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Is There Any Differential Performance by Age and Gender in the Production of Emotional Words in Children?

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Abstract

The study aimed to examine the effect of age and genders and their interaction in the production of two types of emotional words (basic and advanced). A total of 40 Cantonese-speaking children, age ranged from 5;06 to 8;06, were asked to produce emotional words after listening to a story scenario. Three way (gender x age x type of emotion) univariate analysis of variance (ANOVA) was carried out to analyze the main effect of these variables and their interaction. Children performed significantly better on basic emotional words and their ability grew with age. The main effect of gender effect was not significant. No interaction effect was observed among all the variables. These patterns were discussed with reference to the culture in Hong Kong and the experimental design. Clinical implications were also discussed.

Introduction

Anthropological research often claims that emotional expression was a kind of fundamental behaviour response (Youngstrom & Carroll, 2008). For example, one would automatically jump away at the sight of a cockroach. Such an avoidance behaviour provoked by the potentially dangerous agent 'cockroach' can be interpreted as an indicator of fear. So expression of emotion was considered to provide a very fast system for the 'flee or fight' response and has survival value (Youngstrom & Carroll, 2008). These very rudimentary emotions appeared to be instinct and are triggered by innate mechanism. When the cognitive system becomes more developed, expression of emotion would be produced in words. This more subtle form of response seemed to be more socially acceptable. Dunn (1988) found that even for children as young as the age of three are able to give a reasonable response in expressing emotions. In Dunn's (1988) observational data, the children began to verbally express themselves. Their reference to feelings suggested that children was found to began establish reference to feelings at the age of two to three. Another line of evidence support the innateness claim stemmed from Evolutionary psychologists (Ekman, 1969). Emotions are found to be universal and people speaking of different languages end up with very similar corpus of emotional words (Russel, 1994). For example, consistent results with perception of the basic six emotions were reported in speakers of languages other than English, such as Cantonese (Wang, Hoosain, Lee, Meng, Fu & Yang, 2006) and across different cultural groups (Izard, 1971). Russel (1994) conducted a systematic review on literature about the universality of facial expressions and recognitions of emotion. He reviewed a total of eight studies. Regardless of the methodological concerns raised by Russel, the studies reviewed appeared to claim that facial expressions and the corresponding emotion labels were very similar across different cultural and ethnic groups. Across these studies, the experimental

procedures employed were similar to the most pioneer study by Ekman (1969). Photographs of the six emotions (happy, sad, fear, surprise, disgust and anger) were presented to the participants. And these six basic emotional words were called ‘Big six’ by this group of researchers (Ekman, 1969). Ekman had further expanded the basic emotional word category, adding many other emotional words in a subsequent study (1999). The Big Six were often adopted in many subsequent experiments by other researchers, dated after 1969, as the most fundamental set of basic emotional words. In most of the studies, participants were asked to choose the emotional words related to the displayed photograph among a given set of words. Some studies required participants to label the emotions as an open-ended response. All of the studies came to a conclusion that these six facial emotions were universally recognized and in much very similar across all cultures, suggesting universality of basic emotions (Prinz, 2004). Research Bosacki and Moore (2004) argued that the claim of universality of emotional words. Although some of these ‘universalist’ scholars assume the existence of (basic) emotions, which appeared to be innately set in human being, empirical data suggested that emotional words, especially these advanced or ‘secondary’ ones were learned by experience during the course of development. As reviewed above the claim of universality of emotional words was mainly focused on basic emotions such as happy, sad, fear, disgust, anger and surprise. Use of other words received much less attention.

In the experiment carried out by Lewis, Sullivan and Vasen (1987), who tested the production of creating facial emotions with preschool children. The poses were scored accordingly. Results demonstrated that young children failed to pose any faces, whereas older children, at around aged 5;00 were able to pose like adults, other than the emotion ‘anger’ and ‘surprise’. This suggested that age does have an effect affecting the production of emotional words. Further, MRI studies indicated the specificity of age and its impact on the

