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研究課題名（和文）Lexical Frequency Profiles and Lexical Usage: Knowledge vs Use

研究課題名（英文）Lexical Frequency Profiles and Lexical Usage: Knowledge vs Use

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研究成果の概要（和文）：本研究は，口頭および筆記による生産的語彙，受容的語彙，流暢性を研究している第二言語習得研究者に有益な知見を提供するものである。この調査により，ある種のタスクは，流暢さと語彙の特定の側面を研究するのに適していることがわかった。また，話者の習熟度によって結果が左右される可能性があることもわかった。異なるタイプのスピーキングタスク，i）口頭流暢性の様々な側面及びii）学術的語彙の生成における異なるレベルとの間に有意な相関があることを報告する。

研究成果の学術的意義や社会的意義
This study highlights the importance of task selection (spoken and written) when attempting to investigate and assess specific aspects of oral fluency and oral productive vocabulary.

研究成果の概要（英文）：This research offers useful insight for second language acquisition researchers investigating oral and written productive vocabulary, receptive vocabulary, and fluency. With this investigation, we found that certain tasks are better suited for researching specific aspects of fluency and vocabulary. We also found that results may be dependent on a speaker's level of proficiency. In support of these claims, I report significant correlations between different types of speaking tasks and i) various aspects of oral fluency, and ii) different levels of spoken academic lexical production.

研究分野：fluency, vocabulary, and tasks

キーワード：fluency　vocabulary　task　productive　receptive　spoken　written

1.　研究開始当初の背景 (research background)

Vocabulary is central to English language pedagogy because without sufficient vocabulary students cannot understand others or express their own ideas. Research notes that ". . . while without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (Wilkins, 1972, p. 111–112). The current study relates to the vocabulary needed to convey ideas. Despite research acknowledging the central importance vocabulary plays in language use (e.g., Anderson & Freebody, 1981; Nation, 2013) this area of enquiry remains surprisingly under-investigated. The current proposal was therefore designed to investigate L1 Japanese learners' knowledge and the use of L2 English. We administered a number of tasks designed to elicit vocabulary knowledge in language testing, in addition to vocabulary knowledge in naturalistic use. Our testing included the IELTS speaking test, along with validated tests commonly used in the research domain. Our investigation was therefore intended to explore the extent to which knowledge of specific vocabulary items influences L2 vocabulary use at different oral proficiency levels under different task conditions.

Even though the relationship between vocabulary knowledge and language use has been recognized as a fundamental aspect of language learning and vocabulary acquisition for years (e.g., Anderson & Freebody, 1981; Nation, 1993), it remains a significantly under-investigated area of vocabulary research.

Research acknowledges that "vocabulary is multifaceted and contains a number of interrelated, though separable, aspects" (Schmitt, 2010, p. 79). Numerous studies have confirmed that vocabulary is a multifaceted construct (e.g., Fitzpatrick & Clenton, 2017; Meara, 1995; Nation, 2013; Read 2000; Webb, 2005, 2006). Moreover, attempts to define vocabulary knowledge have seen the construct defined according to several identifiable and seemingly distinct aspects. For instance, Nation's table of word knowledge identifies three aspects of vocabulary knowledge with respective sub-aspects, divided according to receptive or productive knowledge: form (spoken, written, and word parts), meaning (form & meaning, concepts and associations), and use (grammar, collocations, and constraints) (2001, p. 27).

Once we acknowledge that vocabulary is multi-faceted, we might begin to question what forms it takes. Taking productive vocabulary, we might accept that producing a word orally is also componential in nature. Research suggests that the productive vocabulary construct includes aspects such as fluency (speed, breakdown, and repair) (e.g., Segalowitz, 2010), phonology (segmentals, and word stress) (e.g., Trofimovich & Isaacs, 2012), as well as lexical variation, sophistication, and abstractness (e.g., Saito, Webb, Trofimovich & Isaacs, 2016). Despite researchers acknowledging the various multi-faceted aspects of productive vocabulary knowledge, no single study has related the construct to lexical usage. Accordingly, the aim of this proposal was to illuminate specifically this research area in order to explore potential relationships that may exist between productive vocabulary knowledge and use.

