Academic Vocabulary in Psychology Research Articles: A Corpus-Based Study[1]

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Abstract

The current corpus-based study investigated the lexical profile of psychology research articles based on General Service List (GSL) (West, 1953) and Academic Word List (AWL) (Coxhead, 2000). To this end, a corpus of 8,500 psychology research articles with around 74 million words was analyzed. The results showed that the AWL accounted for 13.12% of the tokens in the corpus. Further computer analysis of the corpus revealed that 472 out of 570 word families in the AWL have been used frequently in psychology research articles. The study also identified 693 word types outside the GSL and the AWL which occurred frequently in the corpus and accounted for 6.1% of the tokens. Finally, the findings of this study revealed that 1,537 high frequent AWL and non-GSL/AWL word types (rather than word families) provided around 17.91% coverage of the corpus, while the high ranking 570 word types in this list accounted for about 13.44% of the corpus which is higher than the coverage of the 570 AWL word families combined (with about 3000 types). Based on these findings, the study concluded that although the AWL is a valuable pedagogical resource for teaching academic vocabulary, there is a need to develop more restricted and discipline specific word lists to cater for the needs of students in different subject areas. The study also highlights the significance of these findings.

Resumen

El presente estudio investigó el perfil léxico de los artículos científicos de psicología basado en la Lista de Servicios Generales (GSL) (West, 1953) y la Lista de Palabras Académicas (AWL) (Coxhead, 2000). Con este fin, se analizó un corpus de 8.500 artículos con alrededor de 74 millones de palabras. Los resultados mostraron que el AWL representaba el 13,12% de los tokens en el corpus. Análisis informáticos posteriores del corpus revelaron que 472 de 570 familias de palabras en el AWL se han utilizado con frecuencia en artículos de investigación psicológica. El estudio también identificó 693 tipos de palabras fuera del GSL y el AWL que ocurrieron con frecuencia en el corpus y representaron el 6.1% de los tokens. Finalmente, los hallazgos de este estudio revelaron que 1,537 tipos de palabras frecuentes de alto nivel de AWL y no GSL / AWL (en lugar de familias de palabras) proporcionaron alrededor del 17.91% de cobertura del corpus, mientras que los 570 tipos de palabras de alto rango en esta lista representaron aproximadamente 13.44 % del corpus que es más alto que la cobertura de las 570 familias de palabras AWL combinadas (con aproximadamente 3000 tipos). Con base en estos hallazgos, el estudio concluyó que, aunque el AWL es un recurso pedagógico valioso para enseñar vocabulario académico, existe la necesidad de desarrollar listas de palabras específicas más restringidas y disciplinarias para satisfacer las necesidades de los estudiantes en diferentes materias. El estudio también destaca la importancia de estos hallazgos.

Introduction

Identifying and categorizing academic and discipline-specific vocabulary is important to a variety of stakeholders in English for Academic Purposes (EAP) programs. According to Coxhead and Nation (2001), this type of vocabulary refers to those items that occur with reasonably higher frequency across various academic genres, but with much lower frequency in other text types. It has been argued that learning academic vocabulary is a major challenge for first year undergraduates (Li & Pemberton, 1994), and knowledge of academic vocabulary is essential for reading academic texts and for successful writing in different subject areas (Corson, 1997). As a result, over the past years, there has been a concern among teachers and researchers to develop different vocabulary lists to serve the needs of language learners (Farrell, 1990; Xue & Nation, 1984). Since its creation, the Academic Word List (AWL) has been employed extensively in EAP programs, materials development, and vocabulary tests (Coxhead, 2011). According to Coxhead and Nation (2001), the pedagogical value of the AWL as a teaching instrument lies in the fact that when combined with General Service List (GSL) (West, 1953), it covers about 90% of the words in most academic texts. Coxhead (2011) also claims that the AWL has a great potential in helping instructors and students to set vocabulary learning goals by focusing on the most useful vocabulary items in EAP

1 This is a refereed article. Retrieved: 10 December, 2019. Accepted: 3 April, 2020.
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programs. The development of this list, which contains 570 word families was based on a corpus of 3.5 million words, featuring academic textbooks and journals, selected from arts, commerce, law, and science (Coxhead, 2000).

Despite its widespread use and acceptance as a benchmark for materials developments in EAP (Huntley, 2006; Schmitt & Schmitt, 2005; Wells, 2007), a number of studies have questioned the usefulness of a common core approach for identifying an academic word list in order to satisfy the needs of a diverse group of learners in different English for Specific Purposes (ESP) courses (Chen & Ge, 2007; Durrant, 2017; Hyland & Tse, 2007). In this regard, it has been strongly argued that the knowledge of specific vocabulary in a given field is largely related to the content knowledge of that discipline (Hyland, 2002, 2006; Woodward-Kron, 2008). A serious criticism leveled against the AWL is that the list is too general since offers language learners some vocabulary items that they don't need, and it limits their exposure to those items they do need (Chen & Ge, 2007; Hyland & Tse, 2007; Paquot, 2007). In order to address these shortcomings, a number of discipline-specific vocabulary lists have been developed (Green & Lambert, 2018; Hajiyeva, 2015; Hsu, 2013; Konstantakis, 2007; Lei & Liu, 2016; Tangpijaikul, 2014; Wang et al., 2008; Ward, 2009). In spite of its shortcomings, the value of the AWL has been acknowledged as a great resource for learners and instructors (Eldridge, 2008). Alongside with the GSL, the AWL has been employed as the base list for identifying and categorizing specialized vocabulary for a number of disciplines (e.g., Chen & Ge, 2007; Csomay & Prades, 2018; Dang & Webb, 2014; Khani & Tazik, 2013; Li & Qian, 2010; Martínez et al., 2009; Mozaffari & Moini, 2014; Valipouri & Nassaji, 2013; Vongpumivitch et al., 2009; Yang, 2015).

Given the needs of graduate students and researchers in most EFL contexts to read published research and publish their own research in international journals in English (Martínez et al., 2009; Valipouri & Nassaji, 2013), there remains a need to investigate the vocabulary learning needs of students in different subject areas. However, according to Coxhead (2018), while the increased demand for STEM (Science, Technology, Engineering and Mathematics) education for international students has inspired a great deal of attention among researchers to these fields, the humanities have not been as thoroughly researched in university vocabulary studies, and many subject areas including biology, chemistry, and psychology have received scant attention. Given the point that no previous study investigated the AWL presence and its coverage in psychology research articles, the current study aims to fill this gap in the literature. Moreover, due to technological and software developments in corpus linguistics in recent years which have made it possible to analyze much larger corpora in vocabulary studies, this study sets out to investigate a very large corpus of psychology research articles (74 million words) to provide a detailed understanding of their lexical profile.

Review of Related Literature: AWL across Disciplines

A number of studies have investigated the coverage of the AWL in different text types in various academic disciplines (see Table 1 for a summary of some related studies in a chronological order). In this section, the findings of these studies will be summarized.

Study	*Type of corpora*	*Size (words)*	*AWL coverage*
Chen and Ge (2007)	Medical research articles	190,425	10.07%
Hyland and Tse (2007)	Professional and learner texts across a variety of genres from sciences, engineering, and social sciences	3,292,600	10.60%
Konstantakis (2007)	Business English course books	600,000	4.66%
Martínez et al. (2009)	Agriculture research articles	826,416	9.06%
Vongpumivitch et al. (2009)	Applied linguistics research papers	1,500,000	11.17%
Li and Qian (2010)	Hong Kong Financial Services Corpus	6,279,702	10.46%
Khani and Tazik (2013)	Applied linguistics research articles	1,553,450	11.96%
Valipouri and Nassaji (2013)	Chemistry research articles	4,000,000	9.96%
Mozaffari and Moini (2014)	Education Research Articles	1,710,989	4.94%
Shabani and Tazik (2014)	ESP and Asian EFL Journal Research Articles	320,310	14.89%
Hajiyeva (2015)	Subject-specific university textbooks for English majors	508,802	6.50%
Tongpoon-Patanasorn (2018)	A sub-corpus of the Khon Kaen University Business English (KKU BE) Corpus	10,093,425	10.52%

Table 1: A summary of some recent studies investigating AWL in different texts types

Some studies investigating the AWL in various contexts provided different profiles regarding its coverage. For example, two studies reported that the AWL accounted for less than 5% of their analyzed corpora (Konstantakis, 2007; Mozaffari & Moini, 2014). Nonetheless, Shabani and Tazik (2014) investigated the presence of the AWL items in 80 research articles (with 320,310 running words) selected from two Asian EFL and ESP journals, and they reported that the AWL covers about 14.89% of their corpus. A study by Konstantakis (2007) in particular indicated that the GSL and the AWL words provided a total coverage of 90% in the corpus of business English course books with 600,000 running words, with the AWL accounting for only 4.66% of this coverage. By establishing a Business Word List, this study found some vocabulary items with high frequency occurrences in the corpus that provided an additional coverage of 2.79%. It should be noted, however, that as these studies investigated relatively small corpora, their results might be biased as the size of the corpus is crucial for occurrence of some lexical items (Sinclair, 2005). More specifically, the size of the corpus is of prime importance in studying specialized and academic vocabulary. Unlike high frequent vocabulary, these items tended to occur with much less frequency in specialized domains.

In another study, Hyland and Tse (2007) explored the distribution of the AWL word families in a multi-genre and multi-discipline corpus of 3.3 million words, which was principally compiled based on sound criteria and balanced among various disciplines. By providing a strong case for the impracticality of a common core approach to identify and classify academic vocabulary, this study concluded that "although the AWL covers 10.6% of the corpus, individual lexical items on the list often occur and behave in different ways across disciplines in terms of range, frequency, collocation, and meaning" (p. 235). The findings of the study also emphasized that despite the merits and considerable coverage of the AWL in academic texts of different genres, it "might not be as general as it was intended to be" (p. 235), so there is a need to develop more restricted and discipline-based word lists. In a more recent study with similar conclusions, Hajiyeva (2015) analyzed a 508,802-word corpus of subject-specific university textbooks for frequency, distribution, and coverage of the AWL and the British National Corpus (BNC) frequency-based word families. Based on the findings of this study, the AWL world families constituted a very small proportion of the total words in the corpus (i.e., 6.5%), providing further support for the claim made by Hyland and Tse (2007).

Furthermore, Li and Qian (2010) investigated the presence of the AWL items in Hong Kong Financial Services Corpus (HKFSC) and reported that the GSL and the AWL in total covered about 83.09% of the tokens in their analyzed financial texts. The findings of this study also revealed that the 570 AWL word families covered around 10.46% of 6,279,702 running words in the finance corpus. In another study of a multimillion-word corpus of finance texts, Tongpoon-Patanasorn (2018) found that the AWL items cover about 10.52% of finance sub-corpus (10,093,425 words) of the Khon Kaen University Business English (KKU BE) Corpus. A number of other studies have investigated the coverage of the AWL items in research articles (Chen & Ge, 2007; Khani & Tazik, 2013; Martínez et al., 2009; Valipouri & Nassaji, 2013; Vongpumivitch et al., 2009). In one of the early studies of this category, Chen and Ge (2007) found that 292 out of the 570 the AWL word families were frequently used in medical research articles written in English. The AWL words also accounted for around 10.07% of their 190,425 running word corpus. Findings also indicated that 111 AWL word families were used infrequently, and 99 families were never used in medical research articles. Furthermore, high-frequency AWL items were used differently in medical research articles than in the AWL sub-lists compiled by Coxhead (2000). Investigating the presence of the AWL items in the five sections of medical research articles (i.e., abstract, introduction, materials and methods, results, and discussion) showed that the AWL items were dispersed throughout the articles and had varying rhetorical functions in different sub-sections of research papers. These findings are in line with other studies which have concluded that the AWL is far from being a complete academic vocabulary list for a wide range of subject areas and field of studies (Hajiyeva, 2015; Hyland & Tse, 2007).

In another study with both quantitative and qualitative analysis, Martínez et al. (2009) investigated the academic vocabulary in agriculture research articles. They reported that the cumulative coverage of the GSL and the AWL accounted for about 76.59% of the whole corpus with 826,416 running words, while the AWL represented around 9.06% of the tokens. Moreover, the findings of this study revealed that 37.50% of the AWL (out of 3107 types) did not occur at all in the corpus of agriculture research articles. Qualitative analysis of the corpus also revealed that some words from the AWL had technical meanings in the agriculture research articles corpus. Similar to the findings reported by Chen and Ge (2007), Martínez

et al. (2009) also found that the use of the AWL items in different sections of research articles vary considerably, and the lowest and the highest number of the AWL types were used in the results and the discussion sections respectively. It should be noted that the majority of studies investigating the AWL in various corpora are mostly quantitative (and hence limited), and the study by Martínez et al. (2009) in particular demonstrated that in order to better understand the behavior of the AWL items in a given field, qualitative analyses are of prime importance.

