

Exploring Vocabulary Acquisition and Related Factors among Malay Preschool Children

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Abstract

Vocabulary acquisition is an essential aspect of a child's language development. This study investigated vocabulary acquisition in the Malay language, examining variations related to age, gender, the impact of maternal education level, and the correlation between vocabulary and speech sound accuracy. A total of 326 Malay preschoolers, aged between 4 to 6 years, participated in this research. A set of stimulus pictures comprising 53 Malay vocabulary items were employed to assess the children's ability to name vocabulary items. The older children demonstrated higher Malay vocabulary naming accuracy compared to younger children. No significant differences were observed in terms of gender and maternal education level in relation to vocabulary naming accuracy. The findings, inconsistent with certain previous studies, underscore the necessity of examining methodological differences. There was a strong correlation between the accuracy of vocabulary naming and speech sound accuracy, suggesting a close relationship between vocabulary and speech sound acquisition. This implies that vocabulary and speech sound development are interconnected and may influence each other during the process of vocabulary acquisition in children. Understanding the correlation between vocabulary naming accuracy and other variables enables researchers to incorporate this information when designing assessments to gauge children's vocabulary acquisition more accurately.

Keywords: vocabulary acquisition, Malay, gender, speech sound

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Introduction

Vocabulary, encompassing knowledge of words and their meanings, is a multifaceted construct that can be classified into four distinct types: meaning/oral vocabulary, receptive vocabulary, expressive vocabulary and literate/written vocabulary (Pikulski & Templeton, 2004, p. 2). Vocabulary can be classified according to level of difficulty. Two different frameworks to organize and categorize words have been proposed. Pikulski and Templeton (2004) introduced a four-level vocabulary classification, while Beck, McKeown, and Kucan (2002) proposed a three-tiered framework. According to Pikulski and Templeton's (2004) classification, Level I vocabulary, known as 'conversational speech', comprises words that are commonly used in everyday conversations and are familiar to all children. Level II vocabulary, referred to as 'academic vocabulary' or 'instructional vocabulary', consists of words that are primarily learned through reading or explicit instruction. Level III vocabulary encompasses the 'technical vocabulary' specific to fields or professions. Level IV comprises rare and esoteric words that offer limited practical use. Beck et al. (2002) introduced a similar three-tiered framework for vocabulary classification. In their framework, Tier I consists of basic and commonly known words that are familiar to most individuals. Tier II encompasses vocabulary with significant meanings across various domains. Tier III comprises low-frequency and challenging words that are specific to domains.

Both Pikulski and Templeton's (2004) and Beck et al.'s (2002) frameworks can inform assessment and curriculum development practices. Assessments can be designed to measure students' proficiency across different tiers of vocabulary, providing valuable insights into their language development and informing instructional decision-making. When assessing the vocabulary of preschool children, the framework can guide the selection of vocabulary types based on the level of progression. For instance, when selecting vocabulary that is commonly known to preschoolers, Level I vocabulary as proposed by Pikulski and Templeton (2004) as well as Beck et al.'s (2002) Tier I vocabulary can serve as a guideline. Additionally, curriculum materials can be designed to gradually introduce students to increasingly sophisticated vocabulary, ensuring progression and mastery over time.

The importance of vocabulary acquisition

Vocabulary acquisition is an essential aspect of a child's language development. Vocabulary acquisition occurs when a child starts to learn new words. Upon entering preschool, children demonstrate varying levels of vocabulary knowledge and size. Vocabulary knowledge and size have been found to be interconnected with numerous indicators of language learning outcomes.

