingly of the overall words in the corpus (p.13). The corpus studies on Blues genre by Kuhn (1998) uncovered that Blues lyrics resembles real life requests (p.527). Bridle (2018) in the Male Blues Lyrics is focused to investigate language use in the pre-World War Two and post-World War Two corpora, and stated that pronouns like *I* and *you* (p.28) in the corpora are related to category of Relationship: Intimacy and Sex (p.27). For DCOESL, the personal pronouns *I* and *you* occur about 4.19 per cent and 3.74 per cent respectively overall in the corpus. This study unveils that the two pronouns are extremely high in the RnB genre with 34.27 per cent occurrences of the total *I* and *you* in the corpus. Overall, *I* and *you* in DCOESL have the highest resemblance to spoken register when compared to general reference corpus COCA.

Table 7. *Distribution of Know, Want, and* ***Love*** *Variants in DCOESL and G^2 Test Results against COCA*

	DCOESL			vs. COCA	
Form	POS Tag	Genre	NF	G^2	Sig. Level
know	VV0	Country	549		
		Pop	985		
		RnB	1295	1447.02	<0.0001
		Rock	733		
			3562		
knew	VVD	Country	114		
		Pop	116		
		RnB	166	678.33	<0.0001
		Rock	94		
			490		
knows	VVZ	Country	94		
		Pop	99		
		RnB	83	458.12	<0.0001
		Rock	55		
			331		
knowing	VVG	Country	25		
		Pop	27		
		RnB	24	96.81	<0.0001
		Rock	8		
			84		
known	VVN	Country	37		
		Pop	36		
		RnB	25	114.26	<0.0001
		Rock	43		
			141		
want	VV0	Country	331	1292.53	<0.0001
		Pop	698		
		RnB	966		
		Rock	377		
			2372		
wanted	VVD	Country	42	17.21	<0.001
		Pop	48		
		RnB	41		
		Rock	56		
			187		
wants	VVZ	Country	38	19.04	<0.0001
		Pop	58		
		RnB	40		
		Rock	88		
			224		
wanting	VVG	Country	10	3.39	<0.05
		Pop	16		
		RnB	9		
		Rock	6		
			41		
wanted	VVN	Country	17	13.02	<0.001
		Pop	30		
		RnB	21		
		Rock	11		
			79		
love	VV0	Country	418	2239.10	< 0.0001

		Pop	684		
		RnB	848		
		Rock	256		
			2206		
loved	VVD	Country	59	30.20	< 0.0001
		Pop	44		
		RnB	35		
		Rock	30		
			168		
loves	VVZ	Country	88	250.11	< 0.0001
		Pop	107		
		RnB	59		
		Rock	35		
			289		
loving	VVG	Country	76	301.35	< 0.0001
		Pop	55		
		RnB	102		
		Rock	24		
			257		
loved	VVN	Country	41	101.47	< 0.0001
		Pop	30		
		RnB	32		
		Rock	27		
			130		

Note. Values of significance as given by McEnery, Xiao, & Tono (2006, p.55): Null hypothesis, H_0=There exists no significant association between *know, want, and love variants* in DCOESL with those in the reference corpora. Alternative hypothesis, H_a=There exists a significant association between the occurrences *know, want, and love variants* in DCOESL with those in the reference corpora ($G^2 \geq 10.83$ at $p < 0.001$, $G^2 \geq 15.13$ at $p < 0.0001$).

Based on the quantitative and qualitative findings that are discovered from DCOESL, it is assumed that it is the nature of English song lyrics to reflect immediate communication similar to that of face-to-face conversation. This assumption is grounded upon six characteristics of English song lyrics that emerge from DCOESL; 1) high density of cognition and mental verbs, 2) high density of pronouns, 3) use of contraction, 5) simple sentence structure, and 6) high density of simple present tense.