Vongpumivitch et al. (2009) investigated the coverage of the AWL in applied linguistics research articles and reported that the AWL items accounted for 11.17% of the corpus; nonetheless, this study did not provide any account of combined coverage of GSL and AWL items in articles. In another study of applied linguistics research articles with the same size corpus, Khani and Tazik (2013) found that the AWL items accounted for around 11.96% of all tokens in the corpus, and when combined with GSL, the cumulative coverage of the two lists reached 88%. This coverage is higher than 86.1% coverage reported by Coxhead (2000), and considerably larger than results obtained results by Martínez et al. (2009) which was 76.59%. Valipouri and Nassaji (2013) also investigated the frequency and distribution of the AWL in a corpus of 1,185 chemistry research articles containing four million words. Results of the latter study revealed that 327 out of 570 AWL word families occurred frequently in the corpus of chemistry research articles, and the AWL items accounted for about 9.60% of tokens in the whole corpus. Moreover, non-GSL/AWL items accounted for about 24.57% of all tokens, which means that the two lists provided approximately 75% coverage of the tokens in the 4 million words corpus.

The comprehensive view offered by these studies indicates that the AWL covers around 10% of most academic texts (Coxhead, 2000; Coxhead & Byrd, 2007); however, its coverage of different texts varies considerably among some disciplines. In this regard, there remains a need to further investigate the vocabulary profile of academic texts in less studied disciplines. Given the fact that the field of psychology has been neglected in vocabulary studies, the current study aims to fill this gap by investigating the distribution and frequency of the AWL (and non-GSL/AWL) items in psychology research articles.

The Study

Coxhead and Nation (2001) divided English vocabulary into four categories: (1) high-frequency or general service vocabulary, (2) academic vocabulary, (3) technical vocabulary and (4) low-frequency vocabulary. Nation and Waring (1997) argued that beginner English language learners should focus on the first 2000 most frequently occurring word families of English in the GSL, which constitute the majority of spoken and written language in their various forms. For those students in English for Academic Purposes (EAP) programs, a major source of difficulty is academic vocabulary (Li & Pemberton, 1994). According to Farrell (1990) academic or semi-technical vocabulary falls somewhere between technical and general words and is viewed as "formal, context-independent words with a high frequency and/or wide range of occurrence across scientific disciplines, not usually found in basic general English courses; words with high frequency across scientific disciplines" (p. 11).

The current study aimed to develop an academic word list for psychology students. To this end, it investigated the lexical profile of psychology research articles based on GSL (West, 1953) and AWL (Coxhead, 2000). The following research questions were addressed:

1. *What is the coverage of AWL in psychology research articles corpus?*
2. *Which items from the AWL occur more frequently in psychology research articles?*
3. *Which lexical items occur frequently in psychology research articles, but are not included in the GSL and the AWL lists?*

The Corpus

The current study adopts the criteria proposed by Sinclair (2005) in terms of size, balance, and representativeness. A corpus of psychology research articles was compiled and analyzed. First, AntCorGen software (Anthony, 2019) which is a freeware tool for creating discipline-specific corpora was used, and a corpus of 20,000 psychology research articles containing around 143,000,000 words was created. This very large corpus was representative of experimental research articles genre (Swales, 1990) in the field of psychology, and it contained articles from all sub-areas of this discipline, including cognitive psychology, developmental psychology, and social psychology. In order to create a more manageable corpus for

further analysis, a second corpus was created by assigning a number to every research article, followed by a random selection of 8,500 articles out of 20,000 (with approximately 74,000,000 running words). These research articles were then grouped randomly into 20 sub-corpora, each containing 425 research articles with around 3,700,000 running words. It should be noted that for the purpose of current study, all sections of psychology research articles including abstracts, body (introduction, materials and methods, results, discussion, and conclusion), references, and appendices were collected and analyzed.

Software for Analysis

The computer software used for lexical profiling of psychology research articles in this study was AntWordProfiler (Anthony, 2014), which is a freeware tool available for analyzing the vocabulary level and the complexity of texts. The GSL and the AWL are the default word lists that come with AntWordProfiler. The software compares the texts loaded into the program against a set of vocabulary level lists and generates vocabulary statistics and complete frequency information about the corpus.

Data Analysis

For the purpose of this study, the frequency and distribution of word families and types in the corpus were analyzed based on the GSL and the AWL word lists. Furthermore, the obtained outputs from AntWordProfiler were used to identify frequently used general service and academic vocabulary, and also frequently used non-GSL/AWL items in psychology research articles. In order to complete this identification following Coxhead (2000), three criteria including range, frequency, and specialized occurrence were used for profiling the GSL and the AWL items in psychology research articles. As for range, AWL (and non-GSL/AWL) words which occurred in all 20 sub-groups of the corpus were included in the list of the most frequent items in psychology research articles. For frequency, the word forms and types had to occur at least 28.5 times in a million words (2100 times in the entire corpus and at least 105 time in each of 20 sub-corpora) to be included in the high frequent lexical items list. For specialized occurrence, the selected items had to be outside the most frequently occurring word families in English based on the GSL (West, 1953).

A major concern in developing word lists is how to determine the unit of counting including tokens, types, lemmas, and families. A common approach employed in most corpus studies is using word families, defined as the base word plus its inflected forms and transparent derivations (Bauer & Nation, 1993). For example, vocabulary items including *anticipate, anticipated, anticipates, anticipating, anticipation, anticipations, anticipatory*, and *unanticipated* are all members of a single word family with the word *anticipate* being the headword. The underlying assumption in this approach is that knowledge of the base word in a word family facilitates the understanding of its derived forms (Coxhead, 2000; Xue & Nation, 1984). However, this view has been challenged recently, and a number of studies have questioned the usefulness of word families as a unit for counting; thus, lemmas are used instead (Brezina & Gablasova, 2015; Gardner & Davies, 2014; Lei & Liu, 2016). In this regard, a major concern which is specifically related to learning English as a foreign language (EFL) is that using headwords in developing word lists simply assumes that knowing one family member contributes to the knowledge of all the other members of the same family for the less proficient learners, and this is misleading (Ward, 2009). Moreover, the headwords in the AWL expand to around 3,000 word types, making it even more difficult for EFL learners to learn them out of context. In order to analyze the coverage of the GSL and the AWL items in psychology research articles based on these considerations, Coxhead's (2018) word family has been used as the unit of analysis. Nonetheless, for creating a more restricted and pedagogically useful list, the current study included high frequent word types (defined as single word forms) in Psychology Academic Word List (Appendix).

Finally, the study ensures validity concerns by a principled creation of a corpus of psychology research articles in terms of size, balance, and representativeness (Sinclair, 2005) and the reliability of findings by analyzing the data with computers, which are much accurate and faster than human analysis. Moreover, most of the similar studies conducted to investigate lexical profile of different corpora have used the *Range* software (Coxhead, 2000) which was developed nearly two decades ago and has not been updated since that time. Currently the AntWordProfiler (Anthony, 2014) is the best software available for lexical profiling of texts, which provides a better analysis of data with some additional and useful features for researchers (for more information see: https://www.laurenceanthony.net/software/antwordprofiler).

Results and Discussion

The focus of the current study was (1) on profiling the frequency and the coverage of the GSL + AWL in psychology research articles, (2) identifying the most useful and high frequency academic words for psychology discipline, and (3) identifying frequently occurring words in psychology research articles which are not included in the GSL and the AWL lists. The following subsections will present related results and discussions with respect to the aforementioned goals.

Coverage of the GSL and the AWL in the Corpus

Table 2 shows the overall lexical profile of a corpus of psychology research articles analyzed in this study. Results indicated that the GSL word families accounted for about 72.08% of 74,016,481 tokens in the corpus; the first most frequent words in English based on this list accounted for 66.14% while the second 1,000 word families covered only 5.94% of the corpus. The AWL word families also accounted for 9,708,661 tokens, which are 13.12% of the corpus, and together with the GSL, the cumulative coverage of these two-word lists reached 85.2%. Regarding the AWL word families, results indicate that almost all 570 of the AWL word families have been used in psychology research articles written in English. Finally, non-GSL/AWL items constituted 109,573,27 tokens, or 14.8% of the corpus.

Word Lists	Token	Token%	Cumtoken%	Type	Group
1st GSL	48,953,298	66.14	66.14	3982	998
2nd GSL	4,397,195	5.94	72.08	3371	985
AWL	9,708,661	13.12	85.2	2942	569
Non-GSL/AWL	10,957,327	14.8	100	14,2818	14,2818
TOTAL	74,016,481				

Table 2: Coverage of GSL and AWL in the larger psychology research articles corpus

Comparing these findings with previous studies indicated that coverage of the AWL items in psychology research articles is higher than research articles published in some other disciplines. For example, the AWL coverage of 13.12% in this study is higher than 11.17% coverage reported by Vongpumivitch et al. (2009), and 11.96% reported by Khani and Tazik (2013) for applied linguistics research articles. It is also considerably higher than the AWL coverage of 10.07% for medical research articles (Chen & Ge, 2007), 9.06% for agriculture research articles (Martínez et al., 2009), and 9.96% in chemistry research articles (Valipouri & Nassaji, 2013). One explanation for this higher coverage might be the fact that in psychology research articles analyzed in this study, almost all word families from the AWL were used. However, in the study conducted by Martínez et al. (2009) for example, 37.50% of the AWL items did not occur at all in the corpus of agriculture research articles. In terms of cumulative coverage of the GSL and the AWL items in psychology research articles, the results obtained in this study also differ from the previous studies on agriculture, applied linguistics, and chemistry research articles. In this regard, the current study indicated that both lists accounted for 85.2% of all tokens in the corpus, which is considerably higher than 76.59% in research articles in agriculture (Martínez et al., 2009), and 75% in chemistry (Valipouri & Nassaji, 2013) . Nonetheless, this level of coverage is less than 88% coverage of the GSL and the AWL items reported for applied linguistics research articles (Khani & Tazik, 2013; Vongpumivitch et al., 2009).

Frequently Used AWL Items in the Corpus

Regarding the most frequently used AWL word families in psychology research articles, 472 out of 570 word families from the AWL met the criteria set for this study. Further analysis also revealed that these 472 word families accounted for about 12.98% of all tokens in the corpus. This means that the remaining 98 word families from the AWL used in psychology research articles covered only 0.14% of the tokens in the corpus. Table 3 displays the 50 most frequent AWL word families found in the corpus which accounted for about 5.71% of all tokens. Results also indicate that the 100 most frequent AWL word families accounted for 8% of the tokens in the corpus, which is impressive. Considering the word types, the results indicate that 842 word types from the AWL occurred frequently in the corpus (see the Appendix for the full list), accounting for 8,767,820 tokens, and around 11.84% of the corpus.