First, research has shown a robust correlation between vocabulary and reading comprehension. Cruz (2020) examined the effect of receptive vocabulary knowledge on the reading comprehension of 340 Kindergarten Dual Language Learners (DLLs) and monolingual students in first and second grades. Vocabulary knowledge emerged as a significant predictor of comprehension in the second grade, although the changes varied according to timing of assessment. Ouellette (2006) sampled 60 typically developing Grade 4 students to study the relation of vocabulary and reading comprehension. The findings of the study showed that the depth of vocabulary knowledge predicted reading comprehension. Second, vocabulary size may also have implications for speech and language disorders, especially among those young children. Vocabulary assessments are commonly used by researchers and practitioners for identifying and classifying the language conditions of the young children. Rescorla and Schwartz (1990) conducted a follow-up study on 25 boys who were identified with specific expressive language delay when they were between 24 and 31 months old. Many of the boys had vocabularies containing less than 50 words and only limited usage of word combinations. Rescorla et al. (1997) used a vocabulary test known as the Expressive One-Word Picture Vocabulary Test (Gardner, 1981) as one of the expressive language measures to assess age 3;00 outcomes for a cohort of late talkers identified between the ages of 2;00 to 2;07. Thus, limited vocabulary development could potentially signal language delays or difficulties. Dale et al. (2003) identified children whose vocabulary scores fell below the 10th percentile as early language delay. By the age of 3, approximately 44% of these children continued to show persistent language difficulties in two out of the three measures: vocabulary, grammar, and use of abstract language. Based on the research mentioned earlier, we understand that vocabulary is often employed as an indicator of language development issues in young children.

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Vocabulary acquisition is closely associated with various factors, including gender, socio-economic status and speech sound acquisition. In the subsequent sections, studies that discuss these specific aspects will be reviewed.

Association between gender and vocabulary acquisition

The gender effect on vocabulary acquisition among children has indeed been a subject of ongoing debate and investigation. The studies which reported the gender effect on vocabulary acquisition are rather extensive. Several studies found gender differences in vocabulary skills, with female children outperforming the male children. Huttenlocher et al. (1991) conducted a study on the early vocabulary growth of 22 children, observing data collected at multiple time points between 14 to 26 months. Their results indicated that gender played a significant role in the rate of vocabulary growth, with girls exhibiting better performance than boys. On the other hand, Bornstein, Haynes and Painter (1998) examined vocabulary competence in 126 children aged 20 months within a developmental ecological model. Their research revealed that girls displayed a more accelerated rate of vocabulary development compared to boys. Galsworthy et al. (2000) investigated genetic and environmental origins in 3000 2-year-old twin pairs and found that girls scored higher on verbal ability, as measured by productive vocabulary. Rescorla and Achenbach (2002) investigated the impact of gender and age on a sample of 278 children aged 18 to 35 months using the Language Development Survey, and found that vocabulary scores increased with age, with girls scoring slightly higher than boys. Bornstein et al. (2004) conducted a study on birth order and vocabulary competence. Their findings indicated that at 20 months, first-born girls outperformed boys on all vocabulary competence measures, while second-born girls were superior to boys on vocabulary comprehension and production.

Westerlund and Lagerberg (2008) examined 1091 children aged 17 to 19 months and reported that girls had a more developed vocabulary and were more engaged in reading than boys at 18 months. Bavin et al. (2008) studied 1447 children in Australia and noted that gender also influenced vocabulary development, with girls producing more words than boys at both 12 and 24 months of age. Eriksson et al. (2012) investigated gender differences in early language abilities of 13,783 European children across 10 non-English speaking

communities. The study utilized a compilation of published data evaluated using modified MacArthur-Bates Communicative Development Inventories (CDIs) covering the age range of 8 months to 2.06 years of age. The findings indicated that girls exhibit a slight advancement over boys in initial communicative gestures, productive vocabulary, and word combination skills. They found that the distinction between girls and boys persisted even though considerable differences in language abilities were observed among various language communities. In a more recent study, Urm and Tulviste (2016) examined the vocabulary size of children aged 16-30 months (N=1235) utilizing the MacArthur-Bates Communicative Development Inventory (ECDI-II): Words and Sentences. The study revealed that girls possess more extensive vocabularies than boys, and first-born children have an advantage in comparison to those born later.

On the other hand, Hyde and Linn (1988) conducted comprehensive meta-analysis of 165 studies encompassing samples of both children and adults, exploring various aspects of language abilities, such as vocabulary, reading comprehension, and verbal communication. Their analysis revealed that the overall size of the gender difference in language ability was minimal and could even be considered negligible. The findings suggest that, on average, there is little disparity between genders when it comes to language abilities.