Daniel J. Levitin, an American Canadian cognitive psychologist, a neuroscientist, writer, musician, and record producer, stated that knowledge and emotion are intertwined. He disagreed with the stereotypical perspective that science consists solely of facts and measurements that are isolated to emotion. He described that through emotional judgment, artists selected what they thought were vital and transferred their observations in life into an intelligible complete work of art called music (Levitin, 2019). Therefore, making music is an emotional journey for artists. Music can be referred to as a single coordinated pattern of neurochemical impulses in the brain (Rowell, 1984, p.1), and is generally defined by Hornby et al. (2010) as "sounds that are arranged in a way that is pleasant or exciting to listen to" (p.972). However, music is incomplete without song writing (Hauser, Tomal & Rajan, 2017). This team of musical composer, guitar rocker, and lyric opera singer describe song lyrics as:

> The lyrics reflect our feelings and emotions beyond the music, tell us stories, and give us new way of thinking about everyday experiences. The lyrics translate the aural experience of a song into something tangible connecting the movement of the melody and enabling the music to become personal and memorable. … The relationship between music and lyrics is at the very heart of good songwriting. (Hauser, Tomal, & Rajan, 2017, p.85)

Communication is defined as the "activity or process of expressing ideas and feelings or giving people information" (Hornby et al., 2010, p.290). To communicate is to share ideas or feelings. People delve into songs for many reasons including a compelling need for self-expression and a desire to communicate something to others. Kennedy and Gadpaille (2014) stated that song lyrics is a medium to express emotions, evaluations, and values to the audience (p.50). Through song lyrics, artists have a medium to carry and communicate their stories to the audience (Griffee, 1992). Therefore, English song lyrics utilize high frequencies of mental verbs namely *know*, *want*, and *love* as demonstrated in DCOESL. This is naturally appropriate because when writing song lyrics, it is very important to remind oneself that song writing is synonymous with emotions, and successful songs tap into the emotions that everyone feels (Hirschhorn, 2001, pp.29-31). Otherwise stated, song lyrics must be emotional.

Findings also show that DCOESL contains extremely significant frequencies of pronouns *I* and *you*. In fact, *I* and *you* is also at the top two most common word forms in DCOESL. The use of personal pronoun *I* helps listeners to appropriate the words (Murphey, 1992, p.171), which places the listeners as the subject (*I*) who is communicating with the object (*you*). This leads to the linguistics construction of *Subject* + *Verb* + *Object*, which is the primary sentence structure in DCOESL. This finding is similar to the finding made by Motschenbacher (2006) in his corpus of ESC-ENG.

Other than that, the use of contraction *don't* is common in DCOESL. Contraction *don't* is very prominent whereby it can be found as a collocate directly to the left of *know* and *want* (see Table 4). Contractions are usually associated with speech and have so far normally been avoided in formal writing (Cheng, 2002, p.13; Nasroniazam, 2016). DCOESL contains high frequencies of contraction *don't* because lyrics are a medium of free expression and therefore does not follow the formal conventions of written English. Baker (2009) stated that the use of contractions is to lessen the processing burden for the listener. For instance, a song can last up to three minutes. An artist has to pack the lyrics to make sure that the song lyrics convey stories and emotions within that short period of time to listeners. Contractions provide immediacy to content delivery like how it is done naturally in informal speech such as conversation. This is because contractions keep a sentence short and makes content delivery to consume less time. Overall, English song lyrics portrays interactive features through high preference for mental verbs, personal pronouns, simple sentence structure, and present tense. These features are very similar to findings by corpus linguistics researchers such as Biber et al. (1999), Motschenbacher (2016), Kreyer & Mukherjee (2007), Nishina (2017), Roland, Dick & Elman (2007), Eiter (2017) and Lovett (2020) to name a few.

4.2 Usage-Based Model of Mental Verbs in DCOESL

The extremely high instances of personal pronouns alongside mental verbs in DCOESL demonstrates great emphasizes on cognition and emotional activities between singers or songwriters, and the person the person they direct the song lyrics to. For the purpose of general representation, singers and songwriters in this study are called as the artists. Motschenbacher (2016) described this type of linguistics structure (*SVO*) as the relationship between the desiring subject and the desired object (p.203). In DCOESL, an artist (represented by *I*) direct his or her attention to the person that causes the mental state. The artist addresses the person involves in the context of the song. Thus, the artist becomes the *addressor*, and automatically the person being mentioned or targeted (anonymously or known) in that particular context or relationship is called as an *addressee*. Figure 5 outlines the lexical system for lexical verbs *know*, *want*, and *love* in DCOESL. The structure demonstrated is the main basic *SVO* structure found in DCOESL. This structure can be inflected for example by adding clausal item *that*, and reduction such as contracted words *don't* and *won't*. The terms addressor and addressee in DCOESL agrees with the representation made by Pustejovsky (1993) on the two-way causal relation of mental state whereby the terms *experiencer* and *stimulus* are used instead.