Rank	Headword	Frequency	AWL sub-lists	Rank	Headword	Frequency	AWL sub-lists
1	participate	323,527	2	26	consist	73,256	1
2	significant	192,933	1	27	affect	70,210	2
3	analyse	176,985	1	28	identify	66,359	1
4	task	174,505	3	29	method	65,630	1
5	respond	167,710	3	30	predict	65,045	4
6	vary	153,543	1	31	estimate	58,143	1
7	data	139,776	1	32	range	56,455	2
8	individual	129,132	1	33	statistic	54,529	4
9	process	104,675	1	34	error	53,771	4
10	visual	103,851	8	35	select	51,368	2
11	factor	102,717	1	36	image	50,341	5
12	indicate	96,124	1	37	outcome	49,216	3
13	item	94,806	2	38	evident	47,623	1
14	research	93,842	1	39	bias	46,472	8
15	perceive	90,681	2	40	hypothesis	46,266	4
16	function	83,572	1	41	category	46,243	2
17	interact	83,139	3	42	evaluate	45,506	2
18	positive	82,258	2	43	investigate	45,149	4
19	journal	80,149	2	44	accurate	44,752	6
20	assess	80,089	1	45	context	44,416	1
21	negate	79,016	3	46	contrast	43,565	4
22	target	77,922	5	47	distribute	41,704	1
23	specific	75,638	1	48	stress	41,511	4
24	previous	74,505	2	49	structure	41,215	1
25	similar	73,474	1	50	proceed	40,057	1

Table 3: The 50 most frequent AWL families in psychology research articles

As presented in Table 4, 22 out of the 50 most frequent AWL families in psychology research articles would be grouped with Coxhead's (2000) first sub-list, 11 with the second, five with the third, and seven with sub-list 4. The results also indicated that some AWL word families that occurred very frequently in psychology research articles would be grouped under sub-lists 6 and 8 in Coxhead (2000). Some examples include *visual, bias*, and *accurate*. Comparing these findings to the results reported by Hyland and Tse (2007) revealed that five word families from the top ten most frequent AWL headwords in their corpus also appeared among 10 most frequent AWL items in psychology research articles. These include *significant, analyze, vary, data*, and *process* which seem to be common to most academic discourse. *Significant, analyze*, and *data* were also among the 10 most frequent AWL items in agriculture research articles (Martínez et al., 2009), where also 14 AWL families from the top 50 are shared with psychology research articles. There were, however, fewer shared items with chemistry research articles, and only 12 in the top 50 AWL headwords identified by Valipouri and Nassaji (2013) are also among the top 50 in psychology research articles. These findings further support the claims made by previous studies regarding the impracticality a common core word list for a variety of disciplines and fields of study (Hyland & Tse, 2007; Martínez et al., 2009). The findings also underscore the need for creating more restricted and needs-based word lists for different groups of learners. Nonetheless, it should be acknowledged that the AWL has a great pedagogical value in teaching academic vocabulary for psychology discipline as it provided a reasonable coverage of research articles analyzed in this study.

Frequently Used non-GSL/AWL Items in Psychology Research Articles

The results of corpus analysis revealed that 693 word types outside the GSL and the AWL occurred frequently in psychology research articles and met the criteria set for the current study. These 693 types accounted for 4,492,608 tokens, and their cumulative coverage was around 5.7% of the corpus. Table 5 shows the frequency information for the 20 most frequently occurring non-GSL/AWL word types in the

corpus. The 10 most frequent types include *stimuli, non, scores, patients, stimulus, cognitive, emotional, score, correlation, and emotion* which occurred 605,674 times in the corpus and accounted for about 0.82% of all tokens.

Rank	Headword	Frequency	Rank	Headword	Frequency
1	stimuli	82,151	11	symptoms	33,864
2	non	76,065	12	clinical	28,764
3	scores	69,488	13	baseline	27,794
4	patients	68,432	14	personality	27,590
5	stimulus	63,731	15	spatial	27,465
6	cognitive	63,225	16	temporal	26,893
7	emotional	58,478	17	emotions	26,703
8	score	53,233	18	ratings	26,627
9	correlation	35,530	19	questionnaire	26,276
10	emotion	35,341	20	auditory	25,727

Table 4: The 20 most frequent non-GSL/AWL word types in psychology research articles

Further analysis of non-GSL/AWL items found in the output data also revealed that there were a considerable number of non-word items (i.e., *signific, correl*, …), which were probably caused by the way the AntCorGen software (Anthony, 2019) generated the corpus (i.e., collecting research articles from PLOS database and creating text files). These items, doi numbers, and other non-word characters accounted for about 2.58% of the corpus. Finally, analyzing non-GSL/AWL items against BNC-COCA list 31 and 32, which are for abbreviations and proper nouns, it was found that around 4% of all tokens in the corpus fall into these categories.

Implications for Teaching Vocabulary

The findings of this study have some implications for teaching vocabulary for psychology students. First, as the results indicate, the coverage of the AWL items in psychology research articles is considerable, and 472 out of 570 word families accounted for about 13.12% of the tokens in the corpus. In this regard, the AWL should be considered as a valuable pedagogical resource for teaching EAP students in the field of psychology with huge potential for assisting them in their reading and (probably) writing psychology research articles. However, this study also found that some AWL items (i.e., 98 families) are used very infrequently in psychology research articles and accounted for 0.14% of the corpus. This means that although focusing on materials published based on AWL (e.g., Huntley, 2006; Schmitt & Schmitt, 2005; Wells, 2007) can help psychology students a lot; a better approach is to focus on items which are more relevant to the discipline of psychology. In this regard, the findings of this study can help teachers in EAP programs select the appropriate word types from the AWL in order to focus their teaching on those items based on students' needs.

Second, this study also revealed that there are some non-GSL/AWL items in psychology research articles that occurred with high frequency but are not included in vocabulary lists. For international and non-native English-speaking psychology students, these highly relevant but less frequent words in everyday English pose a learning burden, and teachers need to consider these aspects while teaching (Ward, 2009; Yang, 2015). As these items occurred with high frequency in psychology research articles, there is a considerable value in teaching them if teachers and students invest some time on mastering these items. Moreover, the results of this study further supported the need for creating more restricted and discipline specific vocabulary list to serve the needs of specific groups of students. The list provided in the Appendix includes 1,537 word types which occurred frequently in the 74 million corpus of psychology research articles used in this study. These word types accounted for almost 17.91% of all tokens in the corpus, which roughly means that one in every six words from psychology research articles is a member of this list.

Furthermore, our analysis revealed that the 570 high-ranking AWL and non-GSL/AWL word types from the aforementioned list provided 13.44% coverage of the corpus. This finding is quite interesting as learning

these items (even in isolation or by list learning) is less challenging for students than learning the 570 AWL word families which expand into around 3,000 word types. Finally, when combined with the GSL, these 1,537 word types provided about 90% coverage of the corpus, and when the proper nouns and abbreviation were added, the overall coverage even reached around 94%. In this regard, the list provided in the Appendix can be regarded as an academic word list for the discipline of psychology, and it has a great pedagogical value in helping psychology students and their EAP instructors set vocabulary learning goals which are aligned with their disciplinary needs.

According to Webb and Nation (2017), certain conditions are needed for vocabulary learning to take place, which include meaningful repetition and significant encounters with target words. In this regard, beside published materials based on AWL (e.g., Huntley, 2006; Schmitt & Schmitt, 2005; Wells, 2007), recent developments in ICT technologies can provide students and teachers with more tools and opportunities for learning and teaching vocabulary. Li and Qian (2010) recommend using the AWL highlighter and the AWL Gapmaker as two applications for learning the AWL. With the growing importance of mobile technologies in foreign language learning and teaching and numerous affordances provided by them (Godwin-Jones, 2017; Reinhardt, 2018), there are even further possibilities to integrate them into language learning programs. AWL Builder Multilingual, which is a free application developed by EFL Technologies for Android devices (available in Google Play Store), is an example of available tools for teaching academic vocabulary. This mobile application allows selecting specific target words from 570 AWL word families to be studied and uses intelligent flashcard technology to help students to learn and review selected items (the definitions are provided in simple English). The application also keeps detailed records of the learning progress with the possibility of emailing the report to teachers. In this regard, mastering frequently occurring AWL items in psychology research articles by using this application can help psychology students a lot.

Conclusion

The current study investigated the frequency and coverage of the AWL items in psychology research articles using a corpus of 74 million words. The findings indicated that the AWL items accounted for 13.12% of all tokens in the corpus. The corpus was further analyzed to identify frequently used AWL and non-GSL/AWL items in psychology research articles. The results indicated that 472 AWL word families were used frequently in the corpus and that 693 word types outside the GSL/AWL lists were used frequently. In the Appendix, 1,537 word types are listed with their frequency information in the corpus, providing a cumulative coverage of 17.91% of psychology research articles. Despite acknowledging the value of the AWL (Coxhead, 2000) as a pedagogical resource for EAP programs, the findings of this study provided further support for the need for creating more discipline specific word lists for various fields of study (Hyland & Tse, 2007), as the same number of 570 word types and not families provided higher coverage of the corpus.

The current study had some limitations. First, the AntCorGen (Anthony, 2019) software which collects only open access and freely available articles from the PLOS database in compiling the corpus. However, in order to compensate for this limitation, a very large corpus was created that contained articles written by both native and non-native English speakers; then, articles were randomly selected for compiling a second corpus for further analysis based on principled criteria. Second, this study was quantitative in nature and the behavior of the AWL and other frequently used items in research articles was not examined qualitatively. Despite providing a general picture of the lexical profile of psychology research articles, this study's findings did not provide any insights on how the AWL and high frequent non-GSL/AWL items are used in the field of psychology to perform rhetorical functions. Finally, following previous studies (Chen & Ge, 2007; Hajiyeva, 2015; Lei & Liu, 2016; Martínez et al., 2009; Muñoz, 2015; Shabani & Tazik, 2014; Valipouri & Nassaji, 2013), the GSL and the AWL were used as the base lists in order to analyze psychology research articles. Although these lists provided a considerable coverage of the corpus and the AWL is still a benchmark for most published materials in EAP, there remains a need to investigate the coverage of the newly developed word lists such as the New General Service Lists (Brezina & Gablasova, 2015; Browne et al., 2013b) and New Academic Word List (NAWL) (Browne et al., 2013a) across various academic genres. Future studies can also use both quantitative and qualitative methods in their investigation to provide a better picture of vocabulary use in specific genres and develop more pedagogically sound approaches to teach academic and disciplinary vocabulary for EAP students and graduate students.

References

Anthony, L. (2014). *AntWordProfiler* (Version 1.4.1) [Computer software]. Waseda University. https://www.laurenceanthony.net/software

Anthony, L. (2019). *AntCorGen* (Version 1.1.2) [Computer software]. Waseda University. https://www.laurenceanthony.net/software

Bauer, L., & Nation, P. (1993). Word Families. *International Journal of Lexicography, 6*(4), 253–279. https://doi.org/10.1093/ijl/6.4.253

Brezina, V., & Gablasova, D. (2015). Is there a core general vocabulary? Introducing the *New General Service List*. *Applied Linguistics, 36*(1), 1–22. https://doi.org/10.1093/applin/amt018

Browne, C., Culligan, B., & Phillips, J. (2013a). *New Academic Word List (NAWL).* http://www.newgeneralservicelist.org/nawl-new-academic-word-list

Browne, C., Culligan, B., & Phillips, J. (2013b). *New General Service List (NGSL).* http://www.newgeneralservicelist.org

Chen, Q., & Ge, G.-C. (2007). A corpus-based lexical study on frequency and distribution of Coxhead's AWL word families in medical research articles (RAs). *English for Specific Purposes, 26*(4), 502–514. https://doi.org/10.1016/j.esp.2007.04.003

Corson, D. (1997). The learning and use of academic English words. *Language Learning, 47*(4), 671–718. https://doi.org/10.1111/0023-8333.00025

Coxhead, A. (2000). A new academic word list. *TESOL Quarterly, 34*(2), 213–236. https://doi.org/10.2307/3587951

Coxhead, A. (2011). The Academic Word List 10 years on: Research and teaching implications. *TESOL Quarterly, 45*(2), 355–362. https://doi.org/10.5054/tq.2011.254528

Coxhead, A. (2018). *Vocabulary and English for specific purposes research.* Routledge. https://doi.org/10.4324/9781315146478

Coxhead, A., & Byrd, P. (2007). Preparing writing teachers to teach the vocabulary and grammar of academic prose. *Journal of Second Language Writing, 16*(3), 129–147. https://doi.org/10.1016/J.JSLW.2007.07.002

Coxhead, A., & Nation, P. (2001). The specialised vocabulary of English for academic purposes. In J. Flowerdew & M. Peacock (Eds.), *Research Perspectives on English for Academic Purposes* (pp. 252-267). Cambridge University Press.

Csomay, E., & Prades, A. (2018). Academic vocabulary in ESL student papers: A corpus-based study. *Journal of English for Academic Purposes, 33,* 100–118. https://doi.org/10.1016/j.jeap.2018.02.003

Dang, T. N. Y., & Webb, S. (2014). The lexical profile of academic spoken English. *English for Specific Purposes, 33*, 66–76. https://doi.org/10.1016/j.esp.2013.08.001

Durrant, P. (2017). Lexical bundles and disciplinary variation in university students' writing: Mapping the territories. *Applied Linguistics, 38*(2), 165–193. https://doi.org/10.1093/applin/amv011

Eldridge, J. (2008). "No, there isn't an 'academic vocabulary,' but…": A reader responds to K. Hyland and P. Tse's "Is there an 'academic vocabulary'?" *TESOL Quarterly, 42*(1), 109–113. https://doi.org/10.1002/j.1545-7249.2008.tb00210.x

Farrell, P. (1990). *Vocabulary in ESP - A lexical analysis of the English of electronics and a study of semi-technical vocabulary* (CLCS Occasional Paper No. 25) (ED332551). Trinity College.

