

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

THE INFLUENCE OF SELECTED FACTORS ON THE KNOWLEDGE,
PERCEPTIONS, AND ACADEMIC PRACTICES OF
FACULTY OF SCHOOLS OF PUBLIC HEALTH IN CHINA
ABOUT THE INCREASING SEX RATIO
AS A PRIORITY SOCIAL ISSUE:
IMPLICATIONS FOR PROFESSIONAL EDUCATION

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PUBLIC HEALTH

MAY 1996

By

Stephanie D. Holaday

Dissertation Committee:

Jerrold Michael, Chairperson
Jerome Grossman
Chin Chung
Kathryn Braun
Mary Jane Amundson
Marilyn Rawsley

UMI Number: 9629829

**Copyright 1996 by
Holaday, Stephanie Dodd**

All rights reserved.

**UMI Microform 9629829
Copyright 1996, by UMI Company. All rights reserved.
This microform edition is protected against unauthorized
copying under Title 17, United States Code.**

UMI
300 North Zeeb Road
Ann Arbor, MI 48103

©Copyright 1996
by
Stephanie D. Holaday
All Rights Reserved

To

James G. Smalley,

... my husband, best friend, and steadfast support
whose encouragement was generous and real

"Injustice anywhere is a threat to justice everywhere. We are caught in an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly affects all indirectly."

Dr. Martin Luther King, Jr.

From: *Why We Can't Wait* (New York: Harper & Row, 1963, 1964)

ACKNOWLEDGMENTS

This dissertation was undertaken to examine factors that support or hinder a curriculum change so that it becomes a medium for addressing sensitive social issues such as the sex ratio, in schools of public health in China. It is focused on those in academia and in the practice of public health who are dedicated to enhance public health for all people.

I wish to express my deepest appreciation and gratitude to the members of my dissertation committee for their tenacious perseverance: Dr. Jerrold Michael, Chairperson, of the School of Public Health for his invaluable direction, guidance, and advice; Dr. Jerome Grossman, Dr. Chin Chung, and Dr. Kathryn Braun also of the School of Public Health; and Dr. Mary Jane Amundson of the School of Nursing, for their encouragement, questioning, critique, and assistance throughout the research process. In addition, I am indebted to my external committee member Dr. Marilyn Rawnsley, from the School of Nursing at The Catholic University of America, whose generous sharing of her expertise facilitated the successful completion of this dissertation.

This research effort has been completed with assistance from many. Special recognition for their assistance and kind hospitality is due to the Deans of the three schools of public health in China in which the data were collected: Professors Shaokang Zhan, Zongzan Ni, and Li-Ming Lee. In

addition, I would like to express my sincere appreciation to the research expert panel group: Dr. Juan D'Avis, Mrs. Carolyn D'Avis, Dr. ZhiWei Zeng, Mr. Ray Goldstine, and Mr. James Smalley, to whom I am grateful for their hours of valuable input. Also, I owe a special thanks to Dr. Eugene Owen, U.S. Department of Education, for his expert advice on survey development.

Acknowledgements would be far from complete without expressing my special gratitude to Dr. Patrick DeLeon from U.S. Senator Inouye's Office, who supported and encouraged me to enroll in the Dr.P.H. program; and to Sister Mary Jean Flaherty, Dean of the School of Nursing, Catholic University of America for her shining light which lit the way, her kind and gentle hand which kept me going, and her prayers to see me through.

I would like to express my sweetest love and affection to Dr. and Mrs. Lewis P. Lipsitt for the fullness of their friendship which helped me persevere to reach this goal.

Always around me have been the arms of my family... my husband, Jim, our sons Christian and Jason, and our cat, Simcha who have taught me to live life to it's fullest. I am forever grateful for their love, patience, tolerance, and support throughout our long periods of separation during this process.

Finally, I would like to remember my parents Leslie and Evelyn Dodd, who are no longer with me, but who were here when it counted.

