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The Effect of Embedding Phonological Awareness Training on Adult EFL Learners' Phonological Awareness Skill

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Abstract: Phonological awareness relates closely to listening and speaking skills. It also has an important role in learning to read in an alphabetic writing system. In the context of learning a new language, it is essential to figure out an appropriate strategy in accelerating the phonological awareness skill. The present study aims at investigating the effect of embedding phonological awareness training in adult English as a foreign language (EFL) learners' phonological awareness skill. It involved 63 EFL students who were divided into two groups: Experimental and control. The data were taken by using a phonological awareness test and analyzed by using independent samples t-test. The overall comparison showed that the experimental group who received an embedded phonological awareness training for 4.5 hours (45 minutes of six meetings) surpassed the control group who joined a regular vocabulary class without phonological awareness training ($p = .017$). Thus, phonological awareness training effectively accelerates adult EFL learners' phonological awareness skills.

Keywords: *EFL learners, embedded phonological awareness training, phonological awareness skill.*

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Introduction

Before learners can start to work with print words, they, by nature, work with the sounds in spoken words. In the process of learning to recognize sounds in the spoken words, they gradually develop phonological awareness. Phonological awareness deals with the ability to focus on speech sounds and indicates the degree of sensitivity to the sounds of speech (Konza, 2011). Thus, it has a crucial role in the teaching of English as a foreign language. Some studies have examined phonological awareness as one of the reliable predictors of language acquisition and it associates with early reading ability in children (Yeung & Chan, 2013; Yoshikawa & Yamashita, 2014).

Whereas phonological awareness in children learning a first language (L1) and a second language (L2) has been extensively studied, research about phonological awareness in adults learning a second language is a rare undertaking. This condition is surprising considering differences in young and adult learners' characteristics and L1 and L2 acquisition characteristics. Children may acquire phonological awareness in a second language similar to their first language acquisition, but most adults do not have this facility (Lightbown & Spada, 2006). The L1 phonology is acquired incidentally and without conscious attention to the phonological form. In contrast, L2 phonology is achieved through conscious noticing. This is because the implicit learning mechanisms used in L1 learning are no longer available or optimal in adult learning (Abrahamsson, 2012; Ellis, 2005). To develop accurate L2 phonetic categories, the adult L2 learners need to consciously notice the form in the L2 phonology because, as Schmidt (2012) argues, noticing is necessary for second language acquisition. Thus, since adult learners' acquisition mechanism for L2 phonological awareness requires conscious attention, awareness is needed at the initial stages of L2 learning.

However, limited research has investigated the effect of phonological awareness in adults' language learning. Some studies found the low level of preservice and in-service teachers' metalinguistic knowledge, including phonological, morphological, and orthographic awareness (Carroll et al., 2012; Hismanoglu, 2012; Washburn et al., 2011) and the barriers present in their teaching practice. Some other studies underlined the importance of phonological awareness

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and phonological awareness instruction for adult L2 learners' acquisition and the importance of explicit instruction of phonological awareness in developing their literacy (Brennaan & Booth, 2015; Ibrahim, 2018).

Despite the importance of having phonological awareness knowledge in learning a second language, the need for phonological awareness training is still argued. Krashen and Hastings (2011) state that learners' phonological awareness, both in L1 and L2, develops without instruction. In contrast, some studies found that phonological awareness training developed phonological memory, phonological sensitivity, and metaphonological abilities and therefore phonological awareness intervention programs are advocated (Eissa, 2014; Osterhouse, 2013). Some other studies showed that intervention in the area of phonological awareness through direct and explicit instructions have a significant effect on the development of phonological awareness abilities of the target learners (Elhoweris et al., 2017; Hund-Reid & Schneider, 2013). In addition, limited studies involving adult learners also indicate the positive effect of phonological awareness training on developing learners' phonological awareness (Jaskolski, 2013; Kennedy et al., 2013; McNeill, 2018).

Several studies have investigated the effectiveness of phonological-based instruction in English as a foreign language (EFL) context at the primary school level (Eshiet, 2014; Shepherd, 2013; Yeung, 2012; Yeung & Chan, 2013). The studies employed various strategies to adapt phonological-based instruction to the characteristics of EFL students. The results of the data analysis showed a significant effect of the phonological-based instruction on students' phonological awareness as well as non-word reading (Shepherd, 2013), word reading (Shepherd, 2013; Yeung & Chan, 2013), and text comprehension (Shepherd, 2013). However, two studies (Eshiet, 2014; Yeung, 2012) showed an insignificant effect of the instruction on students' phonological awareness skills.

