行政院國家科學委員會專題研究計畫 成果報告

中國悼亡詩詞的聲情效應
研究成果報告(精簡版)

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中 華 民 國 99 年 12 月 01 日

行政院國家科學委員會補助專題研究計畫 ■成 果 報 告 □期中進度報告

中國悼亡詩詞的聲情效應

計畫類別：■個別型計畫　　□整合型計畫
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　　　　　　　常鈺、馬麗雅、陳怡如

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中　華　民　國 99 年 10 月 31 日

摘要

　　本計畫首度有系統地研究漢語的悲情效應，從語料庫語言學的角度著眼，以中國古代悼亡詩詞為素材，進行較大規模的聲情效應的研究。主要的研究成果如下：

(一)並非所有音節成分都足以有效營造悲情效應，因為古代詩歌皆可吟唱，聲調明顯不是載體。

(二)鼻音韻尾出現頻率明顯高於詞頻預測，比起韻核更適宜展現悲情效應。尤其同一音節鼻音韻尾配搭不利營造悲情效應的響度最高的a元音，例子時有所見。

(三)撇開詞頻因素，聲母偏好捲舌音，但相關語音理據仍待探討。與高元音僅一線之隔的介音出現機率超過七成，庶幾高於詞頻二成，應是低響度和悲情效應相合使然。整體而言，韻核無明顯偏好，唯陰聲韻中止攝(古音構擬 $*i$)出現頻率甚高，應是元音本身低響度加上惹人憐愛(朱 2004)的語音特質致之。陽聲韻出現頻率佔了五成，比詞頻約高一成半，反映其利於模仿哭泣時夾帶鼻音(nasal twang)。

(四)排除詞頻因素，三個鼻音韻尾中，$-n$ 出現最頻繁，而非鼻音性最強的$-ŋ$ (Zhang 2000)。或許可訴諸筆者針對古代漢語音節結構提出的歷時觀點，亦即$-n$ 衍生自韻尾叢(coda cluster) $*-iŋ$ 的併合。假設中古音仍保留韻尾叢，$*-iŋ$不僅具有高元音低響度的特質，還有最高的鼻音性，用以營造悲情效應，誠乃絕妙組合。

關鍵詞：悼亡詩、聲情效應

Abstract

This research project is the first systematic study on sadness symbolism in Chinese. Based on the statistics of our corpus of ancient Chinese poetry of mourning, important findings are listed as follows:

(a) Tone does not help create sadness symbolism.

(b) Nasal coda serves as a better indicator of sadness symbolism than the nucleus vowel. It happens that the presence of nasal coda overrides the presence of the most sonorous vowel *a*.

(c) Onset prefers the retroflexed consonants, and yet what makes it special phonetically awaits further investigation. Medial glides occur more than 70% in the corpus as they are all counterparts of high vowels with low intensity which is exactly a phonetic property of sadness. Nucleus vowel shows no overall preference, and yet among the open syllables, *Zhi* (*$*i$*) far outnumbers other rhyme categories. The front high vowel not only possesses least sonority, but also arouses feeling of intimacy (Zhu 2004). Nasal coda is often employed to effectively present the accompanied nasal twang in crying.

(d) Among the three nasal codas, *-n* is preferred. The phonetic basis behind merits further investigation as it is not *-ŋ* with the greatest nasality (Zhang 2000) that occurs most frequently. Yet, a diachronic account is ready. Based on dialect comparison and aberrant synchronic morphophonological patterns, a finer-grained analysis of Chinese syllable by the present author reaches the conclusion that codas *$*-n$* derives from merger of the coda cluster *$*-iŋ$* in an earlier phonology. Assume that coda clusters exist in Middle Chinese. The recurrent *$*-iŋ$* not only contains *$*-i$* matching lowest intensity of sadness, but also *-ŋ* with the greatest nasality to best mimic the accompanied nasal twang in crying.