ABSTRACT

Faculty of schools of public health are in a position to teach students, conduct research on priority social issues, and collaborate with official and non-official personnel involved in policy determinations, permitting the faculty to share their opinions and provide advice based on that research. Given the impact of social issues on public health, there is a need to determine what is known and what is being done by faculty about sensitive social issues such as the increasing sex ratio in China.

The research questions in this study examined how factors (individual, cultural, organizational, and socio-political) influence the knowledge, perceptions, and academic practices of faculty from schools of public health in China about the increasing sex ratio, supporting or hindering a curriculum change. A method was developed, based on Kurt Lewin's Force Field Theory of Social Change, to address the research questions.

It was revealed that the faculty were aware of the increasing sex ratio, and they believed that their school of public health should address the issue. However, very little was being done in the Chinese schools of public health to address the increasing sex ratio issue.

In order to begin the change process of moving faculty from belief to action, it was found that individual factors would be examined with regard to why faculty are not

teaching anything about the increasing sex ratio problem; socio-political factors would be examined with regard to why faculty are not collaborating/networking/ or advising any part of the Chinese government or a non-governmental agency regarding the increasing sex ratio; and organizational factors would be examined with regard to why faculty are not aware of activities going on in their schools of public health regarding the increasing sex ratio.

The Lewin based method used in this study could be used in future planning to assess proposed curriculum changes, as well as to identify factors necessary to unfreeze educational institutions so that they can move in a direction of positive change.

TABLE OF CONTENTS

x

		Page
ACKNOWLEDGEMENTS		vi
ABSTRACT		viii
LIST OF TABLES		xiii
LIST OF FIGURES		xiv
CHAPTER I	INTRODUCTION	1
	Background Information	1
	Social Sciences and	
	Public Health Education	1
	Education and Change	1
	Education and Values	3
	Schools of Public Health in China	7
	The Rising Sex Ratio in China	10
	Problem Statement	10
	Purpose of the Study	12
	Research Questions	12
	Significance of the Research Study	13
CHAPTER II	LITERATURE REVIEW	14
	Schools of Public Health in China	14
	Introduction	14
	Initial Chinese Efforts	15
	Early Development of	
	Public Health Education	17
	Public Health Education Under	
	The Nationalists	19
	Health Workers	21
	Public Health Training	22
	Future Plans for Public	
	Health Education	23
	Influence of U.S. Standards on	
	Chinese Schools of Public Health	24
	Schools of Public Health in the United	
	States: An International Standard	25
	The Increasing Sex Ratio in China	25
	Introduction	25
	Stability of the Sex Ratio Among	
	Live Births	26
	Chinese Demographic Data	
	Collection Operations	28
	Analysis of Survey Reports	
	in the Literature	30
	Reported Causes of the	
	Increase in Sex Ratio at Birth	35
	Under-Reporting of Female Births	37

	Page
Gender-Specific Abortion	39
Female Infanticide and Abandonment	41
Summary	43
Theoretical Framework	44
Changing Conduct	46
Social Habits and Group Standards	46
Changing Group Conduct	47
CHAPTER III METHODOLOGY	49
Qualitative Research	51
Features of Qualitative Research	52
Features Common to Analytic Methods	54
Weaknesses of Qualitative Research	55
Strengths of a Qualitative Study	56
Quantitative Research	57
Contrasts of Qualitative and Quantitative Research Studies	58
Design of this Research Study	60
Population and Setting	60
Instrumentation of this Research Study	61
Survey Development	61
Pre-Testing the Survey	62
Data Collection Procedure	63
Data Analysis	63
Sex Ratio Survey Frequency Determination	64
Categories of Forces	64
Expert Panel	66
Chinese Researcher	68
Frequency Distributions	69
Expert Panel Distribution Scores	69
Data Display	69
Drawing Inferences	70
CHAPTER IV FINDINGS	72
Demographics	72
The Three Schools of Public Health	72
Study Sample	72
Educational Background	74
Employment Specialty	74
Research	74
Ethnic & Religious Background	75
Age, Gender, & Marital Status	75
Family Background	77
Children & Siblings	78