Based on the review of the above studies, the findings are rather diverse and sometimes conflicting, contributing to the complexity of understanding this phenomenon. Some studies have suggested that female children may exhibit a vocabulary advantage over male children, implying that girls tend to display better vocabulary acquisition skills (Bavin et al., 2008; Bornstein et al., 1998; Bornstein et al., 2004; Eriksson et al., 2012; Galsworthy et al., 2000; Huttenlocher et al., 1991; Rescorla & Achenbach, 2002, 1990; Urm & Tulviste, 2016; Westerlund & Lagerberg, 2008). Conversely, other studies (e.g. Hyde & Linn, 1988) have failed to find any significant gender differences in vocabulary development, indicating that boys and girls perform similarly in this aspect.

Association between socio-economic status (SES) and vocabulary acquisition

The examination of the relationship between vocabulary acquisition and socio-economic status (SES) has gained substantial attention within scholarly literature. The research within

the literature encompasses a range of developmental stages, ranging from preschool to primary and secondary students. In this section, the literature review will be directed exclusively towards the young children and preschool age group. Numerous studies have addressed the impact of SES on vocabulary acquisition among toddlers and preschool children (E.g. Arriaga, Fenson, Cronan & Pethick; 1998; Farkas & Beron, 2004; Fernald, Marchman & Weisleder, 2013; Hart and Risley, 1995; Hoff, 2003; Lohndorf et al., 2017; Rescorla & Achenbach; 2002). SES can be measured through several methods. For instance, parents' occupation, maternal education or household income. Some research combined these variables as a projection of SES.

Hart and Risley (1995) administered a prospective longitudinal cohort investigation, which scrutinized the connection between early experiences and language development throughout a child's developmental period from 10 months to 3 years of age. This study involved 42 participants within families representing diverse SES. The outcome measures of the study included vocabulary growth and use. The vocabulary repertoire of children originating from high-SES exhibited a substantial disparity, with a notably larger vocabulary size comprising 1110 words. In comparison, children from middle-lower-SES families demonstrated a vocabulary of 750 words, while those from families receiving welfare support displayed a vocabulary of 525 words. They found that child's language experience is crucial where verbal interaction between the parent and the child from birth to age 3 influences the outcome of vocabulary development. They found that families with higher SES tend to speak more with their children than do those from lower SES levels.

On the other hand, Arriaga et al. (1998) employed a cohort design to compare the language skills of children from low-income backgrounds aged 16 to 30 months (n=103) with three middle-class reference samples of corresponding age and gender. The reference samples were retrieved from the MacArthur Communicative Development normative dataset. Vocabulary assessment was conducted utilizing the MacArthur Communicative Development Inventory (CDI) parent report form, a widely recognized instrument for this evaluative purpose. The findings of the study showed that there were substantial differences between the low-income sample of children and the middle-class sample, particularly in aspects of vocabulary production, word combination and sentence complexity. Another study by Fernald et al. (2013) also used MacArthur Communicative Development Inventory (CDI)

to assess the vocabulary of the participants. They conducted a prospective longitudinal cohort investigation, which examined the development of language processing efficiency and vocabulary acquisition among children at 18 and 24 months of age. The study cohort consisted of 48 children from families representing diverse SES. Marked differences in vocabulary scores among children from diverse SES were notably significant at 18 months and even more substantial by the time they reached 24 months of age. Thus, this study suggests a negative impact of low SES on vocabulary development in children, which becomes apparent as early as 18 months of age. Nonetheless, it is pertinent to acknowledge that the evaluation of vocabulary competencies in this study as well as the one conducted by Arriaga et al. (1998) relied on parental reports, potentially introducing a bias into the assessment process, where parents might over or under-estimate the child's language abilities.