To some extent, previous studies that explored relationships between speaking and vocabulary (e.g., de Jong et al., 2012, 2013, 2015; Saito et al., 2016a, 2016b), however, suggested that such relationships exist. Such studies indicate that vocabulary knowledge can be associated to certain indices of vocabulary use. In considering lexical use, we explored relationships with validated measures such as lexical frequency profiles (LFP) (Laufer & Nation, 1995; Walters, 2012), vocabulary size (NVLT: McLean & Kramer, 2015; X_Lex: Meara & Milton, 2003), and productive vocabulary (LEX30: Meara & Fitzpatrick, 2000). The use measures we included related to a host of recently published measures: comprehensibility and accentedness (Saito, Webb, Trofimovich, & Isaacs, 2016), segmental errors (Trofimovich & Isaacs, 2012), functional adequacy (De Jong et al.,2012), variation, diversity, sophistication, abstractness, sense relations (Saito, et al., 2016), and density (Koizumi, 2012).

In order to generate adequate extemporaneous samples of spoken vocabulary we administered three commonly employed oral tasks (De Jong, 2012, Saito et al., 2016): i) a naturalistic setting scenario description; ii) a monologic interview (Michel, Kuiken & Vedder, 2007); iii) a quasi-dialogic interview with discussion and, iv) a dialogic discussion (Tavakoli, 2016).

Studies exploring spoken lexical usage for factors such as fluency (e.g., De Jong, 2012), phonology (e.g., Trofimovich & Isaacs, 2012), and vocabulary size (e.g., Koizumi & In'nami, 2013) tend to rely on a single test capture score. A novel element of this research project was the use of lexical frequency profiles (LFP). Laufer and Nation's (1995) LFP analyzes "the percentage of words a learner uses at different vocabulary frequency levels" (p. 311) and differentiates between learners at various levels of proficiency (Laufer & Nation, 1995) according to specific vocabulary band usage. In addition, Walters (2012) suggests that by analysing a learner's LFP, our analysis becomes more fine-grained (p.144). In our attempts to present a detailed analysis of vocabulary knowledge and use, we adopt a lexical frequency profile analysis of the potential relationships between L2 learners use and vocabulary knowledge.

Building on the initial oral productive vocabulary output, we also explored the relationships between the aspects of fluency elicited from the speaking tasks and the lexical knowledge elicited from the productive vocabulary knowledge tasks.

2. 研究の目的 (purpose)

The purpose of this research was to explore L1 Japanese learners of L2 English use of vocabulary. This research project was unique in three important ways: (i) research had not yet investigated potential relationships between an L2 learner's lexical frequency profile (LFP) and their lexical usage; (ii) we adopted monologic, quasi-dialogic, and dialogic testing, mirroring the IELTS speaking component, the first of its kind; and, (iii), we compared the findings from (i) and (ii) with measures employed in recent speaking and vocabulary papers (i.e. De Jong, 2012; Saito et al., 2016), in order to extend such findings in terms of a productive vocabulary approach. This approach, therefore, allowed us to examine whether much-referenced vocabulary measurement tasks provided information specifically about how learners use their vocabulary knowledge (see Fitzpatrick & Meara, 2004; Walters, 2012).

The final purpose was also to elucidate the relationships between the aspects of fluency elicited from the speaking tasks and the lexical knowledge elicited from the productive vocabulary tasks.

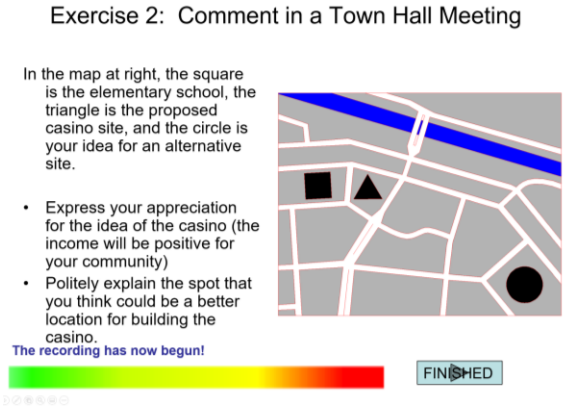
3. 研究の方法 (methods)

We assessed two groups of 30 and 44 respectively. They were pre-intermediate L1 Japanese learners of English (first year university students; *M* age = 19, *SD* = 1.3).