production of emotional words. Keightley, Chiew, Winocur and Grady (2007) did a study on the identification of emotional expressions of the face in different age groups of participants (ten young adults and 11 older adults). There was a pattern in distinguishing an expression from another and was found to be age specific. Older adults showed increased brain activity for happy expressions, whereas younger adults' brain activity recruited a more widely use of regions; indicating different brain activity may be activated when exposed to different emotions with different age groups. It mentioned that the results were consistent between the behavioral differences and the neuro-imaging data, which demonstrated age-related activity of the emotion-related areas in the cortex. Possible age-related differences in cognitive ability were suggested with the identification of happy faces. As child become older, one's cognition also increases with age. This enables the child to have the ability to interpret and predict self and others' behaviours and understand people's intention. Then they could comprehend and react accordingly. The study also mentioned some possible cognitive strategies that may be used to identify the emotional expressions of the face (Keightley, Chiew, Winocur, & Grady, 2007). These skills are slowly acquired by the children as they become older and cognitively more mature. Therefore, age may have an effect on the production of emotional words. For children of older age (primary and secondary school students), a corpus of emotional words were developed (Doost, Moradi, Taghavi, Yule, & Dalgleish, 1999). Participants were asked to generate emotional words upon a given scenario about an emotional state to imagine. Secondary school students produced more words than primary school students in some of the categories. Those categories included scary things, sad thing, negative adjective and sad feeling. Consistent results were reported by Goldshmidt and Weller (2000) who found that children could express themselves with a wide range of emotional words when they are seven years old, but only a limited set when they were three/four months old. Because of this

discrepancy, emotional words were sometimes classified as basic/simple and complex in the literature. Bosacki and Moore explicitly classified emotional words into two categories, basic and advanced (2004). Basic emotional words are the core emotions that are related to the fundamental physiological feeling, such as happy and sad, whereas advanced emotional words are more complex in nature and only developed in human interaction. Advanced emotional words, it requires evaluation and reflection of one self. Advanced emotional words like embarrassment, empathy, jealousy, etc, involve a strong Theory of Mind ability, which is an ability to understand other people's thought. Young children build their complex emotions upon their understanding of basic emotions (Bosacki & Moore, 2004). For example, some may perceive 'guilt' as 'sadness' plus 'fear'. Therefore, some advanced emotional words are seen in a child's later development. It was very much related not only to language, but also to one's cognitive development (Doost, Moradi, Taghavi, Yule & Dalgleish, 1999) and the ability to analyze from second person perspective.

When the size of emotional lexicon was affected by age, it is reasonable to speculate that other psychosocial factor, such as gender and culture, may also affect the development of emotional words usage. There seems to be a stereotype that female may be more emotionally sensitive than male. This claim was in fact not a myth but supported by empirical research. In Goldshmidt and Weller's (2000) experiment on the gender difference in emotional expression in conversation, 590 participants were recruited from community centers, kindergartens, families and friends. The experiment included young boys and girls as well as men and women. The method of data collection was through a number of techniques, through observations, 'hidden' observations, interviews and content analysis. The results discovered that women used significantly more emotional terms than men did. These authors explained that the different socialization paths of boys and girls may have an impact on emotional

words. Similarly, Bosacki and Moore (2004) examined the gender difference in explaining and labeling emotions in 53 three to four year old children (26 boys and 27 girls). These children were given social situations, which elicited a stereotypical emotion, and were asked to label and explain basic and complex emotions. Following past research, the researchers used puppets to elicit verbal expression of understanding emotions. The basic and complex emotions included in their investigation were happy, sad, pride and embarrassment. These emotional words selected based on their popularity in previous studies. In the labeling task, children were asked questions (e.g., 'How does Tom feel?') and in the explanation task, the child had to explain why the characters felt in a particular way (e.g., 'Why you think Tom would look happy?'). Results revealed that girls performed significantly better than boys on labeling and understanding complex emotions.

Brody (1985) also provided a more detailed account for gender differences. He suggested that this maybe due to adaptation to the expectations of different genders in society and culture. Culture has a certain expectation on the role of each gender, and what social roles they are expected to play in the future. For example, the media may assert the impression that boys need to be tougher and stronger. Men rarely express their emotion through words, whereas girls are comparatively sensitive and are relatively advanced in verbal expressions. Taking story books for example, story books have stereotyping difference in emotional language based on the targeted reader's gender (Tepper & Cassidy, 1999). Caregivers further shape and guide the development of emotions according to gender role stereotypes (Bosacki & Moore, 2004), and as the child grows older, these sorts of exposure also increase. Despite gender differences and the influences each of the genders are exposed to, it was shown that children learn simple emotions before complex ones (Bosacki & Moore, 2004).

The Present Study

The common themes that are conveyed across from the above studies are emotional words that can be classified as basic and advanced and the former is assumed to be observed at a very early age. As children become older, their emotional lexicon expanded from basic to advanced emotional words. Gender differences may exist in the size of lexicon. However, the previous research does not address the two factors, age and gender, together simultaneously and their relationship appears to be unclear. In addition, most of the research carried out on emotional words was in English, little has been done in Chinese, a very different culture from English. To fill this research gap, the present study investigated the Cantonese speaking population, whether there were any significant differences between gender and age in the use of basic and advanced emotional words in pre-school and primary school children.

