## The Discursive Presence of Digital Technology in Research Articles in Psycholinguistics: A Systematic Analysis

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Abstract: The article introduces and discusses a systematic analysis of the discursive presence of digital technology (e.g., computer programs) in research articles (RAs) in psycholinguistics published in a peer-reviewed journal of psycholinguistics from 2014 to 2022. The corpus was examined for the discursive presence of digital technology and its relation to psycholinguistic research topics. Additionally, the corpus was processed in AntConc (Anthony 2022) in order to identify the frequency of lexical items associated with the discursive presence of digital technology. The results of the systematic analysis yielded the following findings: the presence of digital technology was manifested, predominantly, by software programs, as well as digital artefacts that were localised in the Results and Discussion sections of RAs, whilst the discursive presence of hardware was less frequent in the corpus. The findings were further discussed in the article.

**Keywords:** digital technology, psycholinguistics, psycholinguistic discourse, systematic analysis

### 1. Introduction

There seems to be a consensus in the literature that digital technology and, in particular, digital artefacts (for instance, computer programs, digital pictures, figures, etc.) constitute an inalienable part of research ecologies in applied linguistics, second language acquisition, psychology, and psycholinguistics (Godwin-Jones 2021; Soyoof et al. 2021). The literature in psycholinguistics indicates that the researchers' attention to digital technology in the current psycholinguistic research settings is unquestionable (Conklin & Guy 2020: 494). Set against the paramount role of digital technology in the psycholinguistic research ecology, the study that is further presented and discussed in the article aims at providing a systematic analysis of the discursive presence of digital technology in the corpus of research articles (RAs) in psycholinguistics published in Eastern European Journal of Psycholinguistics (henceforth – EEJPL) from 2014 to 2022. The purpose of the systematic analysis is to identify and classify the discursive presence of digital technology in the corpus and gain a deeper understanding of the role of digital technology in the discursive practices associated with the state-ofthe-art psycholinguistic research.

The construal of digital technology is pivotal in the present systematic analysis. Based upon prior studies (Ekbia 2009; Kallinikos, Aaltonen & Marton 2013; Sauro & Zourou 2019), digital technology is operationalised in the systematic analysis as an umbrella term that involves digital devices (e.g., a laptop), digital artefacts (e.g., figures drawn in Microsoft Excel), digital tools (e.g., an online app), digital corpora (inclusive of ad-hoc corpora), digital sources of data (e.g., a website), Social Networking Sites (e.g., Facebook), and software (e.g., MatLab). With such an approach towards the definition of digital technology, it follows that the systematic analysis is set to identify and classify hardware, software, and digital artefacts, such as tables and figures, in the corpus of psycholinguistic RAs published in EEJPL.

The systematic analysis of the discursive presence of digital technology merits specific attention due to the absence of the state-of-the-art systematic analyses that examine how digital technology is manifested discursively in psycholinguistic RAs published by peer-reviewed specialised journals. The current gap in the literature appears to be surprising given that there is a substantial focus on digital technology in RAs published in the cognate disciplines, for instance, applied linguistics (Kapranov 2020) and psychology (Fairburn & Patel 2017), respectively. However, fairly little is known about the discursive presence of digital technology in RAs in psycholinguistics (Liu 2021). Against the backdrop of the contemporaneous gap in scholarship, the systematic analysis, which is further discussed in the article, seeks to provide answers to the following research question (RQ):

**RQ**: How is the discursive presence of digital technology manifested in RAs in psycholinguistics published by EEJPL from 2014 to 2022?

In order to elucidate the RQ, the article proceeds as follows. First, the use of digital technology in the prior studies in psycholinguistics is outlined in the literature review section. Second, the present study is introduced. Since the study is anchored in the systematic analysis of the corpus of RAs, the corpus inclusion criteria are specified. That is followed by the presentation of the results and their discussion in light of the RQ and the specific research aims of the study. Third, the article concludes with the summary of the major findings and their implications for the writing of an RA in psycholinguistics in terms of the role of digital technology and its discursive presence.

**2.** Digital Technology in Psycholinguistic Research: A Literature Outline There is a cornucopia of publications in psycholinguistics that describe, or at least, refer to digital technology (Ţeplic 2022). Obviously, it is beyond the scope of the present article to provide a detailed account of the current

literature in psycholinguistics that involves references or foci on digital technology. However, this article section outlines the major psycholinguistic topics that are routinely researched nowadays with the help of digital technology.