Rescorla and Achenbach (2002) conducted a cohort study that involved 278 children aged 18 to 35 months, displaying significant diversity in terms of SES, ethnic composition, and language background. Data were presented from a nationally representative probability sample, utilized as the normative group for the Language Development Survey (LDS) by Rescorla (1989). SES exhibited a significant yet moderate correlation with both vocabulary scores and mean phrase length. Hoff (2003) examined the relation between SES and language development, by testing the SES-related differences in children's vocabulary development and making connections to their language-learning experiences. Naturalistic interactions were recorded between 33 mothers from high SES and 30 mothers from middle SES, along with their respective 2-year-old children. These interactions were captured at two distinct time points, spaced 10 weeks apart. The vocabulary measure was based on productive vocabulary from the children's language sample. The findings of the study indicated that children from higher SES experienced greater growth in the size of their productive vocabularies compared to children from mid-SES. This difference in vocabulary growth was entirely explained by the specific properties of maternal speech, which varied based on the SES.

Another study conducted by Farkas and Beron (2004) also mentioned the influence of SES on vocabulary development in children. They conducted a comprehensive retrospective longitudinal cohort investigation that studied the effect of both race and social class on the development of vocabulary skills in children ranging from 36 to 156 months of age. The

study encompassed a substantial cohort of 5107 participants, drawing from the extensive Children of the National Longitudinal Survey of Youth 1979 (CNLSY) datasets. Vocabulary scores were gathered through utilization of the Peabody Picture Vocabulary Test (PPVT-III) by Dunn and Dunn (1997). The measure of the vocabulary development was receptive vocabulary. Their research indicated that the main effect of SES on vocabulary growth is prominent before children reach 36 months of age, irrespective of whether they are White or African-American. Beyond this age, the vocabularies of White children from different social class backgrounds tend to grow at similar rates. Farkas and Beron put forth the argument that the equalizing effect observed in later years could be attributed to attendance in kindergarten and subsequent schooling grades. Schools provide a more standardized and uniform vocabulary instructional input compared to the highly segregated race and class environments experienced by preschool children in their homes and neighbourhoods.

Lohndorf et al. (2017) investigated the impact of socioeconomic status (SES) and home environment quality on vocabulary acquisition among three-and-a-half-year-old children from seventy-seven Chilean majority and Mapuche minority families. Results indicated that home environment quality predicts vocabulary acquisition, independently of ethnicity, SES, parental caregiver status and daycare attendance. The study highlighted that the quality of home environment significantly predicts preschoolers' vocabulary acquisition, with socioeconomic status mediating the relationship between SES and vocabulary acquisition.

Based on the above studies, it is evident that variations exist in methodological aspects, including participant age, research design, vocabulary measurement tools, and approaches to defining SES. Nevertheless, despite these differences, all the studies consistently demonstrated a significant impact of SES on vocabulary development, albeit to varying degrees. Hence, it is imperative for educators and practitioners to comprehend the correlation between SES and early vocabulary development. This understanding is essential for effectively facilitating the development of vocabulary skills among children coming from different SES and disadvantaged backgrounds.

Association between speech sound accuracy and vocabulary acquisition

There has been limited research exploring the relationship between vocabulary acquisition

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and speech sound accuracy. Some notable discussions in this area were presented by Gathercole et al. (1999) and Edwards, Beckman, and Munson (2004). Gathercole et al. (1999) investigated the impact of vocabulary size on accuracy in short-term memory tasks, with a particular focus on exploring phonotactic effects. Phonotactics refer to the rules and constraints governing permissible sound combinations within a language. Their findings revealed that children with larger vocabularies demonstrated remarkable proficiency in accurately reproducing and recalling phonotactically valid sounds. Edwards et al. (2004) discovered a compelling connection between the frequency of words and speech production accuracy, which was influenced by vocabulary size. One of their interpretations suggested that children with larger vocabularies might have had more opportunities to practice perceiving and producing specific sounds in diverse contexts. This finding implies that a rich and extensive vocabulary repertoire could potentially enhance a child's proficiency in articulating sounds accurately.

Despite the valuable insights provided by these studies, the relationship between vocabulary acquisition and speech sound accuracy remains an underexplored area of research. Further investigations into this topic could yield a deeper understanding of the intricate connections between vocabulary acquisition and speech-related abilities.