3.1 Group 1 (n = 30)

The three speaking tasks used as well as the delivery format were the same as those used in de Jong et al. (2013), a picture description format. The tasks varied according to demands including: i) formal descriptive (describing a crime scene to a policeman); ii) formal persuasive (responding in a town hall meeting to whether a new casino should be built next to an elementary school); and iii) informal persuasive (providing a view on climate change). Participants used a computer to complete the tasks. Participants first viewed the scene and were then allowed to mentally prepare their description before speaking the response aloud. Following earlier fluency studies participants' oral responses were recorded, in this case using a Sony voice recorder. These recordings were then transcribed manually in the same manner as done by de Jong and colleagues (2013), followed then by a fluency analysis using PRAAT (Boersma & Weenink, 2005). The same instructions were given to all participants where they were asked to complete the tasks themselves and required to follow all directions which appeared on the screen. All tasks began with an explanation of the scene the participants would be describing. Participants were then asked to place themselves in the shoes of the individual in the scene and describe the situation as if they were experiencing it themselves. Participants were then given 30-seconds to prepare the description (indicated by a 30 second 'expanding timer bar' located at the bottom of the screen). Once the initial 30 seconds of preparation time concluded and the task phase began, a new 2-minute duration 'expanding timer bar' appeared (this ensured participants were aware of the time constraint and completed their responses within the given time limit) which, as the 2-minutes progressed, and the deadline approached the colour of the bar would change from green to yellow to red.

Here is a sample slide with the 'expanding timer bar':



To measure fluency, I based my approach on de Jong (2012) and used PRAAT (Boersma & Weenink, 2005). I began by using the participant response transcriptions to manually count syllables. I then employed PRAAT to manually measure all other aspects of fluency. Silent pause threshold was set at 350 ms (as per de Jong, 2012). All instances of sounds uttered such as *ehh, uhh, mm*, and *umm* were indicated and counted as filled pauses (no threshold time was set for filled pauses). Repetition rate and repair rate were also manually counted using PRAAT. The following aspects were also measured for each of the three speaking tasks: i) Articulation rate (syllables/second – excluding pauses); ii) Filled pause ratio (total # of filled pauses/total # of words); iii) Filled pause rate (pauses per second); iv) Silent pause ratio

(total silent pause time/total speaking time); v) Silent pause rate (pauses per second); vi) Mean syllable duration (total speaking time/total syll.); vii) Mean silent pause duration – Within ASU; viii) Mean silent pause duration – Between ASU; ix) Phonation rate (speaking time/total time) ; and x) Speech rate (syl./sec – including pauses). 'ASU', referred to in vii and viii, is used to refer to *analysis of speech units* as defined by Foster, et al. (2000).

I then measured *lexical retrieval speed* using a picture naming task. The same speaking task as used by de Jong et al. (2013) and de Jong and Mora (2017). From the Snodgrass and Vanderwart (1980) picture set, I chose 35 pictures that all participants would be expected to recognize and name (i.e., highly frequent items). The pictures were presented, in order one by one, using E-Prime software. To begin with participants familiarized themselves with the pictures using a practice run through of the pictures in an alternate sequence. While watching the computer screen, a fixation cross appeared mid-screen for 1000 ms, followed by one of the pictures. Following 2000 ms the name of the item appeared below the picture. Following these two components, participants were instructed to press the space bar in order to proceed to the next picture of this familiarization round. Following the familiarization round, I then asked the participants to complete the task again yet this time to clearly and loudly speak the name of the pictures that appear both as quickly and as accurately as possible. The timing in this round was slightly altered. A fixation cross appeared mid-screen for 1500 ms (unlike 1000 ms in the first round), followed by the picture for 2000 ms (as per the first round). The picture then disappeared and was replaced by a blank screen for 500 ms. The 35 pictures appeared in an order that was identical for all participants but different from the initial round of exposure (which was the same for all participants). The time between the appearance of the picture and the beginning of the response was measured manually with the use of PRAAT. For each participant, the mean time of response was used as the lexical retrieval measure. Importantly, all participants recognized all the pictures and scored 100 percent correct.