It is evident from the current psycholinguistic literature that the presence of digital technology in psycholinguistic RAs is necessitated by the disciplinary demands for objectivity (Conklin & Guy 2020). Generally, digital technology is assumed to ensure research objectivity by minimising the researcher's inconsistencies as well as other human judgement errors in linguistic, psycholinguistic, and psychological research (Hollis, Westbury & Lefsrud 2017) concurrently with facilitating the collection of data and/or corpora, and the statistical processing of the results in a consistent and objective manner (Kapranov 2013). It follows from the state-of-the-art studies in psycholinguistics that digital technology leaves a mark on RAs in psycholinguistics, which permeates a variety of research topics, for instance, discourse, reading and writing, second language acquisition, translation and interpreting, etc. (Horning 2014; Kapranov 2009).

In psycholinguistic research, it has become a common practice to treat discourse as an invaluable source of data (de la Fuente Garcia, Ritchie & Luz 2020). Discourse, especially written discourse, has been elucidated in a substantial bulk of psycholinguistic studies that involve online text corpora that are collected, stored and retrieved via digital technology (Keuleers & Balota 2015). In this regard, it is pertinent to note that online corpora allow psycholinguists to compute the frequencies of the occurrence of words, which, in their turn, may provide a comprehensive insight into such variables, the age of acquisition of a particular word, or a lexical bundle for that matter, the individual and collective uses of words and the norms associated with them, word association data, and many other variables that can be measured successfully by means of data derived from online corpora (Keuleers & Balota 2015).

The study of reading and writing from a psycholinguistic perspective has been enriched substantially by the use of digital technology (Yang *et al.* 2018). In particular, the literature indicates that the application of digital technology (e.g., eye tracking) facilitates the explanation of a vast array of critical issues involved in the acquisition, as well as processing and skills retention of reading and writing, and literacy in general (Conklin & Guy 2020). It should be noted that technology-enhanced investigations of reading and writing seem to be akin to other research domains, especially those that are related to second language acquisition (SLA). In this regard, it is indicated that digital technology, inclusive of hardware and software, has

replaced analog technology in the laboratory-based psycholinguistic studies in SLA (Hulstijn 2000).

Judging from the literature, digital technology has found its proper place in psycholinguistic studies that address a variety of issues in interpreting and translation (Pöchhacker 2016; Schwieter & Ferreira 2017). The psycholinguistic literature is replete with the references to digital technology that enables research in the interpreter's speech fluency by means of applying, for instance, speech processing software (Kapranov & VikTuovinen 2008), or the translator's written fluency by means of keystroke logging software (Swar & Mohsen 2022). The application of digital technology to the topics in translation and interpreting assists in ensuring research objectivity and expedites statistical processing of the results, in addition to providing a profound insight into cognitive processes involved in the task of translation and/or interpreting (Dastyar 2018).

Summarising the outline of the literature, it seems reasonable to suggest that digital technology is used rather extensively in the current psycholinguistic research ecology in conjunction with such overarching topics, as discourse, reading and writing, SLA, translation and interpreting. However, it appears that there are very few studies that address the presence of digital technology in RAs in psycholinguistics in a systematic manner. Furthermore, there is no published research that examines discursive manifestations of the presence of digital technology in RAs published in peer-reviewed psycholinguistic journals, such as, for instance, EEJPL. The systematic analysis that is introduced and discussed in section 3 of the article seeks to fill the present gap in scholarship as far as the discursive presence of digital technology in RAs published in EEJPL is concerned.

## 3. The Present Study

As previously mentioned, scholarly attention to the discursive presence of digital technology in psycholinguistic RAs is quite limited (Kapranov 2022b). The scantiness of systematic analyses that examine digital technology in psycholinguistic RAs is in stark contrast to the constantly growing number of psycholinguistic studies that examine various types of discourse (de la Fuente Garcia, Ritchie & Luz 2020; Keuleers & Balota 2015), concurrently with neglecting the discourse of psycholinguistics in general and the role of digital technology in it in particular. Against this background, the present study sets out to provide a systematic analysis of digital technology that is present discursively in the corpus of RAs published in EEJPL from 2014, i.e., from the EEJPL's first issue, to 2022. It should be noted that EEJPL is considered a specialised peer-reviewed journal in Central and Eastern Europe that publishes research in psycholinguistics on a plethora

of topics (EEJPL 2023). Presumably, the systematic analysis of discursive presence associated with digital technology in RAs that are published in EEJPL would be beneficial to psycholinguists, linguistics and a wide circle of readership.