Aims of the study

While numerous past studies have examined the acquisition of vocabulary, it is essential to acknowledge that a substantial proportion of these investigations have primarily focused on English language acquisition. Little attention has been given to understanding the vocabulary acquisition in other languages especially Malay. Consequently, there remains a significant gap in knowledge regarding whether the patterns of vocabulary acquisition in the Malay language mirror those observed in English or differ substantially. Furthermore, this exploration of vocabulary acquisition in Malay should encompass several key aspects, including age-related variations, potential gender differences, the influence of parents' education level, and the correlation between vocabulary and speech sound accuracy. Investigating these factors in the context of the Malay language could reveal valuable

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information about the underlying mechanisms that shape vocabulary development in this specific linguistic community.

This study attempted to address four research questions:

1. Is there a significant difference in Malay vocabulary naming accuracy between age group?
2. Is there a significant difference between male and female children in their vocabulary naming accuracy in Malay?
3. Is there a significant difference and a relationship between Malay vocabulary naming accuracy and maternal education level?
4. Does Malay vocabulary naming accuracy in children correlate with their speech sound accuracy?

Methods

Participants

Participants in this study were typically developing Malay children aged between 4 to 6 years, recruited from kindergartens in Penang Island, Malaysia, using purposive sampling. Only children who met the selection criteria were included in the study. To ensure that the selected children were typically developing and had no delays in personal developmental milestones, including medical, hearing, speech and language aspects, parental questionnaires were employed to assess and select suitable participants. A total of 326 children (179 females and 147 males) were included in the sample. Table 1 displays the demographic information of the participants.

Table 1. *The Demographics of Participants Based on Gender and Age Group*

Gender	Age Group					Total
	4;00–4;05	4;06–4;11	5;00–5;05	5;06–5;11	6;00–6;05	
Female	29	49	42	42	17	179
Male	18	31	38	43	17	147
	47	80	80	85	34	326

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Instruments

Two types of instruments were employed for the purpose of this study. First, a stimulus book was used to elicit single-word production of Malay vocabulary from the participants. As standardized vocabulary tests for Malaysian children were lacking, a researcher-developed stimulus book was utilized. The stimulus book from the study by Phoon et al. (2014) was used for the purpose of this study. A total of 53 words (see Appendix A-I, ~~retrieved from~~ in Phoon et al., 2014) were sampled in this stimulus book. The targeted vocabularies were illustrated and presented colourfully in 18 composite pictures, organized according to themes. For example, fruits such as “anggur” grapes, “nenas” pineapple, and “tembikai” watermelon were grouped as a theme. The selected words were deemed to be culturally appropriate and familiar to Malay preschool children. The vocabularies from the categories of common objects, animals, food, colours and numbers were included. The words selected were common and familiar to children, as defined by Pikulski and Templeton (2004) as Level I vocabulary. Notably, culturally relevant words such as "durian" (a local tropical fruit with thorns) and "rambutan" (a local tropical fruit with a hairy shell) were included in the word list.

Next, a parent report was designed to gather demographic information and the developmental history of the selected children. Parent reports were chosen as parents are reliable sources of information about their child’s language and overall development (Pavri & Fowler, 2005). The parent report included demographic data such as age, gender, ethnicity and mother’s education level. Maternal education was chosen as one of the variables for this study due to its dual significance. Firstly, maternal education is linked to socioeconomic status, which could influence vocabulary acquisition. Secondly, maternal education is frequently used in language development research, enabling cross-study comparisons and generalizability of findings across studies.

Data Collection

All 326 children were individually tested by the researcher at their respective kindergartens. Before commencing the task, the researcher established a warm rapport with each child to

ensure a comfortable testing environment. The task was administered in a quiet room, and the stimulus book was placed clearly within the child's view. The child was given instructions to name the picture in response to questions such as “What is this?”, “What colour is this?”, “What number is this?”, and “Who is this?”.

To maintain consistency and accuracy in scoring, the entire session was audio-recorded. This allowed for later verification and completion of the scoring process. The speech production of each child was recorded using a portable microphone (model: Samson Zoom H4n), positioned approximately 6 to 12 inches away from the child's mouth. The speech samples were then saved in the WAV format to maintain high audio quality and fidelity.