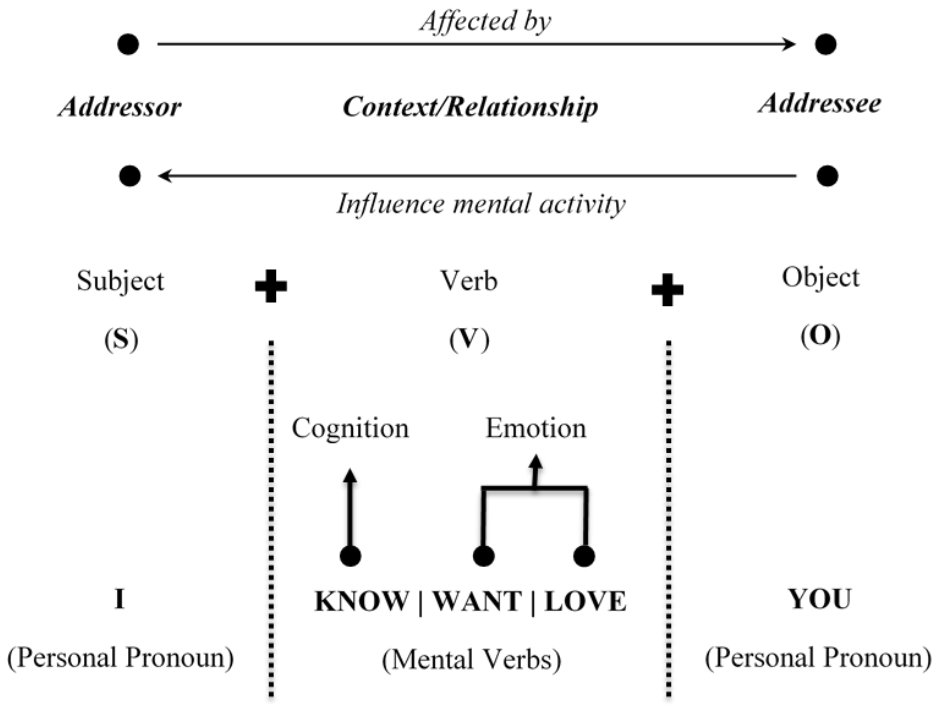

Fig. 5 Usage-based Model of Mental Verbs (***Know***, ***Want***, and ***Love***) in DCOESL

Grounded upon the usage-based conception developed by Langacker (1991), Mukherjee (2005) specified four central principles of a usage-based model namely (1) a real-data model of natural language data, (2) a frequency-oriented model based on quantitative analysis of representative corpus data, (3) a lexicogrammatical model that overcome the traditionally established boundary between lexis and syntax, and (4) a unified core-periphery model that reflect language use by actual speakers in natural contexts (pp.221-224). The usage-based model of mental verbs in Figure 3 is a lexical framework centered on (1) native speakers' song lyrics, (2) lexical items that were submitted to statistical tests of significant against large general reference corpus, (3) combine a set of lexical items with their grammatical structure, and (4) pointed that song lyrics possess similar characteristics of spoken features, making them a written-spoken-like genre.

Pustejovsky (1993) explained that two processes are involved in obtaining a mental state namely first, the experiencer must direct his or her attention to the stimulus and second, the stimulus causes the experiencer to come into a certain mental state (p.64). Hence the two-way causal relation. In DCOESL, the spoken-like interaction between artists and the persona (or thing) in their song lyrics are defined in terms of the addressor- addressee relationship or context.

5. Conclusion

This study identified most frequent verbs, most frequent mental verbs, and analyzed the uses of mental verbs in English song lyrics of four music genres through 1960s until 2000s. Overall, five features of English song lyrics are identified based on this diachronic analysis of DCOESL; 1) high density of cognition and mental verbs, 2) high density of pronouns, 3) use of contraction, 4) simple sentence structure, and 5) high density of simple present tense. A usage-based model of mental verbs *know*, *want*, and *love* was developed to reflect the findings from this study. These interesting findings ultimately lead to the conclusion that song lyrics are conversational, or a conversation-like register.

6. Acknowledgement

The authors wish to thank Universiti Pendidikan Sultan Idris (UPSI) for supporting this research and the Research Management and Innovation Centre (RMIC) UPSI for funding the journal publication.

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