The systematic analysis aims at collecting the corpus of RAs in EEJPL that involve the discursive presence of digital technology by means of applying a clearly defined set of inclusion criteria. Methodologically, the systematic analysis is in agreement with the theoretical premises that are outlined in Moher et al. (2009; 2015) and Kapranov (2022a), which presuppose the involvement of pre-defined eligibility criteria and the data collection protocol associated with the criteria. In the present study, the eligibility criteria are embodied by the corpus inclusion criteria (see Table 1 in subsection 3.1), which are set to ensure that the systematic review is based upon the carefully planned data collection protocol that promotes consistency and transparency of the completed review (Moher *et al.* 2015).

In line with the systematic review methodology and the RQ, the systematic analysis focuses on investigating several specific research aims that are associated with the discursive presence of digital technology in the corpus. Perhaps, prior to enumerating the research aims, the construal of the discursive presence should be clarified. It is assumed in the systematic analysis that the discursive presence is manifested by explicit linguistic references to digital technology that involve nomination (e.g., the name of the software program), the immediate discursive context where the piece of digital technology is introduced (e.g., a sentence in the RA that contains explicit references to the piece of digital technology), and the placement of explicit discursive references to the piece of digital technology in the structure of the RA as well as the placement of digital artefacts (e.g., figures) in the RA's structure (e.g., results and discussion section of the RA). Hence, the research aims are formulated as follows: i) to identify and systematise the discursive presence of software programs, online resources and tools, online corpora and online databases/sources of data, and social networking sites in conjunction with the RAs' research topics; ii) to identify and systematise the discursive presence of figures and tables in the corpus; and iii) to identify and systematise the discursive presence of hardware in the corpus. Additionally, the RAs' authorship and the distribution of RAs in diachrony from 2014 to 2022 are systematised (see section 3.2).

## 3.1. Corpus, the Corpus Inclusion Criteria, and Methodology

In line with the research methodology of a systematic analysis (Moher *et al.* 2015), the corpus collection in the study follows a fixed set of inclusion criteria that are summarised in Table 1 below.

Table 1. The Corpus Inclusion Criteria

#	Inclusion Criteria	Inclusion
1	The RA is published in EEJPL	+
2	The RA is written in English	+
3	The RA is published between 2014 and 2022	+
4	The RA contains such digital artifacts as figures or tables, or	+
	both	
5	The RA involves explicit discursive references to, at least, one of the following: algorithm, app, chatbot, computer/computers, computer program, digital aids, digital audio, digital data source, digital tools, digital technology, digital video, figure/figures, hardware, eyetracking, laptop/laptops, online corpus/corpora, online document/documents, online platforms, online social networking sites, online survey/surveys, software, social networking site/sites, statistical online tools, table/tables, website/websites	+

It should be emphasised that RAs that are written in languages other than English are factored out from the analysis in order to ensure the comparability of the discursive presence of digital technology in the corpus. Additionally, it should be pointed out that figures and tables are operationalised as digital artefacts in the present systematic analysis. Hence, the RAs published in EEJPL are searched for tables and figures irrespectively of whether or not there are other discursive references to, for instance, hardware and/or software in the RA under analysis.

Based upon the inclusion criteria (see Table 1), the corpus is compiled by means of searching the official website of EEJPL. Each RA that meets the inclusion criteria is downloaded as a pdf file and converted into a Word file in order to establish the total number of words per article. Means and standard deviations of words are computed in Statistical Package for Social Sciences, or SPSS (IMB 2011). The descriptive statistics of the corpus are presented in Table 2.