Gardner, D., & Davies, M. (2013). A new academic vocabulary list. *Applied Linguistics, 35*(3), 305–327. https://doi.org/10.1093/applin/amt015

Godwin-Jones, R. (2017). Smartphones and Language Learning. *Language Learning & Technology, 21*(2), 3–17. https://dx.doi.org/10125/44607

Green, C., & Lambert, J. (2018). Advancing disciplinary literacy through English for academic purposes: Discipline-specific wordlists, collocations and word families for eight secondary subjects. *Journal of English for Academic Purposes, 35,* 105–115. https://doi.org/10.1016/j.jeap.2018.07.004

Hajiyeva, K. (2015). A corpus-based lexical analysis of subject-specific university textbooks for English majors. *Ampersand, 2,* 136–144. https://doi.org/10.1016/j.amper.2015.10.001

Hsu, W. (2013). Bridging the vocabulary gap for EFL medical undergraduates: The establishment of a medical word list. *Language Teaching Research, 17*(4), 454–484. https://doi.org/10.1177/1362168813494121

Huntley, H. (2006). *Essential academic vocabulary: Mastering the complete Academic Word List.* Houghton Mifflin Company.

Hyland, K. (2002). Specificity revisited: How far should we go now? *English for Specific Purposes, 21*(4), 385–395. https://doi.org/10.1016/S0889-4906(01)00028-X

Hyland, K. (2006). *English for Academic Purposes: An advanced resource book.* Routledge.

Hyland, K., & Tse, P. (2007). Is there an "academic vocabulary"? *TESOL Quarterly, 41*(2), 235–253. https://doi.org/10.1002/j.1545-7249.2007.tb00058.x

Khani, R., & Tazik, K. (2013). Towards the development of an academic word list for applied linguistics research articles. *RELC Journal, 44*(2), 209–232. https://doi.org/10.1177/0033688213488432

Konstantakis, N. (2007). Creating a business word list for teaching business English. *Estudios de Linguistica Inglesa Aplicada (ELIA), 7*, 79–102. http://revistas.uned.es/index.php/ELIA/article/download/18091/15242

Lei, L., & Liu, D. (2016). A new medical academic word list: A corpus-based study with enhanced methodology. *Journal of English for Academic Purposes, 22*, 42–53. https://doi.org/10.1016/j.jeap.2016.01.008

Li, S.-L., & Pemberton, R. (1994). An investigation of students' knowledge of academic and subtechnical vocabulary. *Proceedings Joint Seminar on Corpus Linguistics and Lexicology, Guangzhou and Hong Kong*, pp. 183–196.

Li, Y., & Qian, D. D. (2010). Profiling the Academic Word List (AWL) in a financial corpus. *System, 38*(3), 402–411. https://doi.org/10.1016/j.system.2010.06.015

Martínez, I. A., Beck, S. C., & Panza, C. B. (2009). Academic vocabulary in agriculture research articles: A corpus-based study. *English for Specific Purposes, 28*(3), 183–198. https://doi.org/10.1016/j.esp.2009.04.003

Mozaffari, A., & Moini, R. (2014). Academic words in education research articles: A corpus study. *Procedia - Social and Behavioral Sciences, 98*, 1290–1296. https://doi.org/10.1016/j.sbspro.2014.03.545

Muñoz, V. L. (2015). The vocabulary of agriculture semi-popularization articles in English: A corpus-based study. *English for Specific Purposes, 39*, 26–44. https://doi.org/10.1016/j.esp.2015.04.001

Nation, P., & Waring, R. (1997). Vocabulary size, text coverage and word lists. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 6–19). Cambridge University Press.

Paquot, M. (2007). Towards a productively oriented academic word list. In J., K. Walinski, K. Kredens & S. Gozdz-Roszkowski (Eds.), *Practical applications in language and computers 2005* (pp. 127-140). Peter Lang.

Reinhardt, J. (2018). Social media in second and foreign language teaching and learning: Blogs, wikis, and social networking. *Language Teaching*, 52(1), 1–39. https://doi.org/10.1017/S0261444818000356

Schmitt, D., & Schmitt, N. (2005). *Focus on vocabulary: Mastering the academic word list.* Longman.

Shabani, M. B., & Tazik, K. (2014). Coxhead's AWL across ESP and Asian EFL Journal Research Articles (RAs): A corpus-based lexical study. *Procedia - Social and Behavioral Sciences, 98,* 1722–1728. https://doi.org/10.1016/j.sbspro.2014.03.599

Sinclair, J. (2005). Corpus and Text – Basic Principles. In M. Wynne (Ed.), *Developing Linguistic Corpora: a Guide to Good Practice.* Oxbow Books.

Swales, J. M. (1990). *Genre analysis: English in academic and research settings.* Cambridge University Press.

Tangpijaikul, M. (2014). Preparing business vocabulary for the ESP classroom. *RELC Journal, 45*(1), 51–65. https://doi.org/10.1177/0033688214522641

Tongpoon-Patanasorn, A. (2018). Developing a frequent technical words list for finance: A hybrid approach. *English for Specific Purposes, 51*, 45–54. https://doi.org/10.1016/j.esp.2018.03.002

Valipouri, L. & Nassaji, H. (2013). A corpus-based study of academic vocabulary in chemistry research articles. *Journal of English for Academic Purposes, 12*(4), 248–263. https://doi.org/10.1016/j.jeap.2013.07.001

Vongpumivitch, V., Huang, J.-Y., & Chang, Y.-C. (2009). Frequency analysis of the words in the Academic Word List (AWL) and non-AWL content words in applied linguistics research papers. *English for Specific Purposes, 28*(1), 33–41. https://doi.org/10.1016/j.esp.2008.08.003

Wang, J., Liang, S.-I, & Ge, G.-C. (2008). Establishment of a medical academic word list. *English for Specific Purposes, 27*(4), 442–458. https://doi.org/10.1016/j.esp.2008.05.003

Ward, J. (2009). A basic engineering English word list for less proficient foundation engineering undergraduates. *English for Specific Purposes, 28*(3), 170–182. https://doi.org/10.1016/j.esp.2009.04.001

Webb, S. & Nation, P. (2017). *How vocabulary is learned.* Oxford University Press.

Wells, L. (2007). *Vocabulary mastery 1: Using and learning the Academic Word List.* University of Michigan Press.

West, M. (1953). *A General Service List of English Words.* Longman, Green.

Woodward-Kron, R. (2008). More than just jargon – the nature and role of specialist language in learning disciplinary knowledge. *Journal of English for Academic Purposes, 7*(4), 234–249. https://doi.org/10.1016/j.jeap.2008.10.004

Xue, G., & Nation, I. S. P. (1984). A university word list. *Language Learning and Communication, 3,* 215–229.

Yang, M.-N. (2015). A nursing academic word list. *English for Specific Purposes, 37*(1), 27–38. https://doi.org/10.1016/j.esp.2014.05.003

Appendix
Psychology Academic Word List
(Note: 1=AWL, and 2=non-GSL/AWL types)

RANK	TYPE	LIST	FREQ.
1	PARTICIPANTS	1	247650
2	DATA	1	139776
3	TASK	1	133201
4	SIGNIFICANT	1	120740
5	ANALYSIS	1	97803
6	VISUAL	1	96572
7	STIMULI	2	82151
8	JOURNAL	1	78854
9	RESEARCH	1	78073
10	RESPONSE	1	76939
11	NON	2	76065
12	POSITIVE	1	71229
13	NEGATIVE	1	69821
14	SCORES	2	69488
15	PATIENTS	2	68432
16	STIMULUS	2	63731
17	INDIVIDUAL	1	63499
18	COGNITIVE	2	63225
19	INDIVIDUALS	1	59873
20	TARGET	1	59466
21	EMOTIONAL	2	58478
22	ITEMS	1	57758
23	PREVIOUS	1	57086
24	SIGNIFICANTLY	1	55869
25	RESPONSES	1	54547
26	SCORE	2	53233
27	FACTORS	1	52491
28	INTERACTION	1	50384
29	FACTOR	1	49922
30	SIMILAR	1	49508
31	ANALYSES	1	48653
32	SPECIFIC	1	48502
33	VARIABLES	1	47693
34	ET	2	47471
35	PROCESSING	1	45357
36	PARTICIPANT	1	44095
37	EVIDENCE	1	41971
38	TASKS	1	41304
39	FUNCTION	1	39717
40	VS	2	38559
41	RANGE	1	38311
42	PERCEPTION	1	38056
43	GENDER	1	37718
44	PERCEIVED	1	37112
45	ITEM	1	37037
46	CONTRAST	1	36340
47	CORRELATION	2	35530
48	EMOTION	2	35341
49	STRESS	1	35058
50	SYMPTOMS	2	33864
51	ERROR	1	33751
52	DEPRESSION	1	33078
53	BIAS	1	32370
54	PROCESS	1	32108
55	OVERALL	1	31863
56	MENTAL	1	31226
57	CONTEXT	1	31135
58	PHYSICAL	1	30907
59	ACCURACY	1	30702
60	AFFECT	1	30495
61	CONDUCTED	1	30441
62	METHODS	1	30294
63	DURATION	1	30001
64	ROLE	1	29647
65	VARIABLE	1	29080
66	CONSISTENT	1	29033
67	CLINICAL	2	28764
68	APPROACH	1	28142
69	OBTAINED	1	27860
70	PHASE	1	27845
71	BASELINE	2	27794
72	PRIOR	1	27713
73	PERSONALITY	2	27590
74	SPATIAL	2	27465
75	PSYCHOLOGICAL	1	27406
76	METHOD	1	27265
77	PROCEDURE	1	27190
78	TEMPORAL	2	26893
79	EMOTIONS	2	26703
80	RATINGS	2	26627
81	POTENTIAL	1	26542
82	STATISTICAL	1	26438
83	INDICATE	1	26403
84	QUESTIONNAIRE	2	26276
85	NEUTRAL	1	25838
86	AUDITORY	2	25727
87	CUES	2	25676
88	PERCEPTUAL	2	25592
89	OUTCOMES	1	25578
90	HYPOTHESIS	1	25542
91	PRE	2	25066
92	REVEALED	1	24818
93	DISTRIBUTION	1	24805
94	CORRELATIONS	2	24710
95	FEATURES	1	24520
96	SESSION	2	24390
97	REGRESSION	2	24323
98	DESIGN	1	24322
99	INTERVENTION	1	23957
100	NETWORK	1	23894
101	IMAGES	1	23687
102	OUTCOME	1	23638
103	INDICATED	1	23612
104	RANDOM	1	23261
105	VERSION	1	23177
106	ADULTS	1	23108
107	ASSESSMENT	1	22920
108	IMPACT	1	22826
109	PROCESSES	1	22789
110	WHEREAS	1	22741
111	PERIOD	1	22536
112	IMAGE	1	22383
113	ASSESSED	1	22364
114	STRUCTURE	1	22258
115	FEEDBACK	2	22072
116	DEFINED	1	21519
117	CUE	2	21499
118	RELEVANT	1	21450
119	VARIANCE	1	21409
120	SEX	1	21259
121	PARAMETERS	1	21162
122	STATUS	1	21100
123	NORMAL	1	21030
124	INTERACTIONS	1	21000
125	IDENTIFIED	1	20725
126	SPECIFICALLY	1	20513
127	FINALLY	1	20457
128	SELECTED	1	20146
129	FURTHERMORE	1	20080
130	LINEAR	2	20004
131	ACTIVATION	2	19967
132	ASSESS	1	19857
133	LOCATION	1	19808
134	AREA	1	19676
135	ENVIRONMENT	1	19550
136	REGIONS	1	19493
137	AVAILABLE	1	19484
138	THRESHOLD	2	19472
139	INDEX	1	19439
140	ERRORS	1	19179
141	AREAS	1	19176
142	CORRELATED	2	18995
143	PREDICTED	1	18897
144	SENSORY	2	18801
145	INTENSITY	1	18717
146	INITIAL	1	18713
147	FACIAL	2	18704
148	EXPOSURE	1	18462
149	FOCUS	1	18453
150	CATEGORY	1	18441
151	REQUIRED	1	18440
152	INTERVAL	1	18434
153	ANOVA	2	18393
154	VALIDITY	1	18181
155	DISORDERS	2	18045