Data Analysis

Two types of analysis were conducted in this cross-sectional study. The first analysis aimed to evaluate the children's ability to name the vocabularies based on the pictures presented to them. Each child's responses were recorded, and they were given a mark of ‘0’ if their response was incorrect or if they provided no response. On the other hand, a mark of ‘1’ was assigned for a correct response. The number of correct and incorrect responses was then counted, and the percentage of correct responses was calculated by dividing the total number of correct responses by the total number of targeted responses. The obtained data were statistically analyzed using frequency counts and percentages.

The second analysis focused on assessing the child's speech sound accuracy. All the speech data were broadly transcribed to accurately represent the speech sounds. Speech sound accuracies were determined by dividing the total number of correctly produced speech sounds by the total number of targeted speech sounds.

Descriptive statistics, including mean and standard deviation, were used to analyze the data, while statistical analysis such as one-way ANOVA, one-way ANCOVA and Pearson correlation were used to examine the significant difference or correlation.

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Results

Effect of age on Malay vocabulary naming accuracy

The differences in Malay vocabulary naming accuracy among the different age groups were examined using one-way ANOVA statistics. Vocabulary naming accuracy was found to be significantly different across age groups, $F(4, 321) = 34.962, p < .001$. To determine which specific age groups differed significantly from each other, post-hoc Bonferroni tests were conducted.

The post-hoc Bonferroni tests revealed the following significant differences:

- 4;00-4;05 year-old children were significantly different from other age groups.
- 4;06-4;11 year-old children were significantly different from other age groups.
- 5;00-5;06 year-old children were significantly different from other age groups.
- 5;06-5;11 year-old children were significantly different from other age groups, except 6.00-6.05 year-olds.

Table 2 displays the mean and standard deviation of Malay vocabulary naming accuracy for each age group. The results indicate a noticeable increase in the mean accuracy of vocabulary naming across age groups. Older children demonstrated a higher accuracy in vocabulary naming compared to younger children. For instance, children aged 6;00-6;05 years, on average, named 47 out of 53 vocabularies with an accuracy rate of 89.07%. Conversely, children aged 4;00-4;05 years, on average, named approximately 35 out of 53

Table 2. *Vocabulary Naming Accuracy according to Age Group*

Age Group	N	Min		Max		Mean (M)		Std. Deviation (SD)	
		(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
4;00-4;05	47	19.00	35.85	50.00	94.34	35.06	66.16	6.73	12.71
4;06-4;11	80	22.00	41.51	51.00	96.22	37.93	71.58	6.89	13.01
5;00-5;05	80	27.00	50.94	53.00	100.00	40.77	76.93	5.62	10.61
5;06-5;11	85	28.00	52.83	53.00	100.00	44.27	83.53	4.87	9.19
6;00-6;05	34	41.00	77.36	53.00	100.00	47.20	89.07	2.84	5.37

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vocabularies with an accuracy rate of 66.16%. Overall, the older children demonstrated significantly higher Malay vocabulary naming accuracy than the younger children.

Effect of gender on Malay vocabulary naming accuracy

A one-way ANCOVA was conducted to determine a statistically significant difference between gender on Malay vocabulary naming accuracy, controlling for age. The statistical test showed that there was no statistically significant main effect of gender on vocabulary scores, $F(1, 323) = .640, p = .424, \eta^2 = .002$. The mean and standard deviation of Malay vocabulary naming accuracy for female ($M=40.73, SD=6.82$) and male children ($M=40.97, SD=6.89$) were found to be almost equivalent.

Effect and relationship of maternal education on Malay vocabulary naming accuracy

In this study, socio-economic status (SES) of the children's family was based on the maternal education level. Maternal education level was identified based on three categories, which were primary, secondary or tertiary. To examine the effect of mothers' education on Malay vocabulary naming accuracy, one-way ANCOVA analyses were conducted, controlling for age. Based on the analysis, there was no statistically significant main effect of maternal education on Malay vocabulary naming accuracy, $F(2, 272) = 2.082, p = .127, \eta^2 = .015$. To examine the relationship of maternal education on Malay vocabulary naming accuracy, Pearson correlation analysis was conducted. The finding of the study showed that vocabulary naming accuracy was not significantly correlated with maternal education level, $r(324) = .032, p = .591$.