Table 2. The Descriptive Statistics of the Corpus

#	<b>Descriptive Statistics</b>	Value
1	The total number of RAs in the corpus	99
2	The total number of words in the corpus	366 159
3	Mean words	3698.6

4	Standard deviation words	631.9
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Methodologically, the following procedure is applied to the corpus. First, the RAs in the corpus are examined for the number of author/authors per RA and the number of RAs per year that are, subsequently, converted into numerical representations in SPSS (IBM 2011). Second, each RA that meets the inclusion criteria is searched manually for i) the explicit instances of the discursive presence of digital technology, ii) the exact location of the piece of digital technology in the RA, and iii) the research topic that is associated with the piece of digital technology. Third, the sentences that contain pieces of digital technology are extracted from each respective RA and merged into one common file that is processed in the software program AntConc (Anthony 2022) in order to compute the frequency of the occurrence of lexical items associated with the discursive presence of digital technology. Fourth, AntConc (Anthony 2022) is used in order to calculate the frequency of lexical bundles associated with the discursive presence of digital technology via the function "Key Words in Context" (KWIC). The findings of the systematic analysis are presented and discussed in subsection 3.2 below.

### 3.2. Results and Discussion

Following the inclusion criteria (see Table 1), 99 RAs have been collected. The discursive presence of digital technology in the RAs is further discussed in the article through the lens of the RQ and the associated specific research aims.

# 3.2.1. The Identification and Systematisation of the RAs' Authorship and the Distribution of RAs in Diachrony

In total, 230 authors (144 females and 86 males) have been identified in the corpus. The majority of RAs appear to be single-authored, as evident from Table 3 below.

Table 3. The Distribution of RAs in the Corpus in Light of the Authorship

#	RAs' Authorship	Number of RAs
1	One author	39 (39.4 %)
2	Two authors	25 (25.3 %)
3	Three authors	13 (13.1 %)
4	Four authors	15 (15.2 %)
5	Five authors	4 (4.0 %)
6	Six authors	2 (2.0 %)

/   Ien authors	7	Ten authors	1 (1.0 %)
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Judging from the findings summarised in Table 1, it is possible to assume that, conceivably, a typical RA in the corpus is written by a female author. This finding appears to be noteworthy in light of the gender distribution of the authorship. Specifically, when 62.6% of the authorship in the corpus are female, it stands to reason that the finding lends support to Mercader and Duran-Bellonch (2021), who have found that female university researchers use digital technology more and better than they assume they do. Arguably, the finding opens a line of potential research that is focused specifically on the gender variable in psycholinguistic authorship in relation to the use of digital technology.

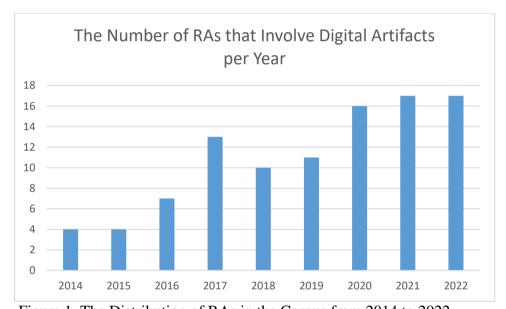


Figure 1. The Distribution of RAs in the Corpus from 2014 to 2022

As far as the distribution of the RAs in the corpus is concerned, the systematic analysis has yielded the results that are illustrated by Figure 1. It emblematises the number of RAs per year starting from 2014 to the moment of article writing in February 2023.

It is seen in Figure 1 that there is an increase in the number of RAs that refer to digital technology. In this regard, it is worth noting that whilst in 2014 and 2015 the total number of RAs that involve the discursive presence of digital technology (inclusive of digital artefacts) is N=4 per year, in 2021 and 2022 the respective number equals 17 RAs per year. Supposedly, the observed increase is reflective of the following variables at hand. First, the

overall number of articles in EEJPL that are written in English grows each year, resulting in several issues (e.g., issue 9(2)) consisting of the RAs that are written exclusively in English (it should be reminded that the present corpus factors out RAs written in languages other than English). Another variable could involve the authors' intention to provide the readers with the relevant data associated with the types of digital technology that are used in their studies. If this assumption is true, then it could be posited that the EEJPL's authorship is in line with the global tendency of objectifying psycholinguistic research by means of employing digital technology (Conklin & Guy 2020; Hollis, Westbury & Lefsrud 2017; Ţeplic 2022).