	Page
Appropriateness of Sample	78
Sex Ratio Knowledge, Perceptions, and Academic Practices Coding Responses	79
Sex Ratio Survey Questions	81
Influence of Factors on Responses to the Sex Ratio Survey	94
Summary	109
CHAPTER V DISCUSSION and CONCLUSIONS	110
Discussion of the Findings	110
Summary of Findings for Research Question Number 1	110
Summary of Findings for Research Question Number 2	111
Interpretation	114
Conclusion	117
Implications for Research and Practice	119
Limitations of the Study	119
An Alternative Methodology	121
The Interview	121
A Different Type of Data Analysis	124
Recommendations for Further Research	127
APPENDICES	130
APPENDIX A Schools of Public Health in the United States: An International Standard	130
Background for the Influence of Social Issues	130
Early Development of Public Health Education	131
Professionalization of Public Health	134
Social Issues in Schools of Public Health	138
APPENDIX B Sex Ratio Survey	142
APPENDIX C Expert Panel Group Instructions	147
REFERENCES	150

LIST OF TABLES

Table		Page
1	Sex Ratios Among Live Births in China, 1960-1990	32
2	Reported Sex Ratio at Birth in China by birth order, selected years 1982-1989	34
3	Sex Ratios at Birth by Nation/Province/City in 1986	35
4	Sex Ratio by Communities in 1986	35
5	Universities, Schools of Public Health, and Faculty Survey Responses	73
6	Demographic Survey Responses	76
7	Coded Responses from Sex Ratio Questions	80
8	Key Informant Scores of the Influencing Factors (According to Response Data)	97
9	Expert Panel Scores of the Influencing Factors (According to the Question)	97
10	Force Field Analysis Framework	126

LIST OF FIGURES

Figure		Page
1	Force Field Analysis Diagram	45
2	Mean Responses to Sex Ratio Questions . . .	82

CHAPTER I
INTRODUCTION

Background Information

Social Sciences and Public Health Education

As health status outcomes become more clearly linked with social issues, there is an increasing need to look at how formal education is responsive to social issues. The report of the Public Health Faculty/Agency Forum, a group of U.S. academics working on curriculum and its outcome, includes the following Universal Recommendation for graduate education in public health:

Public health professionals must be able to develop, implement and evaluate behavior change programs for improving the health status in populations. The range of these programs needs to encompass an awareness of social and behavioral theory and research, behavior change methods, as well as intervention applicable to group behavior change with attention to the development and maintenance of social norms. They must be able to assess program accomplishments, appropriately judge when programs require revision, and develop research strategies to overcome barriers (Sorensen & Bialek, 1994, p. 77-78).

Education and Change

Singh (1991) states that education is at the cross-

roads of societal development and knowledge. He noted that education is a dynamic change process that has the capacity to make choices. Singh explains that the key to understanding education is to recognize that it is not an isolated phenomenon nor a dependent one; it receives and contributes; it creates and is created. "It is at its creative best when it is interwoven with the total social-human-knowledge environment of the future" (Singh, 1991, p. 6). Jovenel makes the case that:

If society tends on the whole to conserve the present state of affairs, our present knowledge has a high chance of being valid in the future. However, the future validity of our knowledge becomes increasingly doubtful as the mood of society inclines towards change, and the changes promise to be more rapid. Moreover, a society that remains rooted in its present state of affairs and its present knowledge cannot subsist in isolation in the fast changing knowledge world of today, however hard it may try. The ongoing technological, social and developmental changes will sweep the cocooned society into a future state of affairs without choice or control of its destiny, a passive recipient and not an active agent (1967, p. 5-6).

In the International Symposium on Qualities Required of Education Today to Meet the Foreseeable Demands of the

Twenty-First Century, held in Bangkok in 1990, Dr. Prawase Wasi used the term "unified field-force" to describe the role of education to indicate the "interactions between human, social, and environmental particles" (Singh, 1991, p. 6). Singh argued that:

Education does not exist in vacuum. It is determined by political and cultural milieu, beliefs, doctrines, economy, social mentality and predominant world views. These determining environments are now quickly changing. We should be in a position to understand them and to be able to design education as the unified field force for development...and create a healthier future (1991, p. 6-7).