The research hypothesis was that if basic emotion word expression was innate, then the basic six emotional words can be seen noticeably in pre-school children and the two genders would performed similarly; whereas complex emotional words would be acquired later and many vary between gender when age increased in later primary school. In other words, there would be interaction effect between gender and types of emotion words in younger and older children. This assumption made was based on the fact that culture and social context will sculpt and modify the advanced emotional words acquisition as the child become older.

Methodology

Participants

Given that the study was a pilot study, a total of 40 participants were recruited using convenient sampling from Hong Kong's kindergartens, primary schools, cultural groups and organizations. Participants were aged from 5;03 (K3) to 8;09 (P3) with ten participants in

each of the age groups 5;06, 6;06, 7;06, and 8;06 with an interval of ± three months for each group. No diagnosed language /cognitive related deficits were identified according to teacher's report. Equal number of boys and girls were included in each age group and all participants' first language was Cantonese. Those who were passive, shy and showed no responses for many of the trials were taken out.

Materials and Selection of Emotional Words

In the present study, the basic emotional words used in the Big Six (Ekman, Sorenson, & Friesen, 1969), including happiness, sadness, anger, disgust, fear and surprise were used. Ekman has further expanded this category, adding many other emotional words in 1999, but for the purpose of this study, only the six most basic emotional words were used. Six advanced emotional words were selected carefully. In order to control for the factor of familiarity of the advanced emotional words to participants, a panel of three experienced primary school teachers conducted the selection. Firstly, 20 advanced emotional words were selected by the author from "The Development of a Corpus of Emotional Words Produced by Children and Adolescents" (Doost, Moradi, Taghavi, Yule & Dalgleish, 1999). They were then translated into written form of Chinese and were given to the teachers, who were asked to select six most familiar emotional words to children at early elementary level from the 20 word list. In total, 15 different emotional words selected chosen by the teachers, and the six most repeated emotional words that were matched by the teachers (i.e. selected by two or more teachers) were chosen. The six advanced emotional words selected out of the 20 were anxious, ashamed, lonely, loved, nervous, and worry. Finally, a total of 12 emotional words were chosen for basic and advanced emotional words.

Three story scenarios were developed for each of the 12 emotional words, yielding a total of 36 story scenarios. Corresponding story scripts and pictures were developed and

sourced from available resources published by SCHUBI® and many others. The story pictures were printed on each PowerPoint slide too. The story script was read aloud and recorded on the PowerPoint slide. All the stories scenarios ended with an open-ended question asking how the characters feel. For example, 明仔覺得點呢? 'How does Tom feel?' The slides were randomly arranged, with one practice trial presented at the beginning.

Procedures

The whole procedure included three parts, (1) language assessment, (2) experimental task of the motional words expression, and (3) nonverbal cognitive assessment. Each participant was assessed in an individual interview at his or her school for the first two parts of the experiment. First, the narrative sub-test from Hong Kong Cantonese Oral Language Scale (HKCOLAS) (Tsou, Tung, Man, Chan, To, Cheung, Ng & Chan, 2006) was carried out. The samples were recorded and analyzed for assessing his/her language ability, which would serve as a covariate to control for the contribution of language on the experimental task.

In the experimental task, the participant was firstly presented with the practice trial, to familiarize with the format and the materials. As explained in the material section, the PowerPoint contained a picture and a sound file (Appendix A). Verbal instructions were given before the slides were presented. (依度有 o 的好短嘅故仔。你聽完之後，試下話俾我聽 o 的小朋友覺得點。) "Here are some short scenarios. After listening, could you tell me how the child feels?" After having to listen to the pre-recorded verbal representation of the scenario, he/she was asked an open-ended question verbally, which was pre-recorded about the emotion of the main character, (e.g. 明仔覺得點呢?) 'How does he feel?' When the story and the question were finished, he/she had to verbally produce an emotional word to that particular context. After the trial was over and the participant was able to produce the targeted emotion and have understood the format of the procedure, the participant was then asked to

listen to the rest of the 36 slides presented through a PowerPoint (Appendix A). The responses were recorded on paper, for decoding later.

Coding

The productions of emotional words were scored on a 3-point scale: correct spontaneous production of emotional word was given two points (e.g. 開心 happy); those that were appropriate synonyms but less precise were given one point (e.g. 情緒好 cheerful); and zero point for no response, doesn't know and refusal or incorrect responses (e.g. 唔知道). A marking scheme was set up and used throughout marking (Appendix B). The total score for each type of emotional words will be used as the outcome measures.