Relationship of Malay vocabulary naming accuracy and speech sound accuracy

To examine the relationship of Malay vocabulary naming accuracy and speech sound accuracy, Pearson correlation analysis was conducted. Vocabulary naming accuracy was significantly correlated with speech sound accuracy of the children, $r(324) = .188, p < 0.01$. Table 3 displays the mean and standard deviation of Malay vocabulary naming accuracy and

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speech sound accuracy for each age group. Both Malay vocabulary naming accuracy and speech sound accuracy increased across age groups.

Table 3. *Vocabulary Naming Accuracy and Speech Sound Accuracy according to Age Group*

Age Group	N	Vocabulary Naming Accuracy (%)		Speech Sound Accuracy (%)	
		Mean (M)	Standard Deviation (SD)	Mean (M)	Standard Deviation (SD)
4;00-4;05	47	66.16	12.71	90.68	6.00
4;06-4;11	80	71.58	13.01	93.03	2.85
5;00-5;05	80	76.93	10.61	95.21	2.64
5;06-5;11	85	83.53	9.19	93.76	3.88
6;00-6;05	34	89.07	5.37	94.47	3.49

Discussion

The first research question in this study was: Is there a significant difference in Malay vocabulary naming accuracy between age group? The finding from the current study is consistent with results in the existing literature, that emphasize the substantial growth in vocabulary acquisition as children age. Rescorla and Achenbach (2002) found that vocabulary scores increased substantially with age. In the case of monolingual children aged 3 to 6 years, it was observed that they add around 3 new words to their vocabulary repertoire each day (Bloom, 2002). Indeed, the findings from these studies consistently demonstrate that vocabulary size expands significantly as children grow older. This pattern of vocabulary growth aligns with the observations made in the current study. Thus, the findings of the study indicate that vocabulary naming accuracy was found to vary significantly across age groups, except for the 6;00-6;05 age group. These results suggest that vocabulary naming serves as a reliable indicator for vocabulary acquisition among Malay preschoolers up to 5 years old. Thus, employing a vocabulary naming task with single word elicitation method can effectively assess the vocabulary acquisition of Malay children below 6 years old. However, it was observed that vocabulary naming accuracy failed to predict the performance of 6-year-

old children. Several factors may account for this observation. Firstly, the study focused on assessing basic vocabulary, predominantly comprising common nouns. As such, the acquisition of basic vocabulary might not adequately predict the vocabulary accuracy level of 6-year-old children. Secondly, it is plausible that at the age of 6, children's language skills become more sophisticated and complex. Consequently, tasks relying solely on vocabulary naming with single-word elicitation methods may prove insufficient to account for the vocabulary acquisition of children at this stage of development. Employing more complex tasks that allow children to utilize a broader range of vocabularies might be more appropriate for older children, such as those aged 6 years.

The second research question in this study was: Is there a significant difference between male and female children in their vocabulary naming accuracy in Malay? The results of the current study revealed that there was no significant main effect of gender on Malay vocabulary naming accuracy. A comprehensive review of previous studies investigating the role of gender in vocabulary acquisition indicates inconclusive findings in this area. However, the findings of the present study align with the work of Hyde and Linn (1988), which suggested that the gender difference in language ability is generally small and may even approach zero. While some studies have reported gender differences in vocabulary acquisition, it is worth noting that these studies focused primarily on younger participants compared to the current study. For instance, Huttenlocher et al. (1991) examined vocabulary development in 22 children aged between 14 to 26 months, Westerlund and Lagerberg (2008) investigated 1091 children aged 17 to 19 months, and Eriksson et al. (2012) investigated gender differences in early language abilities within the age range of 8 months to 2.06 years of age. Given that the participants in the present study were 4 years and older, it is possible that gender differences in vocabulary acquisition may predominantly emerge in younger children, particularly those below 3 years old.