Key words: poetry of mourning, sound symbolism

1. Introduction

In a language, the relation between sound and meaning is mostly arbitrary. Yet, sound symbolism which reveals an obvious correlation has long drawn many linguists' attention (Sapir 1929, Hashimoto 1983, Lapolla 1994, Chan 1996a, b, Chou 2003, among others). Synesthetic sound symbolism, which indicates the correlation between segment/suprasegment and objects' visual or tactile properties such as shape, size, weight and so on, is the focus of interest here (Hinton et al. 1994). This project establishes a corpus of ancient Chinese poetry of mourning and presents whether and how syllabic elements such as onset, rhyme (inclusive of medial glide, nucleus, and coda), and tone help create sadness symbolism.

2. Objective

This project aims to explore into the four issues below and examine relevant phonological theories.
(a) Do all syllabic elements suffice to create sadness symbolism?
(b) Is there degrees difference in sadness symbolism from different syllabic elements?
(c) What is the specific phonetic basis behind individual syllabic elements which help create sadness symbolism?
(d) Does sound bias in the same syllabic position exist in sadness symbolism? If so, what is the phonetic basis behind?

3. Literature Review

In the past two decades, studies on phonetic properties of different emotions (Scherer et al. 1991, Banse & Scherer 1996, Leinonenet al. 1997, Bachorowski 1999, Schereret al. 2001, Asa & Allwood 2002, Pell et al. 2009, among others) flourished. Common denominators between the decoding experiments indicated that sadness features long duration, low intensity, small intensity variation, low F0, small F0 variation, falling F0 contour, and so on. As for the encoding experiments, sadness was able to be easily perceived by subjects from different language backgrounds and cultures. Besides the phonetic studies, there are sporadic phonological researches on sadness. Priestly (1994) pointed out a correlation between onsets with the feature [+grave] and sadness in Russian poetry. Chou (2003: 180) proposed that nucleus vowels with low sonority are good indicators of sadness. The lack of systematic and in-depth exploration into sadness symbolism in Chinese motivates the present study.

4. Method

This project first establishes a corpus of ancient Chinese poetry of mourning, dating from Weijin to Qing Dynasty. It contains a total of 11239 rhyming syllables,

chronologically listed as follows:

(1) Weijin   132
     Tang   5343
     Song   5580
     Ming/Qing   184

Due to paucity of data from Weijin and Ming/Qing, this report focuses on poetry of mourning from Tang and Song Dynasties. Li's (2001) reconstruction of *Qieyun* is adopted to make feasible further classification according to onset, rhyme (including medial glide, nucleus, and coda), and tone. Simple statistics is then done in an attempt to answer the four research questions mentioned in section 2.

5. Results and Discussion

Statistics shows that not all syllabic elements suffice to create sadness symbolism. Table 1 below lists how frequently the four tone categories occur in poetry of mourning from Tang to Song Dynasty.

(2)

Tone	Number	Percentage	Guangyun %
Ping	8022	73.44	38.55
Shang	1044	9.56	19.02
Qu	1198	10.97	21.13
Ru	659	6.03	21.30

Table 1: Tone Frequency Statistics

Though low tones and falling tones better create sadness symbolism,[1] it is not shown in this corpus study. Same as the result in Wu (2006), *Ping* outnumbers other tone categories in rhyming syllables. Though a tone frequency statistics of *Guangyun* (an official rime book pretty much the same as *Qieyun*) which contains a lexicon of 25267 syllables indicates the highest occurrence frequency of *Ping*, its striking occurrence rate in poetry of mourning cannot be explained without attributing to the phonetic properties of high-register and ease of extension as ancient Chinese poetry is recitable, regardless to poetic genre. In other words, tone is not responsible for the creation of sadness symbolism in ancient Chinese poetry of mourning.

The next task to do is to see whether onset helps create sadness symbolism. Table

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[1] Sponsored by this research project, Liu's (2010) experimental study on the correlation between tone and sadness reached the conclusion.

2 below shows the frequency statistics of the four onset series. As opposed to the case in Russian poetry (Priestly 1994), the feature [grave] does not serve as a good indicator of sadness symbolism in Chinese poetry as *Duan* is the only onset series with the minus value and it constitutes a little bit more than a quarter. Instead, the present study seems to show that onset with [+back] has a high correlation with sadness as velars and glottals almost constitute one third of the corpus. Yet, the finding cannot hold true since the factor of word frequency cannot be excluded. Onset statistics of *Guangyun* clearly points out the high frequency of the *Jian* series in the lexicon. One point to note lies in that the *Zhi* series occurs more frequently than the lexicon predicts. What makes the retroflexed consonants phonetically preferable is a question meriting future investigation.