Finally, to ensure all subjects' cognitive ability were within normal limits, Raven's coloured progressive matrices (Raven, Raven, & Court, 2003), a non-verbal assessment of intelligence, was conducted. The participants were divided into groups, with a maximum of 8 participants per group and were asked to complete Raven's coloured progressive matrices (book version, appropriate for those aged 5;00 to 11;00) under one investigator's supervision.

Analyses were also conducted to investigate the inter rater reliability of emotional words ratings. The results were counter rated by another rater. A final percentage was then calculated by dividing the total correct score of the second rater by the first according to the marking scheme. Percent agreement analysis suggested that raters were highly consistent in marking with the emotional words (0.97). In summary, reliability findings suggested that raters were consistent in marking the production of emotional words.

Results

Descriptive statistics in terms of mean and standard deviations were summarized in percentage scores.

Table 1

Mean Percentage of Production of Emotional Words

Age Group	Types of emotional words	Male (n=5)	Female (n=5)	Total (n=10)
5;06	Basic	32.2 (18.6)	38.8 (8.8)	35.6 (14.1)
	Advanced	11.1 (6.8)	13.9 (12.7)	12.5 (9.7)
6;06	Basic	45.6 (14.4)	47.8 (8.4)	46.7 (11.2)
	Advanced	22.2 (11.1)	21.7 (17.4)	22.0 (13.7)
7;06	Basic	53.3 (10.8)	63.3 (6.3)	58.3 (9.9)
	Advanced	31.1 (10.0)	42.2 (15.5)	36.7 (13.7)
8;06	Basic	56.7 (14.9)	71.1 (7.3)	63.9 (13.4)
	Advanced	56.7 (14.4)	45.5 (8.0)	51.1 (12.4)

Results showed that there was an overall increase in the mean percentage for both basic and advanced emotional words across the four age groups. As expected, the percentage scores of basic emotional words were also greater than advanced emotional words. Though there was no statistically significant differences between genders, percentage mean did show difference between the two genders.

Table 2 displayed the raw scores of the narrative sub-test of HKCOLAS showed that all children demonstrated age-appropriate standard scores.

Table 2

Raw Score Means and Standard Scores of Narrative Sub-test of HKCOLAS

Age group	Gender	Mean	Std. Score
5;06	Male (n=5)	62.60	0.3
	Female (n=5)	79.00	1.2
6;06	Male (n=5)	69.80	-0.1
	Female (n=5)	93.40	1.0
7;06	Male (n=5)	97.20	0.3
	Female (n=5)	112.40	1.1
8;06	Male (n=5)	105.20	0.1
	Female (n=5)	107.20	0.3
Total	Male (n=20)	83.70	-0.4
	Female (n=20)	98.00	0.4

To illustrate the interaction of the different variables, linear plots were plotted before the ANOVA test.

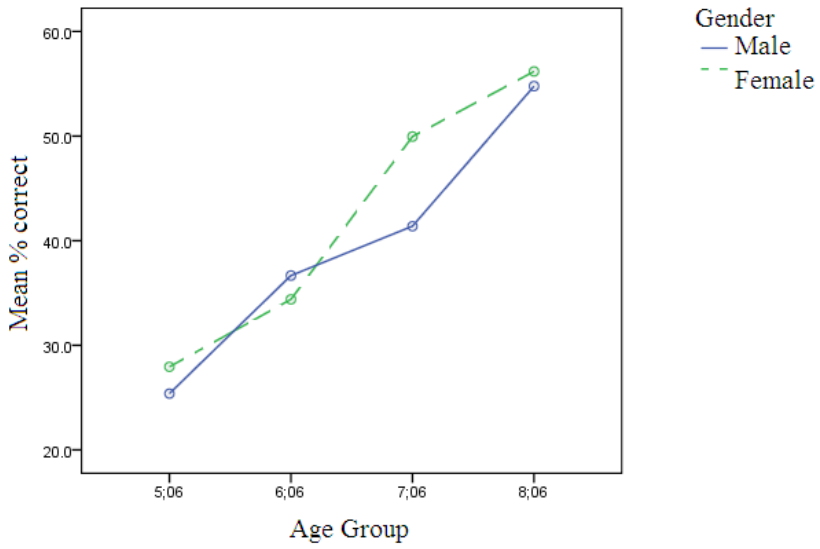

Figure 1. Mean percentage of interaction between age group and gender on the production of advanced emotional words.

Figure 1 appeared to suggest that there might be some form of interaction effect between gender and different age groups in other age groups. It seems that girls performed better in the age group of 7;06 but the boys and girls in other age groups demonstrated similar results.