156	NEURAL	2	18028
157	DISORDER	2	17963
158	CRITERIA	1	17961
159	FIXATION	2	17837
160	SUBJECTIVE	2	17745
161	TRAITS	2	17744
162	CONSENT	1	17706
163	CATEGORIES	1	17691
164	DETECTION	1	17634
165	THEORY	1	17585
166	PREVIOUSLY	1	17419
167	STRATEGIES	1	17417
168	COMPLEX	1	17405
169	ORIENTATION	1	17317
170	RELIABILITY	1	17108
171	DEMONSTRATED	1	17105
172	INVOLVED	1	17027
173	AFFECTIVE	1	16690
174	FUNCTIONAL	1	16656
175	FINAL	1	16537
176	PRIMARY	1	16487
177	INTERNAL	1	16422
178	CORTEX	2	16327
179	MEDICAL	1	16278
180	INDICATING	1	16192
181	TRAIT	2	16183
182	PROPORTION	1	16022
183	MECHANISMS	1	16021
184	INDICATES	1	15948
185	SURVEY	1	15925
186	CORRESPONDING	1	15914
187	STRATEGY	1	15828
188	VERSUS	2	15806
189	SELECTION	1	15785
190	SESSIONS	2	15734
191	ONLINE	2	15666
192	ATTENTIONAL	2	15656
193	ESTIMATES	1	15620
194	VIDEO	2	15294
195	DISCRIMINATION	1	15240
196	REFERENCE	2	15239
197	VALENCE	2	15182
198	GOAL	1	15100
199	EVALUATION	1	15093
200	AROUSAL	2	15072
201	COMPONENT	1	15046
202	ALCOHOL	2	14985
203	INVESTIGATE	1	14895
204	IDENTIFY	1	14892
205	VERBAL	2	14882
206	REACTION	1	14856
207	ESTIMATED	1	14813
208	EXCLUDED	1	14797
209	ONSET	2	14783
210	SIGNIFICANCE	1	14782
211	DIMENSIONS	1	14719
212	VIA	1	14632
213	COMPONENTS	1	14623
214	SEQUENCE	1	14385
215	ASPECTS	1	14293
216	TEXT	1	14288
217	RATIO	1	14269
218	INVESTIGATED	1	14168
219	REGION	1	13897
220	GLOBAL	1	13886
221	VISION	1	13857
222	TARGETS	1	13844
223	FEATURE	1	13826
224	MOTIVATION	1	13780
225	ESTIMATE	1	13590
226	RANDOMLY	1	13589
227	GAZE	2	13589
228	MOOD	2	13571
229	FUNCTIONS	1	13395
230	PARAMETER	1	13342
231	AFFECTED	1	13322
232	MAXIMUM	1	13083
233	COMMUNICATION	1	13076
234	PERCENTAGE	1	13062
235	FOCUSED	1	12918
236	VARIABILITY	1	12810
237	STATISTICS	1	12734
238	PANEL	1	12686
239	FUNCTIONING	1	12624
240	TEAM	1	12534
241	STATISTICALLY	1	12529
242	PERSPECTIVE	1	12508
243	IDENTIFICATION	1	12475
244	PARADIGM	1	12425
245	PREDICT	1	12398
246	STIMULATION	2	12388
247	ANALYZED	1	12324
248	DOMAIN	1	12291
249	INTERVALS	1	12234
250	ADULT	1	12120
251	SECTION	1	12110
252	DEVIATION	1	12104
253	RESEARCHERS	1	12077
254	SIMILARLY	1	12073
255	ADAPTATION	1	12063
256	UNDERLYING	1	12047
257	CLUSTER	2	12042
258	FILE	1	12033
259	ETHICS	1	11980
260	PARTICIPATION	1	11951
261	DESPITE	1	11936
262	RESOURCES	1	11896
263	INTERVENTIONS	1	11830
264	COMPUTER	1	11759
265	APPROXIMATELY	1	11730
266	INFANTS	2	11661
267	DISTRESS	2	11619
268	DEMOGRAPHIC	2	11503
269	ALTERNATIVE	1	11466
270	SEXUAL	1	11461
271	PREDICTION	1	11446
272	ADDITIONALLY	2	11413
273	REGULATION	1	11381
274	SUBSEQUENT	1	11373
275	INTEGRATION	1	11327
276	CONSISTED	1	11319
277	NOVEL	2	11302
278	COMMUNITY	1	11271
279	CULTURAL	1	11262
280	AWARENESS	1	11237
281	MIN	2	11222
282	ALPHA	2	11190
283	INDUCED	1	11157
284	MAGNITUDE	2	11136
285	INPUT	1	11078
286	PARTNER	1	11050
287	POSITIVELY	1	11029
288	DISPLAY	1	11022
289	MEDIAN	2	11014
290	DIMENSION	1	11009
291	MAJOR	1	10997
292	AUTHORS	1	10928
293	EMPATHY	2	10914
294	DISPLAYED	1	10895
295	OPTIMAL	2	10889
296	NETWORKS	1	10867
297	ADJUSTED	1	10841
298	HENCE	1	10829
299	INSTANCE	1	10746
300	CONSISTENCY	1	10725
301	DEPRESSIVE	2	10666
302	GENERATED	1	10565
303	MECHANISM	1	10488
304	ATTITUDES	1	10463
305	VARIATION	1	10436
306	MANIPULATION	1	10409
307	INTELLIGENCE	1	10325
308	DESIGNED	1	10316
309	COLLEAGUES	1	10285
310	INTER	2	10270
311	DATASET	2	10265
312	CRITERION	1	10263
313	COEFFICIENTS	2	10261
314	EVALUATE	1	10167
315	SERIES	1	10165
316	PRIMING	2	10159
317	RECRUITED	2	10153
318	TONE	2	10143
319	EVALUATED	1	10139
320	RESPONDENTS	1	10135
321	CONSTANT	1	10129
322	APPROPRIATE	1	10106
323	SOURCE	1	10096

324	COMPUTED	1	10086
325	NEURONS	2	10071
326	ACADEMIC	1	10060
327	COEFFICIENT	2	10057
328	DIAGNOSIS	2	10054
329	COPING	2	10022
330	EXTERNAL	1	9958
331	EXPLICIT	1	9953
332	DOMAINS	1	9942
333	GYRUS	2	9941
334	OCCUR	1	9896
335	SUBSCALES	2	9815
336	THRESHOLDS	2	9812
337	AXIS	2	9793
338	SUB	2	9788
339	CONFLICT	1	9760
340	ADOLESCENTS	2	9759
341	PREVALENCE	2	9755
342	IDENTITY	1	9725
343	EFFICACY	2	9667
344	PITCH	2	9666
345	INTERPRETATION	1	9585
346	OBJECTIVE	1	9570
347	INSTRUCTED	1	9530
348	MAJORITY	1	9519
349	AMPLITUDE	2	9469
350	IMPLICIT	1	9441
351	IDENTICAL	1	9439
352	PROCEDURES	1	9425
353	ENVIRONMENTAL	1	9378
354	FRONTAL	2	9351
355	AUTISM	2	9283
356	ATTACHMENT	1	9248
357	SUBSCALE	2	9239
358	CAPACITY	1	9211
359	LOCATIONS	1	9188
360	CONGRUENT	2	9176
361	QUESTIONNAIRES	2	9158
362	PREDICTOR	2	9153
363	ASSIGNED	1	9149
364	SOFTWARE	2	9079
365	MATRIX	2	9073
366	COGNITION	2	9010
367	LINKED	1	8968
368	PEAK	2	8939
369	SEMANTIC	2	8924
370	RANGING	1	8910
371	PREDICTORS	2	8910
372	CONTACT	1	8896
373	THEORETICAL	1	8877
374	SUM	1	8864
375	INCOME	1	8832
376	SHIFT	1	8829
377	PSYCHOMETRIC	2	8796
378	SPECIES	2	8785
379	PSYCHOLOGY	1	8768
380	VIRTUAL	1	8757
381	RECALL	2	8653
382	ACCESS	1	8645
383	INSTRUCTIONS	1	8643
384	PHYSIOLOGICAL	2	8636
385	NEGATIVELY	1	8627
386	CONSTRUCT	1	8626
387	EQ	2	8622
388	POTENTIALLY	1	8588
389	FRAMEWORK	1	8536
390	CONCEPT	1	8534
391	CONFIRMED	1	8534
392	ESTABLISHED	1	8519
393	VERTICAL	2	8486
394	IMPAIRMENT	2	8481
395	META	2	8447
396	DISTINCT	1	8420
397	HORIZONTAL	2	8420
398	STABLE	1	8403
399	DERIVED	1	8401
400	JOB	1	8399
401	RESPOND	1	8387
402	BENEFIT	1	8368
403	ELEMENTS	1	8351
404	SIMILARITY	1	8343
405	PREDICTIONS	1	8342
406	EXPERIMENTER	2	8329
407	INTERVIEW	2	8318
408	INCONGRUENT	2	8317
409	CELLS	2	8316
410	EMPIRICAL	1	8303
411	ADHD	2	8222
412	DETECT	1	8214
413	OCCURRED	1	8212
414	INHIBITION	1	8210
415	PREDICTIVE	2	8207
416	CONTRIBUTE	1	8196
417	PRIME	1	8182
418	PROSOCIAL	2	8159
419	DENSITY	2	8140
420	DIFFERED	2	8131
421	SUMMARY	1	8111
422	BENEFITS	1	8075
423	DYNAMICS	1	8064
424	VARIED	1	8050
425	INTERPERSONAL	2	8049
426	DISTRIBUTIONS	1	8031
427	ISSUES	1	8019
428	PERCEPTIONS	1	8018
429	CONTEXTS	1	8003
430	CHRONIC	2	7984
431	CAUSAL	2	7978
432	DYNAMIC	1	7972
433	INTERNET	2	7964
434	STANDARDIZED	2	7960
435	SEQUENCES	1	7957
436	ENGAGEMENT	2	7937
437	SETTINGS	2	7897
438	HYPOTHESIZED	1	7877
439	CONCLUSION	1	7876
440	ESTIMATION	1	7872
441	MODULATION	2	7832
442	FREQUENCIES	2	7820
443	COMPLEXITY	1	7801
444	DRUG	2	7796
445	PSYCHIATRIC	2	7785
446	PARTICIPATE	1	7770
447	CORTICAL	2	7765
448	ACCURATE	1	7761
449	ENSURE	1	7751
450	BIASES	1	7739
451	UNIQUE	1	7739
452	CONSEQUENCES	1	7710
453	POSTERIOR	2	7661
454	ESTEEM	2	7636
455	PROTOCOL	1	7626
456	CRONBACH	2	7621
457	SCORED	2	7607
458	PARTICIPATED	1	7547
459	GOALS	1	7539
460	ECONOMIC	1	7532
461	IQ	2	7519
462	LINK	1	7518
463	PROFESSIONAL	1	7513
464	APPROACHES	1	7508
465	HYPOTHESES	1	7492
466	STRUCTURAL	1	7491
467	PROFILE	2	7483
468	CREATED	1	7461
469	EXECUTIVE	2	7443
470	OBTAIN	1	7442
471	RELIABLE	1	7400
472	FMRI	2	7382
473	ASSUMED	1	7371
474	TRANSFER	1	7350
475	ACQUISITION	1	7289
476	COOPERATION	1	7225
477	AMYGDALA	2	7217
478	NEUROTICISM	2	7201
479	SACCADE	2	7168
480	ADMINISTERED	2	7152
481	ISSUE	1	7148
482	CODING	1	7086
483	GENETIC	2	7085
484	DEMONSTRATE	1	7057
485	DEVIATIONS	1	7055
486	ABUSE	2	7051
487	ENHANCED	1	7046
488	ASSUMPTION	1	7042
489	DIAGNOSTIC	2	7023
490	ALGORITHM	2	7012
491	SUPERIOR	2	6997