Phonological awareness training has been found to improve phonological awareness skills in the past. The improvement could be related to the teaching technique. Non-systematic (embedded) phonological awareness training has not been investigated as much as systematic (explicit) phonological awareness training. Whereas, in some educational settings, where it is impossible to conduct intensive direct phonological awareness training with a proper portion and time, the embedded method could be an alternative way of delivery to maximize the development of phonological awareness. The embedded instruction has proven to be an effective teaching strategy in increasing skill acquisition (Rakap & Parlak-Rakap, 2011). A recent literature review conducted by Jimenez and Kamei (2015) examined the use of embedded instruction to teach academic content to students with moderate and severe intellectual disabilities. The results show that embedded instruction met the standards of an evidence-based strategy to support the academic learning of students with moderate and severe intellectual disabilities.

Recently, the embedded instruction starts touching the teaching and learning of phonological awareness skills. Instead of conducting separate training on phonological awareness, which is impossible to do in some settings and conditions, the training is embedded within the ongoing classroom activities. Two studies, which focused on investigating the metalinguistic knowledge of preservice teachers, have examined the impact of metalinguistic coursework for preservice teachers, including phonemic awareness, morphological awareness, and orthographic awareness (McNeill, 2018; Purvis et al., 2016). The finding of the studies evidence that embedded-based phonological awareness coursework is effective at building adult learners' metalinguistic knowledge. The 7 hours of lecture time (Purvis et al., 2016) and 10 hours of lecture time (McNeill, 2018) focused on metalinguistic knowledge for spelling instruction embedded in literacy education course for the preservice teachers were investigated. Overall, the results evidenced that embedded-based phonological awareness coursework effectively built adult learners' metalinguistic knowledge. In addition, the course work was found effective in building students' phonemic, morphological and orthographic awareness. The effect of the embedded phonological awareness training on the development of phonological awareness itself, however, remains unexplored in such studies. Considering the importance of phonological awareness in learning a language, it is necessary to investigate the effect of the training on the development of phonological awareness.

Based on the review of previous findings of some studies on phonological awareness above, there are some points that need to be underlined. First, it is essential to figure out an appropriate strategy in accelerating the phonological awareness skill in adult learners, especially in a foreign language learning context. Second, it is necessary to consider an embedded instruction focusing on phonological awareness as a problem-solving. Therefore, the present study aims at investigating the effect of embedded phonological awareness training on the phonological awareness skill due to inconclusive arguments on the importance of phonological awareness training. This study also aims to confirm whether the embedded training brings improvement on the learners' phonological awareness skills.

The embedded instruction refers to embedding phonological awareness training explicitly within the ongoing routines and vocabulary instruction activities. Thus, the phonological awareness training was adjusted with the materials and teaching-learning activities in the vocabulary instruction being embedded. In this way, the instruction would enhance the generalization and maintenance of the taught skills. Additionally, considering that adult literacy education's primary focus is not on reading aloud and spelling, this study proposed vocabulary instruction as an alternative subject to be embedded with phonological awareness training as researchers suggested that vocabulary and phonological awareness are related (Cassano & Schickedanz, 2015).

Reflecting upon the importance of phonological awareness training, the research question is formulated as follows: Do adult EFL learners who join an embedded phonological awareness training within vocabulary instruction have significantly better phonological awareness skills than those who join a regular vocabulary instruction?

Methodology

Research Design

This study aimed to investigate the effect of embedded phonological awareness training on the phonological awareness skills of adult EFL learners. It employed a quasi-experimental research design since it was impossible to randomize the research subjects who have already been grouped in classes.

Subjects of the Study

The subjects of the study were 63 first-semester students who attended two intact classes in the English Department of a teacher training college in Indonesia. The students were taking Vocabulary as a part of the integrated intensive course, a compulsory subject for the first semester students of the English Department. There were 25 students in the experimental group and 38 students in the control group and they were approximately the same age, 18-19 years old. The first-year students were selected on the basis of the assumption that in the earlier year of college, the students may still have various backgrounds of knowledge of English, especially in the variables under investigation. They have not received any profound English instructions, which may impact the progress of their learning and affect performance. These varieties and situations are expected to give a comprehensive picture of learners' phonological awareness skill development.