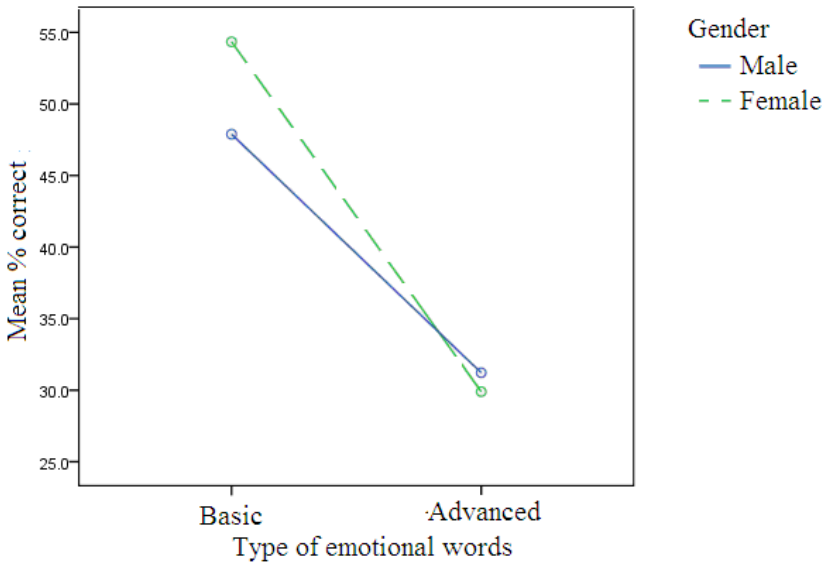

Figure 2. Mean percentage of interaction between types of emotional words and gender.

There was no significant gender difference between basic and advanced emotional words. Figure 2 demonstrated the production of basic and advanced emotional words by girls were higher than boys with the difference more obvious in basic emotion.

All statistical analyses were performed by Statistical Package for the Social Sciences (SPSS). Three way (gender x age x type of emotion) univariate analysis of variance (ANOVA) was carried out to analyze the main effect of these three variables and their reaction on the outcome measure (i.e. total scores). Language scores were entered as a covariate to control for the effect of language skills onto the experimental task.

Before the three-way ANOVA was carried out between age, gender and types of emotion, Levene's Test of Equality of Error Variances was carried out in order to ensure the error variance of dependent variable of the groups are not statistically different, $F(15, 64) = 1.70$, $p = .074$. Thus parametric test was carried out. It is noteworthy that the covariate, language scores, which was originally predicted to have an effect on the emotional word

expression, was shown to be unable to account for any variance in the outcome score.

Table 3

Three-Way ANOVA to Test for Between Subject Effects of Age x Gender x Type of Emotional Words

Variables	df	F	Eta Partial Square	p-values
Raw score of HKCOLAS	1	2.50	.038	.12
age	3	12.30	.37	.00
gender	1	0.76	.012	.39
type	1	58.00	.48	.00
age * gender	3	0.98	.032	.55
age * type	3	0.98	.045	.41
gender * type	1	2.08	.032	.15
age * gender * type	3	1.26	.057	.30
error	63			

Type of Emotion

The three-way ANOVA revealed the significant main effect of emotional word type, $F(1, 63) = 58.0$, $p > .001$, showed that the production of advanced emotional words were significantly more difficult than basic emotional words. That means regardless of age group and genders, children scored higher in basic emotional word than the advanced ones.

Age

Results of the three-way ANOVA also revealed that main effect of age was statistically significant, that means there were statistically significant differences between the different age groups, $F(3, 63) = 12.3$, $p < .001$. In other words, without considering the gender and type of the emotional words, older children performed better than young children as shown in

the mean. Post hoc tests were carried out, using Tukey's analysis, to determine which of the age groups were significantly different from others. The post hoc tests suggested that the percentage of performances of basic and advanced emotional words revealed that the four age groups were significantly different from each other.

Gender

Main effect of gender was not significant. Although the mean value in Table 1 demonstrated slightly higher score in the girls when compared with the boys, the difference did not reach a statistically significant level.

Interaction Effect

None of the interaction effect was significant in the three-way ANOVA test and all p-values are larger than .15. Given the conflict between the prediction and the results so far, a follow-up 2 x 4 analysis of variance (ANOVAs) assessed effect of sex, and age differences on participants performance on each of the two types of emotional words (basic emotional words and advanced emotional words) were conducted to examine if there is any subtle difference that may not be detected in the complex ANOVA design. Again, there was no significant interaction effect of gender and age on the performance of production of basic and advanced emotional words after controlling the effect of language, $F(1, 63) = 0.98$, $p = .55 > .05$. Similarly, there was no significant interaction effect of gender and type of emotion on the performance, $F(1, 63) = 2.08$, $p = 0.15 > 0.05$. This finding suggested that participants of different gender groups perform similarly with emotional words at any one age group.