492	IMPAIRED	2	6968
493	INFANT	2	6965
494	ADAPTIVE	1	6957
495	CONCLUSIONS	1	6936
496	INVENTORY	2	6927
497	MATERNAL	2	6924
498	REQUIRES	1	6923
499	ASSESSING	1	6889
500	VALID	1	6876
501	CODED	1	6860
502	MINIMUM	1	6856
503	ROBUST	2	6855
504	CAPTURE	2	6814
505	OPTION	1	6797
506	CONTRIBUTION	1	6785
507	DOMINANCE	1	6784
508	DEVELOPMENTAL	2	6781
509	REQUIRE	1	6761
510	MEDIUM	1	6760
511	LABORATORY	2	6757
512	ADDICTION	2	6756
513	DISTRIBUTED	1	6706
514	CLUSTERS	2	6701
515	VOLUME	1	6688
516	NEVERTHELESS	1	6658
517	SYMPTOM	2	6642
518	CANCER	2	6631
519	EXPOSED	1	6619
520	DEFICITS	2	6607
521	CONNECTIVITY	2	6596
522	CONSUMPTION	1	6591
523	INVOLVING	1	6577
524	DETECTED	1	6570
525	TIMING	2	6570
526	SUFFICIENT	1	6568
527	REMOVED	1	6558
528	PROBE	2	6557
529	MODALITY	2	6555
530	AUDIO	2	6530
531	STYLE	1	6528
532	CULTURE	1	6497
533	MEDIA	1	6458
534	MULTI	2	6445
535	HEIGHT	2	6443
536	SIMULATION	1	6442
537	DOMINANT	1	6435
538	BRIEF	1	6434
539	LATENCY	2	6431
540	SOURCES	1	6423
541	LUMINANCE	2	6420
542	CORE	1	6403
543	ATTITUDE	1	6370
544	TREND	1	6360
545	ENCODING	2	6346
546	RESOLUTION	1	6343
547	TRADITIONAL	1	6335
548	ACUITY	2	6321
549	LATENT	2	6301
550	LIKERT	2	6285
551	QUALITATIVE	1	6265
552	TACTILE	2	6245
553	MINDFULNESS	2	6240
554	INVESTIGATION	1	6208
555	VARY	1	6206
556	PERIODS	1	6187
557	THERAPY	2	6185
558	PUBLISHED	1	6129
559	SUPPRESSION	2	6098
560	INTERESTINGLY	2	6095
561	OCCURS	1	6081
562	OPTIONS	1	6052
563	RANGED	1	6050
564	LONGITUDINAL	2	6009
565	PARIETAL	2	6008
566	PARTNERS	1	6006
567	DURATIONS	2	6003
568	SEEKING	1	5993
569	ENERGY	1	5989
570	GERMAN	2	5985
571	EQUIVALENT	1	5980
572	SUICIDE	2	5976
573	LOGISTIC	2	5972
574	INTERPRETED	1	5946
575	BURNOUT	2	5944
576	INDICES	2	5938
577	MODIFIED	1	5934
578	ADAPTED	1	5926
579	ETHICAL	1	5921
580	DIFFERENTIAL	2	5902
581	WEIGHTED	2	5896
582	STRUCTURES	1	5894
583	DEFINITION	1	5892
584	DISTRACTOR	2	5859
585	RANDOMIZED	2	5851
586	CONSEQUENTLY	1	5838
587	STABILITY	1	5836
588	VELOCITY	2	5836
589	OVERLAP	1	5835
590	ASSESSMENTS	1	5824
591	SIMULTANEOUSLY	2	5809
592	DUAL	2	5799
593	PEER	2	5798
594	CONCEPTS	1	5778
595	INTERVIEWS	2	5770
596	MEDIATED	1	5754
597	INDICATORS	1	5750
598	IMPLICATIONS	1	5745
599	NORMS	1	5742
600	CONSISTS	1	5722
601	COHORT	2	5718
602	DIMENSIONAL	1	5715
603	SCENARIO	1	5708
604	ENGAGE	2	5703
605	APPENDIX	1	5702
606	CONSISTENTLY	1	5702
607	SPECTRUM	2	5702
608	VALIDATED	1	5698
609	IDENTIFYING	1	5682
610	ACHIEVED	1	5668
611	INVOLVEMENT	1	5664
612	SEM	2	5660
613	ROTATION	2	5658
614	MODE	1	5636
615	SCHIZOPHRENIA	2	5627
616	AFFECTS	1	5622
617	ENVIRONMENTS	1	5603
618	ASSUME	1	5596
619	EXTRACTED	1	5594
620	COMPREHENSION	2	5592
621	BIOLOGICAL	2	5582
622	SWITCH	2	5579
623	DEPENDENCE	2	5573
624	PLOT	2	5559
625	GRADE	1	5554
626	RESPONDING	1	5548
627	LOCATED	1	5541
628	SOCIO	2	5533
629	OUTPUT	1	5524
630	RESILIENCE	2	5517
631	GENE	2	5503
632	TRAUMA	2	5487
633	COMPETENCE	2	5474
634	PREDICTING	1	5452
635	QUANTITATIVE	2	5447
636	PERCEIVE	1	5434
637	VARYING	1	5426
638	SELECTIVE	1	5403
639	HIERARCHICAL	1	5394
640	CREATE	1	5379
641	EXCLUSION	1	5371
642	PERCENT	1	5370
643	DATABASE	2	5362
644	NULL	2	5361
645	VIDEOS	2	5359
646	RESPONDED	1	5350
647	CATEGORIZATION	1	5346
648	SUBSEQUENTLY	1	5341
649	MONITOR	1	5339
650	IRRELEVANT	1	5310
651	CONSTRUCTS	1	5303
652	EQUATION	1	5302
653	MAINTAIN	1	5294
654	RELEVANCE	1	5288
655	VALIDATION	1	5278
656	SIMULATIONS	2	5266
657	ACHIEVE	1	5236
658	ORIENTED	1	5236
659	ASPECT	1	5217

660	ANTERIOR	2	5217
661	COHEN	2	5217
662	ILLUSION	2	5210
663	ODDS	1	5204
664	TRANSITION	1	5189
665	EXPERTS	1	5172
666	ACOUSTIC	2	5169
667	IMPLEMENTED	1	5157
668	SCENARIOS	1	5156
669	PRECISION	1	5155
670	AMBIGUOUS	1	5153
671	CORTISOL	2	5153
672	PEARSON	2	5149
673	PREFRONTAL	2	5149
674	AGGRESSION	2	5134
675	INVOLVES	1	5129
676	EXHIBITED	1	5125
677	PROJECT	1	5118
678	VARIATIONS	1	5095
679	UNCLEAR	2	5092
680	VECTOR	2	5084
681	DISPLAYS	1	5074
682	CELL	2	5074
683	EXTRAVERSION	2	5073
684	ELICITED	2	5069
685	PASSIVE	1	5067
686	MOTIVATIONAL	2	5060
687	SCORING	2	5060
688	SPECTRAL	2	5052
689	INITIALLY	1	5042
690	LINGUISTIC	2	5041
691	LITERACY	2	5036
692	SALIENT	2	5031
693	INSTRUCTION	1	5005
694	THEORIES	1	5005
695	TAILED	2	4993
696	AMERICAN	2	4990
697	NODES	2	4990
698	CONTEXTUAL	1	4976
699	MEDICATION	2	4959
700	AUTOMATIC	1	4956
701	PRIMARILY	1	4951
702	TECHNIQUES	1	4950
703	DSM	2	4949
704	REVEAL	1	4947
705	SWITCHING	2	4946
706	ACCURATELY	1	4928
707	REACTIVITY	2	4924
708	SPECIFICITY	1	4919
709	RECOVERY	1	4891
710	LEXICAL	2	4887
711	GENERATE	1	4885
712	TOPIC	1	4867
713	FACILITATE	1	4860
714	INFERENCE	1	4847
715	EXPLICITLY	1	4845
716	INVESTIGATING	1	4844
717	ETC	2	4838
718	REPETITION	2	4836
719	ACHIEVEMENT	1	4830
720	STATIC	2	4830
721	PHENOMENON	1	4815
722	CONDITIONING	2	4800
723	OLDS	2	4800
724	INTERACT	1	4796
725	ACTIVATED	2	4790
726	RESTRICTED	1	4784
727	ATTRIBUTES	1	4771
728	TONES	2	4768
729	SELECT	1	4766
730	CORRESPONDS	1	4763
731	MONITORING	1	4763
732	MAX	1	4751
733	ACQUIRED	1	4747
734	VERSIONS	1	4742
735	DISABILITY	2	4742
736	PHASES	1	4731
737	DISPARITY	2	4730
738	FATIGUE	2	4729
739	SACCADES	2	4717
740	INFERIOR	2	4716
741	NORMALIZED	1	4714
742	CONTRASTS	1	4701
743	GRAY	2	4699
744	ENHANCE	1	4696
745	PROFESSIONALS	1	4693
746	ADJUSTMENT	1	4690
747	SPAN	2	4689
748	GENERATION	1	4688
749	EXHIBIT	1	4684
750	BIASED	1	4676
751	INSTITUTIONAL	1	4676
752	PERIPHERAL	2	4668
753	CONFIRM	1	4657
754	REACTIONS	1	4655
755	VISIBLE	1	4653
756	LATERAL	2	4634
757	LOADINGS	2	4626
758	SIMULATED	1	4623
759	ADEQUATE	1	4609
760	EVALUATIONS	1	4588
761	GENES	2	4584
762	MAPPING	2	4583
763	ABSTRACT	1	4575
764	COLUMN	2	4558
765	UTILITY	1	4555
766	PROFILES	2	4502
767	BETA	2	4485
768	RESOURCE	1	4473
769	MODULATED	2	4462
770	GAMBLING	2	4460
771	PARALLEL	1	4459
772	FINANCIAL	1	4456
773	APPARENT	1	4449
774	CRUCIAL	1	4434
775	POLICY	1	4427
776	PROCESSED	1	4421
777	MEDIATION	1	4420
778	ATTRIBUTED	1	4394
779	COHERENCE	1	4393
780	BILATERAL	2	4391
781	PLACEBO	2	4386
782	GAUSSIAN	2	4380
783	COMPRISED	1	4367
784	CONCEPTUAL	1	4363
785	INTERCEPT	2	4354
786	IMAGING	2	4344
787	INCONSISTENT	1	4331
788	INVOLVE	1	4330
789	PLOTS	2	4328
790	UNRELATED	2	4315
791	HOUSEHOLD	2	4314
792	COMPUTATIONAL	1	4307
793	IMPULSIVITY	2	4302
794	THEREBY	1	4300
795	SOMEWHAT	1	4295
796	STRUCTURED	1	4290
797	COVARIATES	2	4282
798	CONSENSUS	1	4280
799	ANALYZE	1	4279
800	INTAKE	2	4279
801	SECTIONAL	2	4274
802	IMAGERY	1	4271
803	PRO	2	4270
804	MANIPULATED	1	4269
805	ENGAGED	2	4262
806	GENERALIZED	2	4259
807	ANALYSED	1	4246
808	SITE	1	4245
809	ACUTE	2	4226
810	SPSS	2	4225
811	INTEGRATED	1	4222
812	PLOTTED	2	4214
813	DIVERSITY	1	4212
814	AWARE	1	4211
815	EVOLUTION	1	4206
816	GUIDELINES	1	4203
817	CONSEQUENCE	1	4202
818	SPECIFIED	1	4196
819	CONSCIENTIOUSNESS	2	4180
820	NORM	1	4179
821	RELY	1	4178
822	NODE	2	4175
823	MOTIVATED	1	4161
824	DISTRACTORS	2	4155
825	SITES	1	4154
826	MINIMAL	1	4149
827	CORRESPOND	1	4141