Instrument

The study involved EFL learners' phonological awareness skills as the dependent variable. Measuring the variable, the phonological awareness test was used as the instrument of the research. The phonological awareness test used in this study was constructed for adult learners whose first language is not English. The purpose of the test was to measure learners' phonological awareness skills at two general levels: the awareness skill at the phoneme level and the awareness skill at the onset-rime level. The test consisted of forty items which were divided into eight parts. It was adapted from Starting Points: Supporting the Learning Progressions for Adult Literacy (Tertiary Education Commission, 2008). To be more specific, the skill included were isolating, identifying, categorizing, blending, segmenting, deleting phonemes (at phoneme level), identifying and manipulating onset and rime (at onset-rime level). The learners' responses were scored 1 for the correct responses and 0 for the incorrect responses.

After the test blueprint was determined and the test was constructed, the validating process was carried on. Two experts were involved in the validation process to check whether the test matched the tasks required to do and the relevancies of each item with the dimension, variables, and sub-variables presented in the blueprint of the test. Following the process, a tryout was conducted to thirty students for validity and reliability analysis. The validity analysis results indicate that the items of the test were valid. Additionally, the result of reliability analysis showed very high reliability of the test items (Cronbach's Alpha values = .933, N = 40). Thus, the phonological awareness test was ready to be used in data collection.

Procedure

Prior to the implementation of the treatments, some attempts were made to control extraneous and intervening variables. They were made to ensure that the differences in the posttest results between the experimental and control groups were due to the treatments rather than the initial differences of the research subjects. The duration of the study was determined and the topics for treatment were selected carefully to control the threats of history and maturation. A different arrangement on the pretest and posttest items and a forty-nine-day interval between the pretest and posttest were applied to control the testing threat.

The pretest was administered in the first stage of data collection to know the prior phonological awareness skill between experimental and control groups before the treatment was given. An independent samples t-test on pretest scores was done to ensure that the groups' initial conditions were equal. The results of the test showed sig. (2-tailed) values of .523, which indicated that the two groups' initial conditions were similar. A well-planned teaching scenario was prepared, and intensive training for the lecturers in delivering the material was conducted to control the experimenter effect and diffusion threats. The attempts were made to ensure that there would be no bias or unintentional behavior of the experimenter involved in the experiment. Additionally, the different treatments between the two groups were not informed to the research subjects to overcome the diffusion.

The treatments in experimental and control groups were given in six meetings. The treatment in the experimental group was in the form of phonological awareness training embedded within vocabulary instruction on six different

topics. On the contrary, the control group was exposed to the language by drilling and using them intensively in a real-life setting.

As the treatment of the study, the phonological awareness training was delivered in six meetings that were embedded within the 90 minutes of vocabulary instruction. It took approximately 45 minutes of training in each meeting. In other words, the learners in the experimental group received 270 minutes of phonological awareness training (6 x 45 minutes training) or four and a half (4.5) hours of training. The 90 minutes of vocabulary instruction in every meeting was divided into two sessions, each of which took 45 minutes. The first session was used to introduce the vocabularies related to the topic learned, do pronunciation practice and define or describe the vocabularies introduced with the learners' own words. The following 45 minutes was for the second session in which the phonological awareness training was given.

The training content under investigation focused on two levels of phonological awareness, phonemic awareness, and onset-rime awareness. Specifically, the content of the training covered phoneme manipulation (isolating, identifying, categorizing, blending, segmenting, deleting phonemes) and onset-rime. The content coverage was then broken down into six topics of training; they were: 1) isolating phonemes, 2) identifying phonemes, 3) categorizing phonemes, 4) blending and segmenting phonemes, 5) deleting phonemes, 6) onset-rime. Given that the phonological awareness training in this study was embedded within the vocabulary instruction, the six training topics were then adjusted and embedded within the teaching of six topics of vocabulary instruction. Respectively, the topics of vocabulary instruction include: 1) Schedules and Routines, 2) Describing People, 3) Giving Direction, 4) Emotions and Feeling, 5) Reporting, and 6) Travelling. Different lecturers teach each group to avoid bias in the treatment procedures between the experimental and control groups. However, to ensure that the materials and learning activities in the first session in both experimental and control groups were similar, a small tryout on the two lecturers' teaching procedures was conducted prior to the treatment.