# 3.2.2. The Identification and Systematisation of Discursive References to Software Programs, Online Resources and Tools, and Social Networking Sites in Conjunction with the RAs' Research Topics

In the present corpus, 69 RAs out of 99 mention explicitly such digital artefacts, as software programs, online tools, online corpora, online data sources, and social networking sites (SNSs) that are employed by the RAs' authors in connection with a variety of research topics. It has been established in the systematic analysis that one and the same software program (e.g., SPSS) is involved in different research topics, for instance, sentence processing (Messer & Kennison 2020), syntactic proficiency (Grabovac & Kapranov 2016), text analysis (Taraban & Khaleel 2019), and trauma narratives (Zasiekina 2014; Zasiekina *et al.* 2022). This finding could be interpreted as evidence of the RAs authors' effort to impart their studies objectivity, credibility and scientific value by means of employing statistical analyses that are executed by means of statistical software.

Another observation that can be drawn from the systematic analysis is that one single RA appears to be marked by the discursive presence of several software programs, or, alternatively, several SNSs, for instance Facebook, Instagram, and Twitter (Ushchyna 2022). The finding points to the RAs authors' cognisance of the SNSs that they use as the source of data for their psycholinguistic investigations. Additionally, the finding seems to support the prior literature, which posits that SNSs-based corpora provide an invaluable source of psycholinguistic data on a vast array of research topics (de la Fuente Garcia, Ritchie & Luz 2020; Kapranov 2019; Keuleers & Balota 2015).

Table 4 below outlines the connection of software programs, online resources and tools, online corpora, online databases, and SNSs to the research topics in the RAs in the corpus.

Table 4. The Discursive Presence of Software Programs, Online Corpora, Online Databases, Online Tools, and Social Networking Sites in Conjunction

with the Research Topics

#	Digital Artifacts	Research Topics
1	AntConc software	Translation (Łyda 2021)
	program	Translation (Lyda 2021)
2	Chatbot	Deep learning (Taraban & Marshall 2017)
3	CLAN software	Syntactic proficiency (Kapranov 2014); simultaneous interpreting (Kapranov 2015)
4	Digital slides as visual aids	Gesture and speech analysis (Jarbou 2020)
5	Digital video lectures	Prosody (Tomakhiv 2017)
6	DMDX software program	Lexical access (Issa et al. 2022); morphosyntax (Kiyko, Kiyko, & Drebet 2020); picture naming (Cuitiño <i>et al.</i> 2019); priming (Ansarin & Javadi 2018)
7	E-prime	Idiomstic variation (Geeraert, Newman, & Baayen 2020); sentence processing (Messer & Kennison 2020)
8	Ethical Engineer, an inhouse created website	Text processing (Taraban et al. 2019)
9	Facebook	Discursive representations (Kovalchuk & Litkovych 2022); identity construction (Ushchyna 2022); syntactic proficiency (Kapranov 2014); traumatic experiences (Todorova & Padareva-Ilieva 2021; Zasiekin et al. 2022)
10	GoogleDocs	Conceptual categories (Zhuykova, Lavrynovych & Svidzynska 2020); mindedness in English as a Foreign Language (Fatalaki & Runhan 2016); translation (Semkiv et al. 2022)
11	Google Translate	Deep learning (Taraban & Marshall 2017); translation (Chernovaty & Kovalchuk 2021)
12	Instagram	Discursive representations (Kovalchuk & Litkovych 2022); identity construction (Ushchyna 2022)
13	LDA (Latent Dirichlet Allocation) algorithm	Text processing (Taraban et al. 2018)
14	L2 Syntactic	Syntactic proficiency (Grabovac & Kapranov