(3)

Onset series	Number	Percentage	Guangyun %
Bang	1525	13.96	14.75
Duan	3097	28.35	29.73
Zhi	2674	24.48	17.17
Jian	3627	33.21	38.35

Table 2: Onset Series Frequency Statistics

A check with the 41 individual consonants reveals that the three most frequent onsets are *Lai*, *Jian* and *Xia*. They are respectively a voiced dental lateral, a voiceless velar stop, and a voiced velar fricative. It is not the case that the three consonants possess common phonetic properties which help create sadness symbolism. Again, word frequency is the key, as shown in the Guanyun statistics below.

(4)

Onset	Number	Percentage	Guangyun %
Lai	717	6.56	6.86
Jian	916	8.39	8.03
Xia	558	5.11	5.19

Table 3: Individual Onset Frequency Statistics

In traditional Chinese phonology, open rhyme, nasal rhyme, and checked rhyme are respectively named *yinshengyun*, *yangshengyun*, and *rushengyun*, based on the syllable-final distinction. In Table 4 below, two points calls for further explanation. First, the occurrence percentage of checked rhymes in poetry of mourning is much lower than the lexicon predicts. This is not surprising as they are not good for recital

due to airstream unreleased in syllable-final position. More importantly, nasal rhymes are far more frequent than expected. A plausible reason behind is: nasal rhymes which better mimic the accompanied nasal twang in crying enhance the creation of sadness.

(5)

Rhyme Type	Number	Percentage	Guangyun %
Yin	4699	43.02	42.26
Yang	5564	50.94	36.43
Ru	660	6.04	21.30

Table 4: Rhyme Type Frequency Statistics

In addition, some important findings are obtained from statistics of specific rhyming categories shown below.

(6)

Rhyme	Number	Percentage	Guangyun %
Guo	131	1.20	2.19
Jia	275	2.52	2.14
Yu	863	7.90	7.09
Xie	699	6.40	9.03
Zhi	1875	17.17	10.38
Xiao	379	3.47	6.47
Liu	477	4.37	4.97
Xian	62	0.57	7.77
Shen	283	2.59	2.07
Shan	1523	13.94	15.01
Zhen	1642	15.03	8.30
Dang	656	6.01	6.01
Jiang	8	0.07	1.49
Zeng	273	2.50	2.52
Geng	1006	9.21	7.67
Tong	771	7.06	6.90

Table 5: Rhyme Category Frequency Statistics

First, among the open rhymes, *Zhi* (**i*) occurs far more than the lexicon predicts, whereas the opposite picture is seen in *Xie* (**-ai*) and *Xiao* (**-au*) categories. Nucleus vowel with lesser sonority is preferred as it well matches low intensity observed from sad utterance. This basically holds true for the closed rhymes. Except *Dang*, rhyme

categories with the nucleus *a, including *Xian*, *Shan*, and *Jiang*, occur less than the lexicon predicts. Except for *Zeng*, rhyme categories with the nucleus *ə, including *Shen*, *Zhen*, *Geng*, and *Tong*, occur more than the lexicon predicts. Second, though nasal syllables are favored in poetry of mourning, *Xian* with the labial coda *-m or *-p makes an obvious exception. Besides the most sonorous vowel *a, *-m shall be responsible for the scarcity of the *Xian* Category since a stop coda is not good for recital due to airstream unreleased. The reason behind lies in that among the three nasals, the labial has the least nasality, and hence it is disfavored in ancient Chinese poetry of mourning. Third, the comparative occurrence frequency of *Zhen* is strikingly high among the closed rhyme categories. Before answering the immediate question of what makes it so special in ancient Chinese poetry of mourning, let us digress to the coda statistics. From Table 6, the lesser coda *-i* (phonetically *-y*) in the lexicon doubles coda *-u* (phonetically *-w*) in poetry of mourning.