After the treatments of the experimental group and control group were completed, a posttest was administered for the need of data analysis. The posttest form and items were similar to the pretest, yet they were in a different arrangement. The analysis of the obtained data involved two steps. The first step concerned the test of the fulfillment of normality and homogeneity assumptions required for running a parametric test prior to the primary data analysis. The second step dealt with the hypotheses testing. Since the results of Shapiro-Wilk and Levene's tests showed that the data were normally distributed and that the variance of the data was homogeneous, the hypotheses testing was done by using independent samples t-test with the help of the SPSS program.

Results

After the two assumptions have been met, the hypotheses were tested to compare the mean of the scores of the experimental group receiving embedded phonological awareness training with the mean of the scores of the control group joining regular vocabulary class. The descriptive statistics analysis was done in the first stage to get an overall condition of phonological awareness skills of the experimental group and control groups. Specifically, the condition included the ranges, the minimum and maximum scores, the means, and the standard deviations.

Table 1. Overall Descriptive Statistics

	N statistic	Range statistic	Minimum statistic	Maximum statistic	Mean statistic	Std. deviation statistic
Embedded pa training	25	32	19	51	42.08	7.810
Regular class	38	40	10	50	36.66	9.098
Valid n (listwise)	25					

The result of the descriptive analysis presented in Table 1 informed that the mean of the experimental group that received an embedded phonological awareness training was 42.08, while the mean of the control group that joined a regular vocabulary class was 36.66. With the mean difference of 5.42, the experimental group outperformed the control group. The maximum scores in both groups were 51 and 50, while their minimum scores were 19 and 10. The range of the control group was higher than the range of the experimental group as well as the standard deviation (Range = 40 and SD = 9.098 compared to Range = 32 and SD = 7.810). Those indicated that the scores of phonological awareness skills in the control group were more varied than those in the experimental group.

The main output of the data analysis using independent samples t-test gave information on whether the different training procedures gave statistically significantly different results on the learners' phonological awareness skills. In other words, the analysis aimed to know whether there was an overall statistically significant difference in phonological awareness skills between the different training procedures (in experimental and control groups). The result showed the t-value of the independent variable was 2.444, and the significant value (ρ -value) was .017. Compared to the t-table of $df = 61$, the t-value is higher than the t-table ($2.444 > 1.999$). Additionally, the ρ -value is lower than the alpha value ($.017 < .05$). The values indicated a statistically significant difference in phonological

awareness skills between adult EFL learners who joined an embedded phonological awareness training and those who joined a regular vocabulary class. Thus, it can be concluded that, in general, adult EFL learners who joined an embedded phonological awareness training have significantly better phonological awareness skills than those who joined a regular vocabulary class (see Table 2).

Table 2. Overall Independent Samples Test

		t-test for equality of means					95% confidence interval of the difference	
		t	df	Sig. (2-tailed)	Mean difference	Std. error difference	Lower	Upper
PA_skills	Equal variances assumed	-2.444	61	.017	-5.422	2.218	-9.858	-.986
	Equal variances not assumed	-2.523	56.680	.014	-5.422	2.149	-9.726	-1.118

Further analyses were then conducted to compute the differences in the means on phonological awareness skills at the phoneme and onset-rime levels of the two groups. The result of descriptive analysis showed that the mean at the phoneme level of the experimental group surpassed the mean of the control group by 3.99 (33.92 compared to 29.92). However, both groups had an equal spread of scores which were indicated by the standard deviation values (6.614 and 7.343). See Table 3.

Table 3. Sub-Skills Descriptive Statistics

	Training	N	Mean	Std. deviation	Std. error mean
Phoneme level	Embedded PA training	25	33.92	6.614	1.323
	regular class	38	29.92	7.343	1.191
Onset-rime level	Embedded PA training	25	8.16	1.675	.335
	regular class	38	6.74	2.468	.400

In addition, the result of descriptive analysis at the onset-rime level also showed that the experimental got a higher mean than the control group (8.16 compared to 6.74) with a 1.42 mean difference (see Table 3).