	Complexity Analyzer (Liu 2010)	2016)
15	Linguistic Inquiry and Word Count (LIWC)	Poetry analysis (Arenas & Essam 2018); text analysis (Nalabandian <i>et al.</i> 2020; Taraban et al. 2019; Taraban <i>et al.</i> 2022; Taraban & Khaleel 2019); translation universals (Zasiekin 2021); traumatic experiences (Kostruba 2021; Zasiekina et al. 2019; Zasiekin <i>et al.</i> 2022); verbal expressions of preparedness (Mahdysiuk <i>et al.</i> 2020)
16	MAXQDA software	Teaching practice (Estaji & Fatalaki 2022)
17	MATLAB	Lexicon (Tabari 2021)
18	MEH (Meaning Extraction Helper) application	Text processing (Taraban et al. 2018)
19	Microsoft Excel	Playfullness (Gordienko-Mytrofanova, Kobzieva, & Sauta 2019); the acquisition of writing (Taichi & Hung 2016); text analysis (Taraban & Khaleel 2019)
20	Neurocom software	Memory (Zhuravlova et al. 2021)
21	Nvivo software	Stress experiences (Nair & George 2021)
22	Online corpus (inclusive of ad-hoc corpora and AI platforms)	Hate speech (Krylova-Grek 2022); multilingualism (Sharma 2017); text and speech analysis (Haziri 2020); text comprehension (Akimova 2021)
23	Online database (e.g., MultiPic, PubMed, etc.)	Expressed emotion (Zasiekina 2018); lexicon (Tabari 2021)
24	Online survey	L2 learning (Chrabaszcz <i>et al.</i> 2022); semantic modelling (Bohdan & Tarasiuk 2020); speech production (Zembyska, Romanova & Chumak 2022); traumatic experiences (Kostruba 2021; Martynyuk 2021)
25	PRAAT	Speech production in aphasia (Hisham 2021)
26	PsychoPy software	Lexicon (Tabari, 2021); prospective memory (Zhuravlova <i>et al.</i> 2021)
27	R program for statistical computing	L2 learning (Chrabaszcz et al. 2022);
28	Sound Forge 11.0 software	Speech processing (Mir & Khan 2022)

29	SPSS	Discourse (Kolisnichenko, Osovska &	
		Tomniuk 2022); identity (Kuzikova et al.	
		2021); L1 acquisition (Samko, Čerešník &	
		Čerešníková 2021); mindedness in English as	
		a Foreign Language (Fatalaki & Runhan	
		2016); personal values (Romanyuk 2017);	
		speech processing (Mir & Khan 2022;	
		Rabab'ah, Al-Yasin, & Yagi 2022); priming	
		(Ansarin & Javadi 2018); sentence processing	
		(Messer & Kennison 2020); syntactic	
		proficiency (Grabovac & Kapranov 2016);	
		text analysis (Taraban & Khaleel 2019);	
		trauma (Zasiekina 2014; Zasiekina et al.	
		2022)	
30	Statistical program	Individual reflexivity (Savchenko 2019);	
	"Statistica"	speech production (Savchenko, Kalmykov &	
		Malimon 2020)	
31	T-Lab software	Discursive text constructions (Scardigno et al.	
		2020)	
32	The Latent Dirichlet	Text processing (Taraban et al. 2018)	
	Allocation Algorithm	(D. 14.1 (1.2010)	
33	The Paradigm Program	Anaphora (De Melo et al. 2019)	
34	The Word Net	Topic modelling (Karpina & Chen 2022)	
25	Lemmatizer		
35	Twitter	Identity construction (Ushchyna 2022); topic	
26	¥7'1	modelling (Karpina & Chen 2022)  Discursive representations (Kovalchuk &	
36	Viber	1	
27	Voyant Online Teels	Litkovych 2022)	
37	Voyant Online Tools	Topic modelling (Karpina & Chen 2022)	
38	Watson Natural	Deep learning (Taraban & Marshall 2017)	
	Language Classifier		

It follows from Table 4 that there is a substantial bulk of RAs that employ discourse-based data in conjunction with the digital technology-assisted research methods. This finding supports the prior literature (de la Fuente Garcia, Ritchie, & Luz 2020; Keuleers & Balota 2015) that reports the use of online text corpora and online sources of data in order to analyse a host of variables. Similarly, Table 4 presents a sizable amount of research topics associated with translation and interpreting studies that avail themselves of digital technology in a similar manner that is reported in the

previous studies (Dastyar 2018; Kapranov & Vik-Tuovinen 2008; Pöchhacker 2016; Swar & Mohsen 2022; Schwieter & Ferreira 2017). However, it is seen in Table 4 that the digital technology-assisted research topics on reading and writing from a psycholinguistic perspective are less numerous.