(7)

Coda	Number	Percentage	Guangyun %
-i	2200	67.86	46.84
-u	1042	32.14	53.16

Table 6: Glide Coda Frequency Statistics

A parallel preference is seen in the nasal and stop coda statistics. Shown in Tables 7 and 8 below, when weighed against the lexicon, this poetry of mourning corpus prefers coronal codas to velar codas, leaving the disfavored labials aside. Ohala (1983) attributes identical anti-formant structures to the recurrent sound change between the nasalized *-y* and *-n*, and between the nasalized *-w* and *-ŋ*. The phonetic basis justifies the overall coda preference in ancient Chinese poetry of mourning. The reason why *Zhen* outnumbers other closed rhyme categories is clear as the coronal nasal coda together with a less sonorous vowel make sadness symbolism an easier target to aim for.

(8)

Coda	Number	Percentage	Guangyun %
-m	308	5.54	16.90
-n	2876	51.69	43.96
-ŋ	2380	42.77	39.14

Table 7: Nasal Coda Frequency Statistics

(9)

Coda	Number	Percentage	Guangyun %
-p	37	5.61	17.28
-t	289	43.79	34.20
-k	334	50.60	48.52

Table 8: Stop Coda Frequency Statistics

Table 9 below indicates rhyming syllables with medial glide outnumber those without, far more than the lexicon predicts. Note that medial glides are counterparts of high vowels, the low intensity of which is exactly a phonetic property of sadness.

(10)

Medial	Number	Percentage	Guangyun %
Yes	8075	73.93	55.84
No	2848	26.07	44.16

Table 9: Medial Glide Frequency Statistics

The last task is to look into the nucleus vowel choice in ancient Chinese poetry of mourning. Though *i* also occurs more often than *u* in the nucleus, the front high vowel preference is not found. As the core of a syllable, nucleus is supposed to bear much information. The *i* preference which shall greatly limit word choice by the poet is therefore not considered.

(11)

Nucleus	Number	Percentage	Guangyun %
i	1171	10.72	12.18
u	800	7.32	14.59
Others	8952	81.96	73.23

Table 10: Nucleus Vowel Frequency Statistics

Some important conclusions are made based on the above statistics:
(a) Tone does not help create sadness symbolism.
(b) Nasal coda serves as a better indicator of sadness symbolism than the nucleus vowel. It happens that the presence of nasal coda overrides the presence of the most sonorous vowel *a*.
(c) Onset prefers the retroflexed consonants, and yet what makes it special phonetically awaits further investigation. Medial glides occur more than 70% in the corpus as they are all counterparts of high vowels with low intensity which is

exactly a phonetic property of sadness. Nucleus vowel shows no overall preference, and yet among the open syllables, *Zhi* (**i*) far outnumbers other rhyme categories. The front high vowel not only possesses least sonority, but also arouses feeling of intimacy (Zhu 2004). Nasal coda is often employed to effectively present the accompanied nasal twang in crying.

(d) Among the three nasal codas, *-n* is preferred. The phonetic basis behind merits further investigation as it is not *-ŋ* with the greatest nasality (Zhang 2000) that occurs most frequently. Yet, a diachronic account is ready. Based on dialect comparison and aberrant synchronic morphophonological patterns, a finer-grained analysis of Chinese syllable by the present author reaches the conclusion that codas **-n* derives from merger of the coda cluster **-iŋ* in an earlier phonology. Assume that coda clusters exist in Middle Chinese. The recurrent **-iŋ* not only contains **-i* matching lowest intensity of sadness, but also *-ŋ* with the greatest nasality to best mimic the accompanied nasal twang in crying.

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國科會補助專題研究計畫項下出席國際學術會議心得報告

計畫編號	NSC　97－2410－H－009－033		
計畫名稱	中國悼亡詩詞的聲情效應		
出國人員 姓名	許慧娟	服務機構 及職稱	國立交通大學外文系教授
會議時間	99 年 5 月 20 日至 99 年 5 月 22 日	會議地點	美國哈佛大學
會議名稱	（中文)第十八屆國際中國語言學暨第二十二屆北美洲漢語語言學聯合 　　　　會議 （英文）The 18th Annual Meeting of the International Association of 　　　　Chinese Linguistics and the 22th North American Conference on 　　　　Chinese Linguistics		
發表論文 題目	（中文）「悲傷」之聲情效應--以苗栗四縣客語為例 （英文）		