Table 4. Sub-Skills Independent Samples Test

		t-test for equality of means					95% confidence interval of the difference	
		t	df	Sig. (2-tailed)	Mean difference	Std. error difference	Lower	Upper
Phoneme level	Equal variances assumed	2.198	61	.032	3.999	1.819	.361	7.637
	Equal variances not assumed	2.247	55.171	.029	3.999	1.780	.432	7.566
Onset-rime level	Equal variances assumed	2.523	61	.014	1.423	.564	.295	2.551
	Equal variances not assumed	2.726	60.913	.008	1.423	.522	.379	2.467

The mean differences at phoneme and onset-rime awareness levels of the groups presented from the descriptive analysis were proven to be significant, referring to the results of the independent samples t-test in Table 4. The analysis results presented the t-value at the phoneme and onset-rime levels, respectively, were 2.198 and 2.523, and the sig. (2-tailed) values were .032 and .014. The t values at both levels were higher than the t-table of $df = 61$. In addition, the sig. (2-tailed) values were lower than the $\alpha = .05$. Those indicated that the mean difference in phonological awareness at phoneme and onset-rime levels between the experimental and control groups was significant. In conclusion, the experimental group indeed has significantly better phoneme and onset-rime awareness than the control group.

Discussion

This study investigated the effect of embedded phonological awareness training on the phonological awareness skills of adult EFL learners. A total of 270 minutes of the training was embedded within six meetings of vocabulary instruction (45 minutes in each session). The performances in the phonological awareness test of learners in the experimental group were then compared to those in the control group who joined a regular vocabulary class with intensive exposure to the language.

The independent samples t-test showed that the means of the experimental and control groups were significantly different (t -value = 2.444, Sig. (2-tailed) = .017). The overall comparison of the means of the experimental group (42.08) and control group (36.66) showed that the experimental group who received an embedded phonological awareness training surpassed the control group who joined the regular vocabulary class by 5.42 points. The obtained value indicated that the learners who received an embedded phonological awareness training had significantly better phonological awareness skills than those who joined a regular vocabulary class. In other words, the embedded phonological awareness training indeed had a significant effect on the adult EFL learners' phonological awareness skills.

It was also found that the training affected learners' phonological awareness skill at both phoneme and onset-rime awareness. The comparison of learners' performance at phoneme level showed a 3.99 difference in the means of experimental and control groups. The experimental group got a higher mean than the control group (33.92 compared to 29.92), with a significance level of .032. Additionally, the comparison of learners' performance at onset-rime level also showed a slight 1.42 difference on the means of the experimental group (8.16) and the control group (6.74) with a .008 level of significance. Both of the significance level values indicated that the mean differences were significant. Thus, it indicated that phonological awareness training indeed significantly affected learners' phoneme awareness and onset-rime awareness.

Regarding the controversy on the need for phonological awareness training, the findings of this study contradict the studies of Krashen and Hastings (2011), who state that learners' phonological awareness develops without instruction, yet support the importance of the training on the development of phonological awareness skill (Eissa, 2014; Elhoweris et al., 2017; Hund-Reid & Schneider, 2013; Jaskolski, 2013; Kennedy et al., 2013; McNeill, 2018; Osterhouse, 2013; Shepherd, 2013; Yeung & Chan, 2013). The data analysis results in this study showed that the experimental group, which received phonological awareness training, outperformed the control group that joined regular vocabulary class with intensive exposure to the language, at both levels of phonological awareness skill. The mean difference of the two groups was statistically proven to be significant. That is to say that phonological awareness training in adult EFL learners accelerated the phonological awareness development. The finding is contradictory to the findings of Eshiet (2014) and Yeung (2012) that showed an insignificant effect of the instruction on students' phonological awareness skills.