Arguably, it seems possible to group the digital artefacts that are outlined in Table 4 into supracategories, such as i) software programs, ii) online corpora, databases and data sources, iii) online tools, and iv) SNSs, which are exemplified by Figure 2.

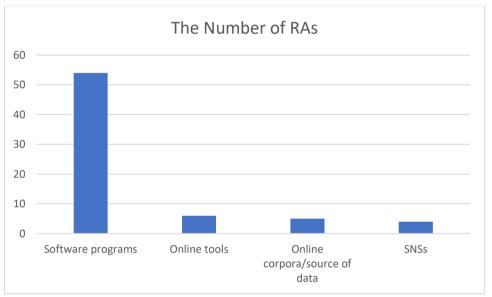


Figure 2. The Number of RAs Associated with the Supracategories of Digital Artifacts

It is evident from Figure 2 that the most numerous supracategory of digital artefacts in the corpus is represented by software programs. Among them, SPSS and Linguistic Inquiry and Word Count (LIWC) appear to be the most frequently used ones. This supracategory is followed by online tools (for instance, chatbots), whilst SNSs (e.g, Facebook) form the least frequent category in the corpus. In addition to the aforementioned supracategories of digital artifacts, there are multiple instances of the presence of such digital artefacts, as figures and tables. These findings are further discussed in subsection 3.2.3.

# **3.2.3.** The Identification and Systematisation of the Discursive Presence of Figures and Tables in the RAs

The systematic analysis of the corpus indicates that whilst there are 69 RAs that involve the discursive presence of software programs, digital hardware, and online tools, the majority of the RAs contain such digital artefacts, as figures and tables. Notably, 30 out of 99 RAs involve tables and/or figures only (i.e., other pieces of digital technology are not indicated except for figures and/or tables). This finding is illustrated by Table 5 that provides the total number of figures and tables in the corpus and the associated descriptive statistics, such as means and standard deviations.

Table 5. The Descriptive Statistics Associated with Figures and Tables in the Corpus of RAs

#	<b>Descriptive Statistics</b>	Figures	Tables
1	Total number	199	205
2	Mean	3.6	2.8
3	Standard deviation	2.9	1.9
4	Minimum	1	1
5	Maximum	15	10

It follows from Table 5 that there are no substantial differences between the number of tables and figures in the corpus. Presumably, the discursive presence of tables and figures in the corpus facilitates the presentation of data and/or research findings in an easy-to-understand manner. As shown in Table 6 below, the distribution of tables and graphs that are employed in the corpus gravitates towards the Results and Discussion sections.

Table 6. The Distribution of Figures and Tables in the RAs' Structure

#	RAs' Structural Elements	Figures	Tables
1	Introduction	3.0%	0.5%
2	Literature Review	-	0.5%
3	Procedure and Methods	-	-
4	Results and Discussion	97.0%	96.1%
5	Conclusions	-	-
6	Appendix	-	2.9%

It should be noted that EEJPL's article submission guidelines mandate the use of a structured article, which is written in alignment with the

so-called IMRaD model, i.e. Introduction (I), Methods (M), Results and Discussion (RaD), Conclusions and References section. The guidelines, however, do not specify the preferred placement of tables and figures in the article. Interestingly, the RAs' authors appear to favour the location of figures and tables in the Results and Discussion sections without direct instructions on the part of EEJPL.

# **3.2.4** The Identification and Systematisation of the Discursive Presence of Hardware in the Corpus

The results of the systematic analysis have revealed that eight out of 99 RAs involve the discursive presence of hardware. The discursive references to digital hardware are summarised in Table 7, where digital hardware is represented discursively in exactly the same manner as it appears in the respective RAs.