Discussion

The current study investigated whether children learn advanced emotional words as they become older, as opposed to basic emotional words which should be acquired at a very

early age. Also, this study examined whether gender differences exist. Three main areas will be discussed. Firstly, whether basic emotional words are innate when compared to other advanced emotional words was discussed. Secondly, the discussion will focus on how gender may or may not be a factor in affecting the production of emotional words. Thirdly, the effect of age on the performance of production of emotional words was discussed.

Type of emotion

As mentioned throughout the study, there are two types of emotional words, basic and advanced emotional words. Language ability was controlled in the experiment, meaning the oral language ability of the children was taken into account with the production of emotional words. Children's production of basic emotional words was significantly better than advanced emotional words. This indicated that children were more able in producing basic emotional words, such as happy, sad, fear, etc. than advanced (e.g. worried, anxious, etc.) emotional words.

The better performance in basic emotional words in all age groups and genders was apparently consistent with the claim that some forms of emotional words may be innate. Dunn's (1988) experiment also found that even for children as young as the age of three were able to give a reasonable response in expressing emotions. In our study, children aged 5;06 were able to give reasonable responses. However when the data were examined in detail, the scores for basic emotional words were far from perfect. As shown in Table 1, only by 7;06, can the children obtain above 50%. Even for the oldest group we studied, i.e., 8;06, the children only obtained 63.9% accuracy. If the innateness claim of the six basic emotional words really holds, children at the youngest group should also be able to produce nearly perfect response and no need to say for the older children. Therefore, the claim of innateness for basic emotional words production was not demonstrated. There may be some reasons

explaining the ‘far-from-perfect’ performance in young children in basic emotional word production.

In the present study, emotional words were elicited through presenting some story scenarios to the children who were asked to give a emotional word with reference to the character’s emotion in the scenario, in an open-ended manner. So it is possible that the children may have the concepts of basic emotional words, but may be unable to infer the situation and hence unable to give the particular basic emotion expected. This account was also consistent with the observation that most erroneous responses in the basic emotion word task belonged to ‘no response’ category instead of giving incorrect responses, or broader categories of ‘happy’ and ‘unhappy’. This made a contrast with the advanced emotional task, in which children tended to produce relatively fewer ‘no response’. Errors in the advanced task were more likely to be incorrect. For example, when expecting children to produce embarrassed (尷尬), children produced ‘佢覺得要同叔叔講對唔住’ ‘he felt like he had to apologize to uncle’. Russel’s (1994) review also pointed out that some previous experiment used the method of closed-set multiple choice method, which directed and limited children’s responses to a limited set of choices. Such a method can clearly obtain better performance in the task than the open-ended questions as like in the present study. Another possible reason may be that Cantonese speaking children in the present study may not be good at expressing emotions, even the very fundamental ones. This may be because in the Cantonese culture, children did not talked about the feeling as direct as English-speaking children. Therefore, their performance may be poor as shown in the data.

Gender

This study revealed that there was no gender difference in labeling scenarios with emotional words. The research originally hypothesized that girls would demonstrate better

performance with complex emotional words, and vary between gender when age increase in later primary school. In contrast to prediction, children of both genders demonstrated similar ability in producing advanced emotional words. This finding was in conflict to almost all the previous studies reported in the literature which claimed that females were ahead of males in expressing emotions. There may be two possible reasons for such a discrepancy.

The first reason maybe more specific to the language context in Hong Kong. In the previous studies investigated the performance of production of emotional words in English. Nevertheless, Cantonese differs from English culture. During the process of learning Cantonese, children will have to learn two forms of Chinese, oral Cantonese and written Modern Standard Chinese (MSC). Children are exposed to oral language from the day they were born. As the child become older, at around the age of six, the child will begin to attend school. Children began to acquire the concepts of advanced emotional words which are more often described in written form than in conversation. Differences exist between oral Cantonese and MSC, especially in the aspect of vocabulary. Therefore, the form in expression an emotion in the informal context of conversation may be slightly different in written or more formal contexts. For example, at lexicon level 驚 /kɜŋ^{1}/ and 害怕 /hɔi^{6} p^{h}a^{3}/ both means scared in Cantonese, but in the context of casual conversation and more formal context like textbook. Therefore, when the stimuli were presented, though target words were chosen in advance, there were many variations of different productions of oral Cantonese form of the target. Though, they were given credits for the productions, the oral productions were not as exact as the written form. It was not common for the child to express the written form of the emotional word in a spoken context. Most of the advanced emotional words would be introduced in textbooks and acquired in the form of literate language, as schooling provides same teaching materials to both genders. Both male and female were exposed to the same

materials. Therefore, the exposure and learning of advanced emotional words would be similar between the two genders. This explains why there may not be gender differences in all age groups, ranging from 5;03 to 8;09.