The findings of this study also attested to the significant effect of explicit phonological awareness training on learners' phonological awareness skills (Jaskolski, 2013; Osterhouse, 2013). Osterhouse (2013) investigated the effectiveness of the 10 weeks of explicit training, which were delivered in 20-minute sessions of four times meeting a week. Additionally, Jaskolski (2013) investigated the implementation of 15-hour professional development training focused on phonological training. Similar to those studies, the present study implemented explicit instruction concentrating on phonological awareness training. However, it had a shorter period compared to the two studies. The phonological training in this study was implemented in six weeks of training, which was delivered in 45 minutes in each meeting, once a week. Despite the shorter implementation time period, the present study's findings indicated a significant effect of the instruction, which is in line with the results of the two studies (Jaskolski, 2013; Osterhouse, 2013).

Further, the findings of the present study prove that explicit training remains effective even though embedded within a regular vocabulary classroom setting. Thus, supporting the argument that embedded instruction is an effective strategy in increasing skill acquisition (Rakap & Parlak-Rakap, 2011). Based on the result of the data analysis, the embedded phonological awareness training in this study had a positive effect on the development of adult EFL learners' phonological awareness skills. The finding was in line with Purvis et al. (2016) and McNeill (2018). The two studies investigated 7 hours (Purvis et al., 2016) and 10 hours (McNeill, 2018) of metalinguistic coursework, which included phonemic awareness on preservice teachers' metalinguistics knowledge. The coursework itself was embedded within literacy education. The results of those studies showed significant growth in learners' phonemic, morphological, and orthographic awareness. Moreover, the studies suggested that the coursework was effective at building learners' phonemic awareness as well as morphological and orthographic awareness. Similar to those findings, the overall comparison of the means of the experimental and control groups showed that the experimental cohort outperformed those who joined the regular vocabulary class with intensive exposure to the language.

Based on the discussion above, some conclusions can be drawn. First, the adult EFL learners' phonological awareness abilities were significantly impacted by the embedded phonological awareness instruction. It was also revealed that the training had an impact on the students' onset-rime and phoneme awareness phonological awareness skills. Next, it evidenced the considerable improvement in phonological awareness abilities resulted from formal phonological awareness training. Besides, even though the explicit training was embedded within a typical vocabulary classroom situation, it still had the desired impact. This circumstance is assumed to be caused by the alignment between the learning objectives of the vocabulary course and the goals of phonological awareness training. Thus, this study embedded phonological awareness training within vocabulary instruction. In brief, it could be concluded that embedding explicit phonological awareness training within vocabulary instruction is effective in accelerating the development of adult EFL learners' phonological awareness skills.

Conclusion

This study has shown that embedding phonological awareness training in vocabulary class indeed affects adult EFL learners' phonological awareness skills significantly. Further, the effect is also shown to be significant at the two levels of the skill, the phoneme and onset-rime level, which means that the training indeed helps the learners to have a better phonological awareness at phoneme and onset-rime level than those who join regular vocabulary class with intensive exposure to the language. It also revealed that an explicit instruction in phonological awareness is indeed effective in accelerating adult EFL learners' phonological awareness skills. The training, furthermore, remains effective even when it is embedded within the vocabulary instruction.

Recommendations

Referring to the current findings, the present study has several recommendations, especially for the teaching and learning of EFL. First, it is possible to implement explicit phonological awareness training to accelerate learners' phonological awareness skills. Time limitation is no longer a problem since embedding the training within daily instruction will not decrease its effectiveness. Second, since reading skill in the Indonesian educational system is not reading aloud, embedding the phonological awareness training within the vocabulary instruction can be an alternative way out. Based on the observation during the implementation of the training, the objectives of vocabulary instruction matched the general objective of the training. Thus, the instruction and training supported each other.

Suggestions are addressed to future researchers with the same research interest in phonology. The suggestions are given based on the limitations which were found during the completion of this study. Future studies using different yet equivalent pretest and posttest instruments are needed to control the interference variable, which is assumed to affect the validity of the results. Further, it is also suggested to establish a further study to investigate its effects on the development of phonological awareness skills by considering learners' phonological awareness levels.

Limitations

The limitation of the present study is on the instrument used in collecting the data. The phonological awareness test used in the pretest and posttest were similar. This condition might impact the findings of the study.

Authorship Contribution Statement

Hentasmaka: Conceptualization, design, data acquisition, data analysis, writing. Cahyono: Supervision, critical revision of manuscript, editing/reviewing, final approval. Basthomi: Supervision, critical revision of manuscript. Puspitasari: Data acquisition, data analysis, technical or material support.

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