Table 7. Discursive References to Digital Hardware in the Corpus

#	Hardware	Research Topics
1	A Toshiba laptop computer	Picture naming (Cuitiño et al.
		2019)
2	A laptop computer (Samsung Essential	Anaphora (De Melo et al.
	E22)	2019)
3	A Sony VIO laptop computer	Priming (Ansarin & Javadi
		2018)
4	Computer	Gesture and speech analysis
		(Jarbou 2020)
5	Computers	Traumatic experiences
		(Zasiekina et al. 2019)
6	Digital stopwatch (XIOMI-A1) mobile	Speech processing (Mir &
	phone	Khan 2022)
7	Hardware complex "Neurocom"	Memory (Zhuravlova et al.
		2021)
8	MEG whole-head scanner	Lexicon (Tabari 2021)
9	Sony IC (ICD-UX523F) recorders	Speech processing (Mir &
		Khan 2022)
10	The Polhemus Fastrak device	Lexicon (Tabari 2021)

The discursive presence of hardware in the corpus appears to be located in the Procedure/Methods subsections of the respective RAs. In comparison to the discursive presence of digital artefacts, it seems that hardware is rather scantily represented in the corpus. Whilst the RAs' authors

pay limited attention to the description of hardware, it would be advisable for the future research to conduct interviews with RAs authors in order to ascertain the reason and/or reasons behind the disregard of the hardware description in the RAs in psycholinguistics.

Finally, let us discuss the most frequent lexical items (inclusive of lexical bundles) that are used by the RAs' authors to refer to hardware, software, and other digital artefacts in the corpus. To that end, the software program AntConc (Anthony 2022) was employed to calculate the frequencies of the lexical items and bundles that were extracted from the corpus in the form of one sentence per one mention of digital technology (i.e., digital artefacts, hardware, and software). In total, 143 sentences comprised of 2747 words were extracted from the corpus and examined in AntConc (Anthony 2022) for i) the frequency of lexical items (words) associated with digital technology per 1000 words and ii) lexical bundles of the lexical items associated with digital technology. The results of the examination are presented in Table 8 below.

Table 8. The Most Frequent Lexical Items and Lexical Bundles Used in

Discursive References to Digital Technology in the Corpus

#	Lexical	Lexical	Lexical Bundles Associated with Lexical
	Item	Item's	Items
		Frequency	
1	LIWC	36	LIWC analyzes the words; LIWC analyzes
			traumatic and positive narratives; LIWC
			category; defined by LIWC
2	Table	34	See Table + the number of the Table; as seen
			in Table + the number of the table; the next
			Table
3	Figure	12	It is shown in Figure + the number of the
			Figure; the results are presented in Figure +
			the number of the Figure; this is shown in
			Figure + the number of the Figure
4	Program	12	Tagged in computer program + the name of
			the software program; program reports;
			program searches; using the program
5	Computer	11	Computer program; tagged in computer
	_		program; computer-assisted
6	SPSS	10	SPSS version + the respective version used in
			RAs; in SPSS; we used SPSS
7	LDA	8	LDA is based; LDA is unsupervised
8	MEH	8	Available online; analysis

9	Software	4	Using software + the name of the software
			program
10	Algorithm	3	Application of the algorithm

It is seen in Table 8 that the discursive presence of digital artefacts that are represented by figures, tables, and software is marked by several lexical bundles that the RAs' authors use in order to introduce and discuss discursively the software programs, as well as draw the readers' attention to the table and/or figure at hand by means of employing such formulaic expressions as "see Table 1", "it is shown in Figure 1", etc. The authors' focus on software could be accounted by their intention to specify the types of software used, possibly, in order to enable further replications of their studies.

#### 4. Conclusions

Having conducted the systematic analysis of the RAs published in EEJPL from 2014 to 2022, the following conclusions emerge. First, it could be postulated that the discursive presence of digital technology in the corpus in the variety of its forms (for instance, digital artefacts, hardware, and software) could be explicable by the general trend in psycholinguistic studies to objectify research by means of using technology. In this regard, the RAs published in EEJPL are no exception. Second, the discursive presence of digital technology is, seemingly, concomitant with the prevalence of female psycholinguists, who, in the substantial number of cases, write RAs as a single author. Third, the results of the systematic analysis point clearly to the dominating discursive presence of computer software programs that are reported to be employed in conjunction with a wide array of research topics in psycholinguistics. Fourth, there are, approximately, three figures and three tables, respectively, per one English-medium RA that is published in EEJPL. This finding might serve an indication of the current discursive practices as far as the use of figures and tables in an RA in psycholinguistics is concerned. Finally, it could be concluded that the results of the systematic analysis have uncovered the most frequent lexical items and lexical bundles that are associated with the discursive presence of digital technology in psycholinguistic RAs. They could, potentially, facilitate the current and prospective authors' article writing in psycholinguistics.

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