I then measured *speed of articulation* using a delayed picture naming task. Following a similar procedure to the original picture naming task, participants were asked to prepare their response to a picture that would appear on a computer screen, however in this case they were asked to wait to name the image until a cue was heard. In this second task the fixation cross appeared for only 500 ms., followed by the picture appearing on the screen for 2000 ms. At the 2000 ms. interval, the cue sound, a short beep, was heard just as a green frame appeared around the picture. The beep and the green frame constituted the cue for participants to produce their response. The picture framed in green, appeared on the screen for 1000 ms after the cue sound (the participants responded during this 1000 ms. interval). Although the pictures were randomized differently from the *picture naming task,* they appeared in the same order for all participants during the *delayed picture naming task*. Only correct responses were retained for the analysis. Participant response was measured in two ways: i) response latency is measured as the time from the moment the sound cue is heard until the beginning of the participant's response; and ii) response duration is measured as the actual length of the participant's response. These two measures were calculated using PRAAT. The mean value was calculated for both response latency and response duration. Again, all participants recognized all the pictures and scored 100 percent correct.

For the productive vocabulary task, I chose Lex30. Since its creation by Meara and Fitzpatrick (2000), Lex30 has been widely employed and researched in the field of productive vocabulary (Clenton, 2010; Fitzpatrick & Clenton, 2010, 2017; Fitzpatrick & Meara, 2004; Jiménez Catalán & Moreno Espinosa, 2005; Meara & Fitzpatrick, 2000, Uchihara & Saito, 2016; Walters, 2012). Lex30 is composed of a set of 30 cue words to which participants respond with up to four associated words. Each response is scored as one point if it falls outside the first 1000 frequency band and is not a proper noun, up to a maximum of 120 (points). These response lists are then lemmatized and processed according to the original criteria developed by Bauer and Nation (1993) and further described by Meara and Fitzpatrick (2000). A single point is assigned for each low frequency word (a lexical item is categorized as 'low-frequency' if it occurs outside of the first 1000 most frequent words). Following the lemmatization, frequency profiling for the responses was completed using the Web VP Classic (https://www.lextutor.ca/vp/eng/).

In addition to the productive vocabulary task, I also employed a receptive vocabulary task, based on earlier research. (e.g., de Jong & Mora, 2017; Milton et al., 2010). The receptive vocabulary task I used was the computer-based X_Lex (Meara and Milton, 2003) task, where participants choose whether each presented item constitutes a known or unknown term. From this task you are able to roughly measure a participant's word knowledge from the 1,000 to the 5,000-word frequency band. Importantly, X_Lex also uses pseudo-words among its items (important because pseudo-words allow for score adjustment due to guessing and over-estimation of knowledge (Milton, 2009, p. 74)). The raw scores are then adjusted based on Meara and Milton's (2003) calculation procedure to consider whether pseudo-words are identified as real words.

3.2 Group 2 (n = 44)

The three-part speaking task for group two was the IELTS speaking test which is comprised of a monologic speaking task (part 1), quasi-dialogic speaking task (part 2) and dialogic speaking task (part 3). It is a 13- to 15-minute-long oral proficiency exam. The monologic component comprises a short interview task whereby the instructor interviews on familiar topics such as family, work, school, etc., for between 4 to 5 minutes. The quasi-dialogic

component comprises a 2-minute talk explaining a topic, on a subject with 1-minute preparation time. The dialogic component comprises a predetermined subject, consisting of discussion and Q &A for approximately 5 minutes. All speech samples were recorded and then transcribed into individual word documents, resulting in two subsequent transcriptions: one that included all of the target dysfluencies including pauses (both filled and silent), as well as repetitions and corrections (i.e., recasts), and one that included only the spoken vocabulary with all dysfluencies removed.

The fluency analysis for group two was carried out according to the methodology employed with group one. However, there was one procedural difference between the two groups, whereby neither lexical retrieval speed nor speed of articulation were measured for group two.

4. 研究成果 (results)

The results for both group one and group two, although employing a different combination of tasks to measure both spoken and written productive vocabulary output, are generally reflective of earlier fluency and vocabulary studies.

