

DOCTORAL THESIS

Role and efficacy of verbal imagery in the teaching of singing: case study and computer vocal analysis

Chen, Ti Wei

Date of Award:
2006

[Link to publication](#)

General rights

Copyright and intellectual property rights for the publications made accessible in HKBU Scholars are retained by the authors and/or other copyright owners. In addition to the restrictions prescribed by the Copyright Ordinance of Hong Kong, all users and readers must also observe the following terms of use:

- Users may download and print one copy of any publication from HKBU Scholars for the purpose of private study or research
- Users cannot further distribute the material or use it for any profit-making activity or commercial gain
- To share publications in HKBU Scholars with others, users are welcome to freely distribute the permanent URL assigned to the publication

**Role and Efficacy of Verbal Imagery in the Teaching of Singing:
Case Study and Computer Vocal Analysis**

CHEN Ti Wei

**A thesis submitted in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy**

Principal Supervisor: Prof. Manny Brand

HONG KONG BAPTIST UNIVERSITY

May 2006

ABSTRACT

Voice teachers and vocal pedagogical literature cite verbal imagery (e.g., “sing as if you are biting an apple”) as a commonly used teaching tool for communicating desirable physical sensations, vocal characteristics, musical interpretations, and concepts of vocal production as well as appropriate vocal quality. While both practitioners and researchers consider verbal imageries to be a fundamental means of communication in contemporary voice teaching and learning, there apparently is no identified systematic research of the role and efficacy of verbal imagery in the teaching of singing.

Thus, the purpose of this study was to identify the role and efficacy of verbal imagery in the teaching of voice based on the use of observations and interviews of four selected voice teachers and computer acoustic analysis of four selected undergraduate vocal students. Utilizing these two seemingly disparate research approaches offers the advantages of obtaining data and insights based on the pedagogical wisdom and practical experience of voice teachers along with the technical objectivity of computer acoustic analysis.

Results based on this study show that voice teachers used verbal imagery on a regular basis, on average every 5 to 9 minutes, during observed lessons, with verbal imagery used less frequently with advanced students. Of the four types of verbal imagery examined (viz., physiological-object imagery, physiological imagery, musical conceptual imagery, and non-musical conceptual imagery), non-musical imageries were used the most, followed by physiological imagery, physical-object imagery, then musical conceptual imagery. Findings also show that when student’s singing did not show any obvious improvement after using verbal imagery, these voice teachers often used the same verbal imagery but with slight modification or variations in wording and description in enhancing the potential efficacy of verbal imagery in voice teaching and learning.

During the interview phase of the study, the voice teachers felt verbal imageries can by-pass complicated explanations of physiological aspects of vocal tract, and evoke physiological movements in correcting vocal problems. Moreover, these voice teachers stated that verbal imagery works most effectively when asserted spontaneously, because they believed that each specific verbal imagery is designed and targeted to solve a particular vocal problem according to individual student’s ability and need.

Furthermore, the voice teachers advocated three steps in utilizing verbal imagery: 1) identify vocal problem; 2) give verbal instruction/imagery; and 3) correct singing technique and musical interpretation. Findings also show that there are two common methods of employing verbal imagery in the teaching of voice: a) develop a teaching/learning theme during a lesson (i.e., use of the same verbal imagery to solve a particular vocal problem); and b) adapt several different verbal imageries to tackle one particular vocal problem.

The portion of the study using computer acoustic analysis used the Computerized

Speech Laboratory (CSL) 4100 in examining collected singing samples on pre and post exposure to selected verbal imageries with a particular focus on measures of vocal intensity. Although no statistical difference between pre- and post-treatment of verbal imagery for group data was detected by *t* tests, individual student-subject data, however, shows that verbal imagery is effective on a case by case basis with demonstrated improvement of sound pressure level, pitch accuracy, and singing power ratio.

TABLE OF CONTENTS

	Page
Declaration	i
Abstract	ii
Acknowledgement	iv
Table of Contents	v
List of Figures and Tables	viii
Chapter	
I Introduction	
Overview	1
Verbal Imagery	1
Research in Verbal Imagery	4
Purpose	8
Procedure	9
Summary	14
II Related Literature	
Overview	16
Literature on Singing	16
Research on the Teaching of Voice	27
Vocal Pedagogy	28
Voice Production	32
a) Breath Management	33
b) Vocal Register	35
c) Larynx and Phonation	36
d) Vowel	40

e) Articulation	40
Voice Care and Rehabilitation	42
Acoustic Analysis	49
Verbal Imagery	57
Imagery in Sports and Dance	60
Imagery in Voice Teaching	67
III Methodologies	
Overview	74
Qualitative Portion – Four Case Studies	75
Selected Voice Teacher-subjects	78
Verbal Imagery: Observation and Interview Form	84
Figure 1: Observation and Interview Form (OIF)	85
Observation and Interview	89
Organization of Data	92
Computer Acoustic Analysis of Verbal Imagery	92
Selected Student-subjects	95
Procedure	96
Figure 2: Selected Verbal Imagery for Acoustic Analysis	97
Figure 3: Script of Data Collection for Acoustic Analysis	98
Figure 4: Order of Selected Verbal Imagery vs. Four Student-subjects	100
Equipment	100
Data Analysis	101
IV Analysis and Findings	
Overview	102
Research Question no. 1	103
Table 1: Frequency of Verbal Imagery for Observed Subjects	107

Research Question no. 2	107
Table 2: Classification of Verbal Imagery Used by Subjects	111
Research Question no. 3	112
Research Question no. 4	119
Research Question no. 5	127
Table 3: Means and Standard Deviations for Sound Pressure Level Scores ...	139
Table 4: Means and Standard Deviations for Pitch Accuracy Scores	140
Table 5: Means and Bandwidths for Formant Frequency Scores	141
Table 6: Singing Power Ratio between F_1 and F_4 for Frequency Scores	142
Statistical Analysis: t test	143
Table 7: P-values for SPL, PA, and SPR for t test.	143
V Summary, Conclusions and Recommendations	
Summary	146
Conclusions	150
Recommendation	155
References	158
Appendices	
A. Student Profile for Observed Lessons	168
B. Data as Recorded on Observation and Interview Form	171
Curriculum Vitae	206