828	INHIBITORY	2	4138
829	SHIFTS	1	4124
830	SALIENCE	2	4124
831	SPANISH	2	4123
832	SUSTAINED	1	4122
833	CATEGORICAL	2	4116
834	TRANSFORMED	1	4101
835	AUTISTIC	2	4095
836	BINOCULAR	2	4094
837	MASK	2	4073
838	CONTRIBUTIONS	1	4071
839	OCCURRENCE	1	4068
840	SURGERY	2	4066
841	PARTICIPATING	1	4062
842	CUED	2	4048
843	SUBSET	2	4023
844	PREDICTS	1	4022
845	RETEST	2	4020
846	FIXATIONS	2	4011
847	PREGNANCY	2	4006
848	NEUROLOGICAL	2	4005
849	EMERGED	1	3997
850	LATENCIES	2	3988
851	INSIGHT	1	3985
852	ASSUMPTIONS	1	3984
853	FUNDAMENTAL	1	3983
854	ADMINISTRATION	1	3980
855	VISUALLY	1	3978
856	CODE	1	3962
857	METHODOLOGICAL	1	3959
858	RECORDINGS	2	3956
859	NEUROPSYCHOLOGICAL	2	3949
860	INTRINSIC	1	3943
861	TECHNIQUE	1	3940
862	CLASSROOM	2	3925
863	MODALITIES	2	3921
864	CORRELATES	2	3907
865	NOTION	1	3906
866	INDIVIDUALLY	1	3905
867	IMPLEMENTATION	1	3897
868	PILOT	2	3893
869	INTERMEDIATE	1	3892
870	CONSISTING	1	3890
871	INDICATOR	1	3888
872	INVARIANCE	2	3888
873	CONCENTRATION	1	3880
874	LAB	2	3880
875	MASKING	2	3876
876	PRELIMINARY	1	3871
877	PSYCHOPHYSICAL	2	3867
878	HTTP	2	3864
879	INDUCE	1	3862
880	CONDUCT	1	3861
881	CORRELATE	2	3859
882	DEVICE	1	3839
883	DEFINE	1	3833
884	EVIDENT	1	3829
885	BENEFICIAL	1	3814
886	TECHNOLOGY	1	3810
887	ESTABLISH	1	3805
888	DIVERSE	1	3801
889	PSYCHOSOCIAL	2	3801
890	BINARY	2	3795
891	RECRUITMENT	2	3792
892	TRAJECTORY	2	3781
893	HEMISPHERE	2	3775
894	MANUAL	1	3774
895	COORDINATES	1	3773
896	OLFACTORY	2	3764
897	DEPICTED	2	3762
898	REVERSE	1	3761
899	HEALTHCARE	2	3749
900	COMPASSION	2	3748
901	VOCABULARY	2	3735
902	MULTIVARIATE	2	3725
903	EVOKED	2	3723
904	PEERS	2	3723
905	TEAMS	1	3722
906	FILTER	2	3719
907	HETEROGENEITY	2	3717
908	DIGIT	2	3714
909	ELICIT	2	3711
910	MEDITATION	2	3707
911	COMPREHENSIVE	1	3702
912	NEURONAL	2	3702
913	COOPERATIVE	1	3690
914	EXPERTISE	1	3688
915	ATHLETES	2	3681
916	ROLES	1	3680
917	INDUCTION	1	3678
918	CONSECUTIVE	2	3678
919	PAIRWISE	2	3672
920	IMPLIES	1	3664
921	RETRIEVAL	2	3662
922	ARRAY	2	3659
923	CHALLENGES	1	3658
924	CONSTRUCTED	1	3657
925	PROMOTE	1	3652
926	RATIOS	1	3652
927	PARADIGMS	1	3651
928	METRIC	2	3651
929	OCCIPITAL	2	3651
930	SUICIDAL	2	3647
931	DEFICIT	2	3634
932	RETINAL	2	3625
933	CONTRARY	1	3612
934	CYCLE	1	3612
935	LAYER	1	3609
936	PRINCIPAL	1	3604
937	REAPPRAISAL	2	3603
938	REPLICATED	2	3597
939	DEPRESSED	1	3594
940	OCCURRING	1	3592
941	DIAGNOSED	2	3590
942	CONSTRAINTS	1	3589
943	PAYOFF	2	3586
944	URBAN	2	3582
945	SUBGROUP	2	3578
946	PATHWAY	2	3577
947	FOCUSING	1	3576
948	CHALLENGE	1	3568
949	SYNDROME	2	3563
950	ORAL	2	3558
951	ELEVATED	2	3555
952	SENSATION	2	3551
953	PANELS	1	3548
954	STYLES	1	3541
955	PIXELS	2	3541
956	RESIDUAL	2	3530
957	ALLOCATION	1	3527
958	ELECTRODES	2	3526
959	EVALUATING	1	3522
960	AGGRESSIVE	2	3514
961	STRESSFUL	1	3513
962	TRAJECTORIES	2	3511
963	ATTRIBUTE	1	3501
964	ANOVAS	2	3501
965	AMPLITUDES	2	3498
966	DISCRIMINATE	1	3491
967	EXPERT	1	3490
968	TECHNICAL	1	3481
969	DASHED	2	3478
970	HIV	2	3464
971	GENOTYPE	2	3462
972	NORMATIVE	2	3458
973	BREEDING	2	3453
974	MULTISENSORY	2	3450
975	IMPAIRMENTS	2	3445
976	THEMES	1	3443
977	CIGARETTE	2	3436
978	PRECEDING	1	3435
979	NORMALLY	1	3429
980	PLUS	1	3427
981	PHYSICIANS	2	3426
982	ODOR	2	3424
983	INTRA	2	3410
984	DIAMETER	2	3407
985	MATHEMATICAL	2	3403
986	ROBOT	2	3403
987	DECLINE	1	3391
988	ETHNICITY	1	3390
989	LABEL	1	3389
990	PLAUSIBLE	2	3388
991	CLUSTERING	2	3360
992	SPONTANEOUS	2	3346
993	LAG	2	3345
994	MIRROR	2	3345
995	ALTERED	1	3344

996	MAINTAINED	1	3344
997	CAREGIVERS	2	3343
998	APPARATUS	2	3338
999	LOCALIZATION	2	3338
1000	PLATFORM	2	3333
1001	OFFSET	1	3328
1002	STRENGTHS	2	3325
1003	PRINCIPLE	1	3322
1004	GRAPH	2	3321
1005	PARAMETRIC	2	3320
1006	TRAUMATIC	2	3318
1007	AUTOMATICALLY	1	3309
1008	REPLICATE	2	3309
1009	ADHERENCE	2	3307
1010	MATH	2	3307
1011	COUNTERBALANCED	2	3305
1012	PRIMES	2	3299
1013	SUBGROUPS	2	3297
1014	ADOLESCENT	2	3295
1015	REPLICATION	2	3284
1016	CONSIDERABLE	1	3279
1017	MEDIAL	2	3273
1018	AUTHOR	1	3271
1019	CUMULATIVE	2	3260
1020	DEMONSTRATING	1	3259
1021	ANTI	2	3259
1022	CONTRIBUTED	1	3254
1023	ILLUSTRATED	1	3254
1024	GERMANY	2	3248
1025	CONVENTIONAL	1	3241
1026	CONCLUDE	1	3240
1027	LINKS	1	3238
1028	RETENTION	1	3237
1029	SEQUENTIAL	1	3235
1030	EMPATHIC	2	3234
1031	FIGS	2	3230
1032	SQUARED	2	3226
1033	PHONOLOGICAL	2	3225
1034	TOPICS	1	3222
1035	COORDINATION	1	3219
1036	DISCRETE	1	3219
1037	PERCEPT	2	3215
1038	TRANSFORMATION	1	3214
1039	BURDEN	2	3211
1040	INVERTED	2	3207
1041	CHANNEL	1	3204
1042	METHODOLOGY	1	3204
1043	PRINCIPLES	1	3202
1044	FRENCH	2	3200
1045	DATASETS	2	3197
1046	LABELS	1	3193
1047	CLASSICAL	1	3192
1048	COMPETITIVE	2	3189
1049	RANGES	1	3184
1050	FLEXIBILITY	1	3183
1051	FORMAT	1	3165
1052	MANIPULATIONS	1	3162
1053	VENTRAL	2	3160
1054	ADVERSE	2	3156
1055	HIGHLIGHTED	1	3154
1056	INJURY	1	3137
1057	UNDERGRADUATE	2	3136
1058	USAGE	2	3133
1059	STRESSORS	2	3131
1060	ENHANCEMENT	1	3123
1061	DISTINCTION	1	3121
1062	PARENTING	2	3120
1063	RUMINATION	2	3117
1064	INTERPRET	1	3107
1065	HAPTIC	2	3093
1066	FOCAL	2	3091
1067	HELSINKI	2	3089
1068	VOLUNTARY	1	3085
1069	PATHWAYS	2	3084
1070	SYNCHRONY	2	3082
1071	DETECTING	1	3077
1072	MAINTENANCE	1	3073
1073	DRUGS	2	3067
1074	CUEING	2	3066
1075	PUBLICATION	1	3065
1076	PRECISE	1	3063
1077	CONVERSELY	1	3061
1078	MONETARY	2	3060
1079	SURVEYS	1	3059
1080	CAREGIVER	2	3059
1081	FLUENCY	2	3059
1082	ELEMENT	1	3049
1083	AVAILABILITY	1	3048
1084	AUTONOMY	2	3046
1085	OVERVIEW	2	3046
1086	SCANNING	2	3045
1087	NEURON	2	3039
1088	CATEGORIZED	1	3038
1089	CONCURRENT	1	3026
1090	DIABETES	2	3022
1091	OCCUPATIONAL	1	3015
1092	CAPTURED	2	3006
1093	MOTIVES	1	3005
1094	ELECTRODE	2	3004
1095	SECTIONS	1	2999
1096	EMOTIONALLY	2	2995
1097	WITHDRAWAL	2	2994
1098	ORIENTATIONS	2	2989
1099	PROPORTIONS	1	2986
1100	REVISED	1	2985
1101	INSTITUTE	1	2981
1102	CONFIGURATION	2	2971
1103	AVERSIVE	2	2969
1104	MARITAL	2	2968
1105	ANTICIPATED	1	2965
1106	UNEXPECTED	2	2963
1107	CULTURES	1	2960
1108	AVERSION	2	2959
1109	UNIFORM	1	2958
1110	EUROPEAN	2	2956
1111	DISCOUNTING	2	2953
1112	REGRESSIONS	2	2952
1113	DOSE	2	2942
1114	SMARTPHONE	2	2938
1115	DOCUMENTED	1	2936
1116	SALIENCY	2	2921
1117	POSTURAL	2	2920
1118	ORGANIZATIONAL	2	2919
1119	CHALLENGING	1	2916
1120	EVOLUTIONARY	1	2910
1121	EXAM	2	2901
1122	ASSUMING	1	2900
1123	INPUTS	1	2887
1124	COCAINE	2	2882
1125	CONE	2	2878
1126	DIGITAL	2	2876
1127	GAMMA	2	2867
1128	SOCIOECONOMIC	2	2866
1129	FACULTY	2	2865
1130	TINNITUS	2	2851
1131	CONTOUR	2	2850
1132	WELLBEING	2	2838
1133	RESEARCHER	1	2835
1134	PSYCHOTIC	2	2834
1135	SOMATIC	2	2832
1136	TWEETS	2	2829
1137	DEMOGRAPHICS	2	2828
1138	PROFICIENCY	2	2825
1139	DISCREPANCY	2	2823
1140	RECEPTOR	2	2819
1141	SYMBOLIC	1	2818
1142	BATTERY	2	2818
1143	COMPATIBLE	1	2817
1144	NAÏVE	2	2817
1145	ASYMMETRY	2	2811
1146	COMMUNITIES	1	2810
1147	MUSCLE	2	2807
1148	TARGETED	1	2802
1149	VARIANTS	1	2790
1150	PROXIMITY	2	2789
1151	LABELED	1	2785
1152	PSYCHOPATHOLOGY	2	2784
1153	TRANSMISSION	1	2782
1154	GENERALIZATION	2	2782
1155	ANALYTIC	1	2781
1156	TRAFFIC	2	2781
1157	CIRCUMSTANCES	1	2780
1158	REJECTION	1	2780
1159	FORAGING	2	2780
1160	IDEATION	2	2778
1161	NEUROIMAGING	2	2778
1162	INVERSE	2	2774
1163	WEB	2	2773