The third research question in this study was: Is there a significant difference and a relationship between Malay vocabulary naming accuracy and maternal education level? The findings of the current study showed that Malay vocabulary naming accuracy was not significantly different and correlated with maternal education level. The findings of the current study are consistent with previous research conducted by Farkas and Beron (2004). In their study, Farkas and Beron (2004) observed that the main effect of SES on vocabulary

development occurs before children reach 36 months of age, both for White children and African-American children. Beyond this age, the vocabularies of children of various socio-economic classes tend to develop at comparable rates. They have posited that participation in kindergarten and subsequent grades exerts an equalizing influence on vocabulary development. This is attributed to schools offering a more consistent and uniform vocabulary-based instructional input. This stands in contrast to the considerably segregated racial and class-based contexts that preschool children encounter within their homes and communities. Since the children in the current study were 4 years and older, and they were recruited from preschool, so similar effect might happen to them.

The fourth research question in this study was: Does Malay vocabulary naming accuracy in children correlate with their speech sound accuracy? According to the findings of the study, Malay vocabulary naming accuracy was significantly correlated with speech sound accuracy of the children. The findings of this study align with the two previous studies (Edwards et al., 2004; Gathercole et al, 1999). Edwards et al. (2004) discovered that the effect of frequency on speech production accuracy was influenced by vocabulary size. One of their interpretations suggested that a child with a larger vocabulary may have had more opportunities to practise perceiving and producing a specific sound in a variety of different contexts. Gathercole et al. (1999) who investigated the impact of vocabulary size on accuracy in short-term memory tasks, with a specific focus on exploring phonotactic effects found that children with larger vocabularies demonstrated a remarkable proficiency in accurately reproducing and recalling phonotactically valid sound combinations.

Limitations and Future Directions

While this study provides valuable insights, it is limited in several aspects. Firstly, the study's nature of using cross-sectional research design prevents it from capturing the longitudinal changes in children's vocabulary over time, which may occur over a few months or even extend to much longer durations, including years. Secondly, it is important to note that this study exclusively concentrated on vocabulary naming through a single-word assessment. Subsequent research could potentially explore vocabulary naming within the

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context of natural conversations. This approach has the potential to yield intriguing insights that may differ from the outcomes observed in the present investigation. Thirdly, this study only included children aged between 4 to 6 years. To gain a comprehensive understanding of the potential impact of gender and SES on vocabulary acquisition, further research is necessary, encompassing a wider range of age groups, including those as young as 2 and 3 years old. In addition, other aspects such as parents' occupation and household income should be used in determining the SES of the family. Fourthly, the vocabulary in the assessment is mainly comprised of common words within the noun category. The targeted words are from Level I (Pikulski & Templeton, 2004) or Tier I (Beck et al., 2002) vocabulary. Future studies on vocabulary naming should incorporate a broader variety of vocabularies, such as verbs and adjectives, and consider words of varying levels of difficulty, such as those from Level II (Pikulski & Templeton, 2004) or Tier II (Beck et al., 2002), to accommodate older children, including those who are 6 years old. Fifth, while the current study did not examine family practices and parent-child interactions, future research should consider these factors to enhance understanding of their impacts on children's vocabulary acquisition.

Implications

The study's findings illustrate the related factors affecting Malay vocabulary naming accuracy such as age, gender and maternal education. These insights are significant for researchers and educators involved in language development studies, particularly regarding vocabulary acquisition in the Malay language. This study provides a deeper understanding of how age, gender and maternal education impact vocabulary naming accuracy among preschoolers in Malay-speaking contexts. Furthermore, the findings of this research can serve as a valuable resource for evaluating the vocabulary acquisition of Malay children. The study reveals significant growth in vocabulary as children age. By assessing vocabulary acquisition across different age groups and tracking the development of vocabulary, the research captures the changes in vocabulary acquisition over time. Additionally, understanding the correlation between vocabulary naming accuracy and other variables allows researchers to integrate this information when designing assessments to more accurately gauge children's vocabulary

acquisition.

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