一、參加會議經過

　　本次聯合研討會在六百多篇投稿中錄取 160 篇，競爭空前激烈。根據語言學相

關議題，兩天半的議程總共安排 69 個場次(sessions)，其中和筆者研究領域比較接近

的語音/音韻的論文共有 38 篇，研究主題涵蓋歷史音韻學、現代音韻學、韻律學、

語音學、方言音韻學和心理語言學。因某些場次時間重疊，筆者僅能就論文題目選

擇聽講。主辦單位哈佛大學籌備工作可謂相當盡心，唯會議前一天的報到流程稍嫌

凌亂，整體而言瑕不掩瑜。

二、與會心得

筆者發表的論文從心理語言學的角度出發，藉由聽感實驗兩兩比較(pairwise comparison)探討三個課題：一、苗栗四縣客語六個聲調哪些較能引發悲傷情緒。二、檢視時長、音強、基頻、基頻曲線的影響，並進一步探討因素間的競存關係。三、悲傷聲情效應是否具跨語言普遍性。實驗結果顯示，受試者普遍認為陽平(41)與上聲(53)兩個長降調、時長大(1.5倍>>1倍>>0.5倍)、音強弱(66分貝>>72分貝>>84分貝)、基頻曲線下降的單音節詞較能與悲傷情緒連結。此外，能否引發悲傷情緒，基頻曲線的影響似乎比時長重要。最後根據台灣、美國兩組受試者的實驗結果，悲傷聲情效應大抵可見「語言普遍性」。然而，實驗結果的細微差異也透露不同語言文化背景可能對悲傷聲情效應產生影響。

聽眾普遍反應本論文十分有趣，研究的延展性也很高，除了聲調研究，聲母、韻母、韻核、韻尾等也能透過實驗檢視悲傷聲情效應。嚴格來說，相較於訴諸理論的多數音韻論文，本論文屬認知音韻學(cognitive phonology)範疇，研究主題較新穎，在中國語言學界相對罕見。

三、考察參觀活動(無是項活動者略)

四、建議

本論文其實屬心理語言學領域，但主辦單位或因特殊考量將本論文與其他主題各異的閩客語研究安排在同一場次，聽眾背景未若預期，致使少有對本文具建設性的建議和指正。希望未來會議場次安排能事先徵詢作者，確認無誤再行公佈。

五、攜回資料名稱及內容

筆者攜回會議中提供之部份較重要的語音/音韻論文 handouts，作者、論文名稱及主要內容臚列如下：

(1) 王志潔　　輕重音對三聲變調的限制

端木山主張普通話右重的理論禁不起實際語言的檢驗，重音決定音節輕重，產生左重或右重的實際語料。

(2) 張慧明　　Chinese sound change and feature economy

利用上古音、中古音至現代普通話的元音系統比較，闡述區辨特徵簡化的歷時演變。會中有學者指出作者的研究方法不夠嚴謹，一則需善用古音構擬，再則現代普通話的元音系統仍莫衷一是，無法據以確定區辨特徵是否簡化。

(3) 葉詩綺　　Vowel/glide distinction in Paiwan: Phonological evidence
　　　　　　　and phonetic facts

排灣語的音韻底層必須區分元音和滑音，音韻證據來自重音及疊稱產生的音變現象，語音上元音時常較大；滑音時常較小。

(4) 蔣平　　　Syllable splitting in Northern Yue dialects of Chinese

粵北土話利用音節分裂增生作為小稱的手段，分析結果得知增生的是韻核，藉此得以確認粵北土話中韻母/iu/和/ui/的內部結構，/i/都做為主要元音。

(5) Kuo-Chan Sun & Tsan Huang

The effects of language experience on tone perception by

Taiwanese and English listerns

作者證實不同語言經驗確實影響聲調感知，尤其英語使用者不具臺閩語使用者的入聲經驗，聲調感知正確率明顯較低。

(6) Sze-wei Chen & Jane Tsay

Testing the allomorph selection hypothesis of Taiwanese

Tone sandhi

臺閩語變調是否據心理真實性至今仍未定案，作者利用實驗檢視詞素選擇假

設，實驗結果傾向支持該理論。

六、其他

臺閩語變調是否據心理真實性至今仍未定案，作者利用實驗檢視詞素選擇假

設，實驗結果傾向支持該理論。

「悲傷」之聲情效應--以苗栗四縣客語為例

許慧娟、劉佳玲

國立交通大學

聲音與情緒不無關聯，不同的情緒具有不同的聲學特徵(Bachorowski 1999)。本文從心理語言學的角度出發，藉由聽感實驗探討以下課題：一、苗栗四縣客語六個聲調哪些較能引發悲傷情緒。二、時長、音強、基頻、基頻曲線的影響，並進一步了解此四因素的競存關係。三、悲傷聲情效應是否具有跨語言普遍性。