The second reason was that many of the previous experiments carried out to prove gender differences involved the use of MRI to measure the brain activity being activated while producing/comprehending emotional words, to determine whether certain people of different genders will have different reactions and performances. Yet subtle differential performances, behavioral wise, were very difficult to quantify. Mildner (2008) emphasized that the differences observed between individuals of the same sex were greater than the differences found between the two genders. This means that individual differences may be more remarkable than differences between genders, when it comes to measuring differential performances. Performances of different genders maybe affected by many factors, such as brain mass, hormone, etc. There are obvious structural differences seen between genders and each individual may have slight differences (such as slight different levels of (hormone). With the use of technologies, it was discovered that, for example, men's brain mass is about 10% greater than women (Mildner, 2008). Hormone influences and differs in maturity rate may also affect the way people respond differently to social influences (Mildner, 2008). Thus, even within one type of gender, there are people who are more masculine or more feminine. Personal experiences even within the same gender may add onto different feelings towards the stimuli presented. This altogether may explain why each and every one's performances of production of emotional words may vary widely among the same gender.

Age

This study, at the beginning, hypothesized no significant differences between boys and girls in children who were attending pre-school and differences would become apparent as

children progress in primary school. This was supported. Significant differences from post-hoc analyses were seen between each of the two age groups as age increases, 5;06 and 6;06 with 7;06; 6;06 and 7;06 with 8;06. This significant differences between the age groups suggested that children produced more accurate emotional words, whether it was basic or advanced, as they become older. It was expected that children of the 8;06 age group should out perform significantly of those other age groups. The scores show that children of age group 8;06 and 7;06 performed similarly in both basic and advanced emotional words, whereas it was expected that 8;06 would perform significantly better than 7;06. Russel (1994) explained that comprehending and expressing emotions could be interpreted as broader perspective, rather than just one emotional word. In some cases, the child may want to say two emotions, but because one was limited to choosing one emotional word rather than describing the emotion in full, one may choose the word in the list of options in mind, that was most appropriate. For example, the child had in mind the feeling of 'worry' and 'sad' at the same time for the presented story scenario, in which both emotions may be correct. But as one was only allowed to produce one specific emotional word, one may have chosen the word he felt stronger towards. Therefore, the 8;06 group may have higher scores if different dimensions of the scenario were taken into account in scoring, rather than asking the child to produce only one emotional word.

With regards to the research question posed upon age, this research demonstrated children in the age group of 7;06 and 8;06 though was not significantly different, there were huge variability in the selection of the advanced emotional words used by the oldest group of children. They produced explanations beyond the targeted words. Thus some of the production of emotional words and explanations the children gave could not be scored towards the final score. Some of the children in the older age groups (7;06 and 8;06) were

unable to produce the targeted advanced emotional words or synonyms, though they attempted to explain the emotion of the character from all perspectives. This resembled the limitations explained in Russel's (1994) review about analyzing and inferring the situation from different dimensions. For example, when the scenario of the bird being hurt, and children were asked how the character felt, and the target advanced emotional word was 'worried'. Some of the children from the 8;06 age group said that they were scared that they will hurt the bird when picking it up, or were surprised to why the bird was hurt. It could not be said that the children's explanations in such details were incorrect, but points cannot be given and counted towards the results. However, from the responses produced by the children were, in fact, considered more complex and thoughtful than children of younger age groups.

Children in age group 8;06 also expressed different intensity of the same emotional word. They were more able to use the emotional words with comparative adjectives (e.g.好開心) to emphasize the intensity of the emotional words under the different scenarios presented. Though this was not given any points, those children demonstrated production of emotional words beyond the marking criteria. All these supported the fact that young children build their complex emotions upon their understanding of basic emotions (Bosacki & Moore, 2004).