In the group one analysis I found a significant but negative correlation ($r = -.39$) between higher vocabulary scores (Lex30) and silent pauses ($p < 0.05$). This negative correlation likely supports the notion that the Lex30 productive vocabulary measure taps into participant knowledge and access to similar high frequency items for both the oral fluency and written tasks. Therefore, using Lex30, these findings support the suggestion made by Clenton et al. (2019) that Lex30 seems to align more strongly with specific speaker word use. Conversely, and unlike previous studies (e.g., de Jong & Mora, 2017; Miralpeix & Munoz, 2018), which examined only higher proficiency level speakers, there was a lack of significant correlations between receptive vocabulary measures and oral fluency (Lex30 and X_Lex, $r = .371$). Perhaps this lack of correlations relates to the lower proficiency level of the participants in this current study.

Regarding the investigation into response latency and response duration using both the picture naming and the delayed picture naming task, I found two significant results. i) response latency-delayed picture naming and the number of silent pauses per second in the speaking tasks ($r=.37$, $p <0.05$), and ii) response latencies in delayed picture naming and mean syllable duration ($r=-.44$, $p <0.05$). The first finding potentially implies that the participants whose responses were slower used more silent pauses in their speaking performances, while the second finding possibly indicates that a fast picture-naming speed is related to a slow articulation rate or a longer syllable duration.

Finally, I investigated whether overlap exists between the productive vocabular output across tasks. Although inconsistent, overlaps did exist between responses to the spoken Lex30 task and the speaking tasks, at levels 2 and 0 of the Academic Spoken Word List (ASWL; Deng et al., 2017). These findings reflect Clenton and Fitzpatrick (2010) where they highlighted that the vocabulary produced from speaking tasks may not always clearly match the vocabulary produced from writing tasks.

In the group two analysis I found that each fluency measure, except for 'filled pause rate' changed significantly across at least the two of the three speaking tasks (monologic to dialogic). These results suggest that certain speaking tasks may be more appropriate than others when attempting to measure fluency. Regarding the influence of task on productive vocabulary output, I found a significant increase in the number of high frequency words (ASWL-L1 – see Deng et al., 2017) moving from monologic to quasi-dialogic, quasi-dialogic to dialogic and from monologic to dialogic. These results might indicate that a speaker at this level of proficiency may attempt to access lower frequency words more so in the quasi-dialogic and dialogic task than in the monologic task. A further significant correlation was found between the Lex30 written score and the Lex30 spoken score, $r =.314$. This result appears to support the notion discussed above that vocabulary overlap occurs inconsistently but is to some extent task dependent. The extent to which vocabulary production varies according to task is an area in need of further exploration.

The results from this study contribute to the foundation of research that suggests that certain productive and receptive tasks might be best suited for investigating specific aspects of fluency and specific levels of lexical knowledge.

５．主な発表論文等

〔雑誌論文〕　計0件

〔学会発表〕　計2件（うち招待講演　0件／うち国際学会　2件）

１．発表者名 Dion Clingwall
２．発表標題 Exploring potential relationships between vocabulary knowledge and fluency measures: a task-based approach
３．学会等名 AALA - Asian Association for Language Assessment International Conference（国際学会）
４．発表年 2019年

１．発表者名 Dion Clingwall
２．発表標題 Investigating whether vocabulary knowledge profiles can predict vocabulary use
３．学会等名 EuroSLA - European Second Language Association International Conference（国際学会）
４．発表年 2019年

〔図書〕　計2件

１．著者名 Clenton, De Jong, Clingwall, and Fraser	４．発行年 2020年
２．出版社 Routledge	５．総ページ数 126-145
３．書名 Vocabulary and the four skills	

１．著者名 Clenton, J., De Jong, N., Clingwall, D., & Fraser, S.	４．発行年 2020年
２．出版社 Routledge	５．総ページ数 Book - 236; Chapter - 27
３．書名 Vocabulary and the Four Skills: Chapter 11 - Investigating the extent to which vocabulary knowledge and skills can predict aspects of fluency for a small group of pre-intermediate Japanese L1 users of English (L2)	

〔産業財産権〕

〔その他〕

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６．研究組織

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７．科研費を使用して開催した国際研究集会

〔国際研究集会〕　計0件

８．本研究に関連して実施した国際共同研究の実施状況

共同研究相手国	相手方研究機関