本實驗受試者分為二組：台灣人組與美國人組。台灣人組受試者共19位，其母語皆為國語且都不會客語。美國人組受試者共11位，母語皆為英語，國語學習經驗平均為26.8個月。實驗材料選用/thun/搭配苗栗四縣客語的四個長調，用/thut/搭配兩個短調，結果均為真字，並依不同目的操弄實驗材料。實驗要求透過兩兩比較(pairwise comparison)擇其較悲者。實驗結果顯示，兩組受試者普遍認為陽平(41)與上聲(53)兩個長降調、時長大(1.5倍>>1倍>>0.5倍)、音強弱(66分貝>>72分貝>>84分貝)、基頻曲線下降的單音節詞較能與悲傷情緒連結。另外，對於兩組受試者而言，是否能夠引發悲傷情緒，基頻曲線這因素似乎比時長重要。

本實驗結果為聲情效應的存在提供有利的證明。兩組實驗結果眾多的一致性似乎反映悲傷聲情效應的「語言普遍性」這個假設。然而，實驗結果的小部分差異，也透露出不同語言文化背景，可能對悲傷聲情效應產生影響。

關鍵詞：聲情效應、四縣客語、聽感實驗、聯覺象徵、語音象徵

國科會補助計畫衍生研發成果推廣資料表

國科會補助計畫	計畫名稱: 中國悼亡詩詞的聲情效應
	計畫主持人: 許慧娟
	計畫編號: 97-2410-H-009-033-　　　　學門領域: 音韻學

<div align="center">無研發成果推廣資料</div>

計畫名稱: 中國悼亡詩詞的聲情效應

計畫主持人: 許慧娟

計畫編號: 97-2410-H-009-033-　　　　學門領域: 音韻學

97 年度專題研究計畫研究成果彙整表

<table>
<tr><td rowspan="2" colspan="3">成果項目</td><td colspan="3">量化</td><td rowspan="2">單位</td><td rowspan="2">備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）</td></tr>
<tr><td>實際已達成數（被接受或已發表）</td><td>預期總達成數(含實際已達成數)</td><td>本計畫實際貢獻百分比</td></tr>
</table>

	成果項目		實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比	單位	備註
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	6	6	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	1	1	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

	其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	無

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

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1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估
   - ■達成目標
   - □未達成目標（請說明，以 100 字為限）
        - □實驗失敗
        - □因故實驗中斷
        - □其他原因
   - 說明：

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2. 研究成果在學術期刊發表或申請專利等情形：
   論文：□已發表 □未發表之文稿 ■撰寫中 □無
   專利：□已獲得 □申請中 ■無
   技轉：□已技轉 □洽談中 ■無
   其他：（以 100 字為限）

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3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限）

   聲情效應雖然很早就引起語言學家的注意，但在中國語言學界有系統的利用語料庫進行研究者前所未見。本計畫蒐羅了魏晉到明清的悼亡詩，針對 11239 個韻腳進行音節內部成分的分門別類，並利用統計理出相關音韻輪廓。

   本計畫在發現中國古代悼亡詩中聲調並不作為悲情效應的媒介後，特別額外指導研究生進行一語音感知實驗，探討三個課題：(一)苗栗四縣客語六個聲調哪些較能引發悲傷情緒，(二)檢視時長、音強、基頻、基頻曲線的影響，並進一步探討因素間的競存關係，(三)悲傷聲情效應是否具跨語言普遍性，實驗成果已發表在國際研討會。其他音節組成成份如聲母、介音、韻核、和韻尾對營造悲情效應的影響也能透過語音實驗一一檢視。總之，本計畫的研究延展性頗高，不管是計畫主持人或研究生都能從中找到其他有趣的研究課題繼續鑽研。