Clinical Implications

The developmental difference/progression confirmed that emotional words could be classified into different levels of complexity, at least into basic and advanced emotional words. Currently in Hong Kong, a lot of resources that aim to teach emotional words to children with autism spectrum disorder (ASD) only targeted at the basic emotional words. For example, in *Teaching Children with Autism to Mind-Read* (1999), part II mentions

teaching about emotions (*p. 23*). It identified the five levels of emotional understanding, where facial expressions and schematic facial expressions of emotions were adopted. The emotions included were happy, sad, angry and afraid. According to Ekman (1969), these were classified as basic emotional words. Many high functioning children with ASD however can already master them well. For example, when dealing with identification of situation based emotions (i.e., in story grammar comprehension), even children with ASD were able to comprehend and produce basic emotions, such as 'happy' and 'sad', during story telling. Rarely were they able to produce advanced emotional words such as 'embarrassed'. Further, when carrying out treatment of story telling/retell, which involves story grammar such as producing internal responses and feelings, different types of emotional words targeted may be considered. Therefore, clinicians could think of more diverse emotional words, such as those mentioned in the advanced emotional words used in the experiment and explain the different synonyms of the emotional words. This may facilitate the learning and use of emotional words in different contexts. This variety of emotional words would better accommodate the children's social needs in expressing their emotions in different contexts, to generalize the ability of producing emotional words in all scenarios.

From this experiment, it can be seen that there were many variations on the performance of production of emotional words. Abilities may range from children who produce few emotional words or imprecise emotional words, to those who were able to produce accurate, concise emotional words in a given context. Therefore, when develop/carrying out future assessments related to emotional words, we can consider the wide range of responses in order to minimize the effect of underestimating children's ability.

This study also gives an implication to clinicians and teachers, that teaching emotional words can be introduced in Hong Kong. The results demonstrated that children in the present

was not good at producing emotional words, both basic and advanced, and culture may be one of the reason. *The emotional literacy handbook* (2003) suggested teaching emotions explicitly will assist the child to access to the emotional state they were undergoing. By teaching emotional words, especially advanced emotional words would facilitate in expanding language to emotions, which would help children develop the 'language' used to express emotions, thus explicitly share their feeling.

Limitation and Directions for Further Research

The number of sample used in this research was limited to a total of exactly 68 participants and which 40 were used. Thus, broader testing is necessary in the future is needed to verify generalization of the sample pool to the norm. Moreover, though gender difference was not significant in this study, the result might be different from reality. The subtle difference may not be able to be detected. For these reasons, future investigation should involve more participants and across wider age range. Better scoring of the production of emotional words should also be adjusted. As age groups from 7;06 and above produced explanations beyond merely producing the emotional words. Marking schemes should also be developed in scoring emotions from different dimensions. The scenarios given may also elicit multiple responses towards a cluster of emotional words. However, one emotional word should be elicited per scenario. Therefore, the scenarios prepared should be further verified to ensure consistency to all participants.

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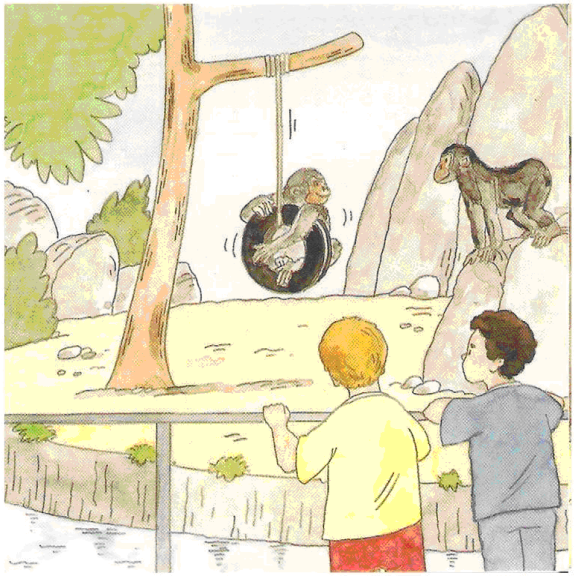
Appendix

Appendix A

Example slide of basic emotional word

Happiness 開心: 今日，媽媽戴咗明仔同埋佢個朋友去動物園睇馬騮喎。明仔覺得點呢? (Today, mummy brought Tom and his friend to the zoo to visit the monkeys there. How does Tom feel?)



Example slide of advance emotional words

Nervous 緊張: 明仔同埋恩恩係度玩攞竹籤喎。到恩恩攞啦，唔知佢攞唔攞到呢? 恩恩嗰陣時覺得點呢? (Tom and Sally were playing a game of 'pick the sticks'. It's Sally's turn, we all wonder if she is able to pick the highest scores. How does Sally feel?)

Appendix B

Emotional words that were considered accurate and were given two marks.

HAPPY 開心: 高興 、快樂

SAD 傷心/唔開心

FEAR 驚/怕: 害怕

SURPRISE 驚訝: 驚奇、驚喜

ANGER 生氣/嬲

DISGUSTSED 嘔心/核突

ASHAMED 羞恥: 慚愧 、唔好意思

NERVOUS 緊張

LOVED 錫/疼愛

LONELY 孤獨: 孤單 、寂寞

SILLY 傻

WORRY 擔心