1164	EXCLUDING	1	2772
1165	REINFORCEMENT	1	2771
1166	DYSFUNCTION	2	2771
1167	NICOTINE	2	2771
1168	ADOLESCENCE	2	2766
1169	PSYCHOSIS	2	2766
1170	CLIMATE	2	2764
1171	DEFAULT	2	2760
1172	REGIONAL	1	2758
1173	CREATIVITY	1	2755
1174	CLINICALLY	2	2754
1175	SIMILARITIES	1	2751
1176	MATHEMATICS	2	2750
1177	ADULTHOOD	1	2747
1178	FRACTION	2	2744
1179	RHYTHM	2	2741
1180	SUPPLEMENTARY	1	2740
1181	HIGHLIGHT	1	2739
1182	CIGARETTES	2	2737
1183	HABITUATION	2	2732
1184	GRID	2	2729
1185	LIKEWISE	1	2723
1186	ENTROPY	2	2720
1187	OUTLIERS	2	2719
1188	ONGOING	1	2716
1189	CONFOUNDING	2	2716
1190	SUBTLE	2	2712
1191	MOVIE	2	2711
1192	SIMULTANEOUS	2	2708
1193	SCAN	2	2702
1194	CFA	2	2697
1195	INFORMATIVE	2	2693
1196	MARGINALLY	1	2691
1197	RESIDENTS	1	2689
1198	PROSPECTIVE	1	2688
1199	STATISTIC	1	2688
1200	ALTERNATIVES	1	2686
1201	INVESTIGATIONS	1	2682
1202	ENGAGING	2	2682
1203	MARGINAL	1	2681
1204	MINOR	1	2680
1205	EMERGE	1	2677
1206	RELIABLY	1	2667
1207	REGISTERED	1	2666
1208	CONCLUDED	1	2660
1209	PHENOMENA	1	2659
1210	DISTRACTION	2	2658
1211	VOCAL	2	2653
1212	ANATOMICAL	2	2651
1213	TOLERANCE	2	2650
1214	CHECKLIST	2	2649
1215	QUANTIFY	2	2649
1216	MODULE	2	2647
1217	PRIORI	2	2647
1218	SPEARMAN	2	2645
1219	RELATIONAL	2	2642
1220	MANN	2	2641
1221	PC	2	2639
1222	CODES	1	2635
1223	ASSOCIATIVE	2	2633
1224	NONETHELESS	1	2632
1225	DEMONSTRATES	1	2629
1226	SERIAL	2	2626
1227	NARCISSISM	2	2625
1228	MINIMIZE	1	2622
1229	SOCCER	2	2620
1230	ECOLOGICAL	2	2619
1231	WHITNEY	2	2613
1232	SUMMARIZED	1	2611
1233	COVARIATE	2	2611
1234	TEXTURE	2	2611
1235	ALIGNED	2	2610
1236	CREATIVE	1	2608
1237	SELECTING	1	2604
1238	INSIGHTS	1	2603
1239	DENOTE	1	2602
1240	EMBEDDED	2	2602
1241	DESIGNS	1	2601
1242	METRICS	2	2600
1243	EXTRACTION	1	2598
1244	ISOLATION	1	2594
1245	CANDIDATE	2	2593
1246	TEMPO	2	2590
1247	ABNORMAL	1	2584
1248	DILEMMA	2	2584
1249	DORSAL	2	2584
1250	VOLUNTEERS	1	2583
1251	MATRICES	2	2583
1252	NERVOUS	2	2583
1253	DEVICES	1	2579
1254	SEEK	1	2576
1255	SEMI	2	2572
1256	ALTERNATIVELY	1	2566
1257	IMPULSIVE	2	2564
1258	WEAKER	2	2550
1259	AMBIGUITY	1	2549
1260	FEEDING	2	2549
1261	CLIPS	2	2548
1262	UPDATING	2	2547
1263	SOUGHT	1	2546
1264	PERSISTENCE	1	2545
1265	ECCENTRICITY	2	2541
1266	SCHEDULE	1	2539
1267	CHANNELS	1	2534
1268	CONVERGENT	2	2528
1269	ENABLE	1	2527
1270	OVERLAPPING	1	2526
1271	TRUSTWORTHINESS	2	2525
1272	ACCOMPANIED	1	2524
1273	SUFFICIENTLY	1	2524
1274	SEGMENTS	2	2517
1275	PERSPECTIVES	1	2515
1276	TRENDS	1	2515
1277	PHYSICALLY	1	2513
1278	RATERS	2	2512
1279	ALGORITHMS	2	2511
1280	PATCH	2	2506
1281	HIERARCHY	1	2504
1282	DISPLACEMENT	1	2501
1283	INTENSE	1	2499
1284	INTUITIVE	2	2498
1285	PERCENTAGES	1	2494
1286	MAINTAINING	1	2492
1287	SYMBOLS	1	2491
1288	ATTRIBUTION	1	2489
1289	VECTORS	2	2488
1290	APPRAISAL	2	2486
1291	PRESENTATIONS	2	2482
1292	SEGMENT	2	2480
1293	EPISODES	2	2479
1294	MODULATE	2	2477
1295	CLINICIANS	2	2476
1296	DENOTES	1	2475
1297	CANNABIS	2	2473
1298	COVARIANCE	2	2472
1299	UTILIZED	1	2471
1300	WELFARE	1	2471
1301	REHABILITATION	2	2467
1302	NARRATIVE	2	2466
1303	INTERACTIVE	1	2457
1304	RATER	2	2457
1305	CURSOR	2	2453
1306	TRANSITIONS	1	2448
1307	DIAGNOSES	2	2448
1308	SETUP	2	2448
1309	REQUIRING	1	2447
1310	MAXIMAL	2	2447
1311	COMPLIANCE	2	2446
1312	EPISODE	2	2445
1313	CONFIRMATORY	2	2444
1314	SPATIALLY	2	2439
1315	INSTANCES	1	2433
1316	CONSERVATIVE	2	2433
1317	POOLED	2	2433
1318	REPETITIONS	2	2433
1319	MORTALITY	2	2429
1320	PROPRIOCEPTIVE	2	2427
1321	INTELLECTUAL	2	2425
1322	POSTURE	2	2417
1323	PREDOMINANTLY	1	2416
1324	GUIDANCE	2	2415
1325	REQUIREMENTS	1	2410
1326	SHIFTING	1	2404
1327	EGO	2	2402
1328	COMPENSATION	1	2398
1329	STRESSED	1	2398
1330	IMPLY	1	2389
1331	ISOLATED	1	2389

1332	CONFLICTS	1	2388
1333	ILLUSTRATES	1	2387
1334	EXECUTION	2	2387
1335	GRADIENT	2	2387
1336	COMPUTE	1	2382
1337	ALTER	1	2381
1338	CREATING	1	2376
1339	PIXEL	2	2376
1340	PSYCHOPATHY	2	2376
1341	ADAPT	1	2375
1342	ILLUSORY	2	2373
1343	MODAL	2	2369
1344	PROBABILISTIC	2	2369
1345	RECEPTIVE	2	2369
1346	ROUTE	1	2365
1347	REGULATORY	1	2361
1348	DEPLETION	2	2361
1349	REVERSED	1	2352
1350	APPROXIMATION	1	2351
1351	IMPACTS	1	2349
1352	EXCLUDE	1	2348
1353	BI	2	2347
1354	PRESCHOOL	2	2346
1355	VARIES	1	2344
1356	AUDIOVISUAL	2	2344
1357	AFFILIATION	2	2342
1358	ANALYZING	1	2341
1359	CONSTRAINED	1	2341
1360	AFFECTING	1	2340
1361	BRIEFLY	1	2340
1362	DRIFT	2	2340
1363	CONTRIBUTES	1	2339
1364	RURAL	2	2338
1365	CONCENTRATIONS	2	2337
1366	MOBILE	2	2337
1367	ATTACHED	1	2332
1368	GRADES	1	2332
1369	GENERIC	2	2328
1370	CRAVING	2	2326
1371	EXCLUSIVELY	1	2322
1372	INFERENCES	1	2320
1373	INTERACTING	1	2319
1374	MEDIATOR	2	2318
1375	ARITHMETIC	2	2316
1376	MRI	2	2316
1377	TEMPERAMENT	2	2315
1378	SOLELY	1	2314
1379	COMPUTING	1	2312
1380	SYNTACTIC	2	2311
1381	VIGILANCE	2	2309
1382	SITUATIONAL	2	2300
1383	SURVIVAL	1	2297
1384	PSEUDO	2	2297
1385	ADJACENT	1	2296
1386	TWITTER	2	2296
1387	ILLUSTRATE	1	2288
1388	CONTINGENCY	2	2285
1389	COUNTER	2	2284
1390	RESPONSIVENESS	1	2280
1391	UNCORRECTED	2	2278
1392	GRATING	2	2277
1393	DEFINITIONS	1	2276
1394	EQUATIONS	1	2275
1395	RECIPIENT	2	2272
1396	COMMENTS	1	2269
1397	PROACTIVE	2	2269
1398	HETEROGENEOUS	2	2264
1399	RELEASE	1	2263
1400	CLINIC	2	2260
1401	HIPPOCAMPUS	2	2260
1402	SYNCHRONIZATION	2	2256
1403	AID	1	2252
1404	FISHER	2	2250
1405	EMERGING	1	2248
1406	DEMENTIA	2	2248
1407	CONSIDERABLY	1	2242
1408	SYMBOL	1	2241
1409	WILCOXON	2	2241
1410	PRECEDED	1	2239
1411	SCHEME	1	2238
1412	FACTORIAL	2	2236
1413	OBVIOUS	1	2235
1414	NOVELTY	2	2234
1415	SHIFTED	1	2233
1416	OBESITY	2	2233
1417	COLUMNS	2	2232
1418	VICE	2	2231
1419	MSEC	2	2226
1420	SCOPE	1	2224
1421	AFRICAN	2	2224
1422	CONSTRUCTION	1	2218
1423	CEILING	2	2216
1424	ASSIGNMENT	1	2203
1425	PROPORTIONAL	1	2201
1426	BILINGUALS	2	2200
1427	WORKPLACE	2	2198
1428	CALIBRATION	2	2197
1429	RATIONAL	1	2194
1430	RESPONDENT	1	2193
1431	EMAIL	2	2193
1432	PROMINENT	2	2190
1433	MEDIATING	1	2187
1434	CAPABLE	1	2185
1435	UNIVARIATE	2	2182
1436	CURRICULUM	2	2181
1437	CONCRETE	2	2175
1438	VULNERABILITY	2	2175
1439	MATE	2	2172
1440	SENSATIONS	2	2172
1441	SENSORIMOTOR	2	2172
1442	VERSA	2	2171
1443	INSPECTION	1	2166
1444	ENROLLED	2	2165
1445	ACCELERATION	2	2158
1446	ATTRIBUTIONS	2	2158
1447	DECODING	2	2158
1448	MINUS	2	2157
1449	OUTGROUP	2	2155
1450	BILINGUAL	2	2155
1451	OPTIMISM	2	2153
1452	PROPENSITY	2	2153
1453	ETHNIC	1	2147
1454	CONTRIBUTING	1	2145
1455	EQUILIBRIUM	2	2140
1456	ADJUST	1	2138
1457	POLICIES	1	2136
1458	RECEPTORS	2	2135
1459	INFER	1	2130
1460	ALIGNMENT	2	2128
1461	KEYBOARD	2	2128
1462	TRIGGER	1	2127
1463	MASKED	2	2126
1464	FILTERED	2	2125
1465	SUCCESSIVE	1	2120
1466	EXHAUSTION	2	2119
1467	VICTIM	2	2118
1468	CYCLES	1	2115
1469	CONSUMERS	1	2114
1470	STRATEGIC	1	2114
1471	TEMPLATE	2	2114
1472	AUSTRALIA	2	2113
1473	MIGRATION	1	2111
1474	MALADAPTIVE	2	2111
1475	HYPERACTIVITY	2	2108
1476	DEBATE	1	2107
1477	INSTITUTIONS	1	2096
1478	BLANK	2	2096
1479	COMMUNICATIVE	1	2092
1480	APPROACHED	1	2091
1481	VERIFY	2	2087
1482	FACILITATION	1	2086
1483	REPETITIVE	2	2086
1484	THERAPEUTIC	2	2085
1485	CAUCASIAN	2	2083
1486	CONTINUUM	2	2078
1487	PRECISELY	1	2077
1488	VICTIMS	2	2075
1489	COPE	2	2074
1490	PROLONGED	2	2073
1491	ALTRUISTIC	2	2072
1492	ELIGIBLE	2	2070
1493	HABITAT	2	2066
1494	REVEALS	1	2063
1495	SYLLABLE	2	2059
1496	HYPOTHETICAL	1	2058
1497	INFERRED	1	2054
1498	VULNERABLE	2	2054
1499	MISMATCH	2	2051

1500	SEGMENTATION	2	2051
1501	CLARIFY	1	2050
1502	REGULATE	1	2050
1503	MAZE	2	2050
1504	VISUOSPATIAL	2	2050
1505	SYNCHRONOUS	2	2048
1506	STRESSOR	2	2045
1507	EXTRACT	1	2043
1508	PROTEIN	2	2043
1509	FLUCTUATIONS	1	2042
1510	GENERATING	1	2042
1511	CEREBELLUM	2	2041
1512	ALLOCATED	1	2039
1513	FACETS	2	2039
1514	INVESTMENT	1	2034
1515	PEAKS	2	2034
1516	MODERATED	2	2032
1517	STARTLE	2	2032
1518	REVERSAL	1	2028
1519	ENCODED	2	2028
1520	PERSISTENT	1	2026
1521	PORTION	1	2026
1522	OPTIC	2	2023
1523	IMPLICATED	1	2022
1524	ODD	1	2022
1525	CONDITIONED	2	2019
1526	DIFFERENTIATE	1	2018