Education and Values

Value differences and disputes about educational goals underlie much of the debate about what our educational institutions should teach and about their ability to change.

In the opinion of the writer, course planners rarely examine basic values and assumptions, but values and assumptions underlie the rationale behind a particular course or curriculum. The values and assumptions underlying curriculum rationale concern the role of the individual in society, the societal role of education, the nature and purposes of society and human beings, the relation of the future to the present, the question of what knowledge is most useful, and the purpose for which it should be useful.

Some questions for discussion which involve these values and assumptions, according to Posner and Rudnitsky (1986) are:

1) The Individual and Society:

Is education an investment that should pay off to the society?

2) The Societal Role of Educational Institutions:

Is it the job of educational institutions to perpetuate present society or to encourage a restructuring of society? If the latter, how should the restructuring take place?

3) Societal Purpose:

What constitutes progress? Is it technological advances, increased Gross National Product, improved social conditions, or increased knowledge?

4) Present-Future Orientation:

Is the future predictable? Can it be used as a basis for planning?

5) Utility of Subject Matter:

Is a subject matter useful if it enables an individual to interpret the world by providing concepts for use in processing information? Is a subject matter useful because it is helpful to people in today's world or because it will probably be of use to the individual in the future or because it will be of use in further learning or because it can be applied in everyday

practical situations?

Our perceptions, attitudes and values which may have served well enough in the past for societies, big or small, may not be good enough for the world now in the making. Singh notes that, "if these attitudes and values will no longer suffice, then this is the most important premise in designing the education for the future" (1991, p. 31).

Feather explains that values arise from, and relate to the human being. He believes that this relationship places education at the core of the values order, and makes "values the sustaining force in education...because social responsibility and social consciousness which underlie all lofty values can only be fostered through education in its broad meaning" (1975, p. 33).

Singh explains that education is not, and cannot be value free, as it is increasingly treated. Education systems everywhere are confused, even in disorder, notes Singh, in responding to students regarding values development. "To shut these doors on the students on grounds of detached view or moral neutrality or irrelevance of values in the preparation for earning a living is arguing for education without purpose" (1991, p. 79). Singh also points out that "education that is infused with a constant sense of values should mean deeper moral sensibility and greater human understanding so that the learners, as they have more education, can more clearly see the barriers that

divide, and can more clearly hear the cries of suffering and loneliness" (1991, p. 80).

According to Supannatas and Grossman (1990, p. 2), "the values on which health education rests lead to a concept of shared leadership which facilitates individual decision making and community growth." In order for this to occur, they explain that the upward bound sequence of learning which education must take, is as follows:

First value clarification and commitment, then understanding of ideas and concepts relevant to our purpose and then - only then - the integration of the two into a theory and art of practice - the actual doing-part of our professional responsibility (p. 2).

Bloom (1995) criticizes a proposal made by Weed (1995, p. 914), that "if public health education included the humanities, public health professionals would be more likely to emerge with a series of traits: creativity, flexibility of perspective, nondogmatism, and critical thinking." Bloom reported that this proposal repeats a mistake that has been made by health educators since 1932. The mistake being that "with curriculum reform, the teaching and learning environment is left as it is, with the result that there is reform without change" (Bloom, 1995, p. 907). The kind of change which Weed desired cannot be accomplished only by adding to, or changing existing curriculum components. It must include a change in the teaching and learning

environment, or in what Bloom describes as socialization for a profession.

Socialization connotes a process of personal change and growth, rather than simple acquisition. One can add knowledge and specific skills. Attitudes and values that combine with knowledge and skill depend on the social climate in which the learning occurs and are revealed mainly in whole behaviors (Bloom, 1995, p. 908).

Schools of Public Health in China

Currently, there are 35 schools of public health in China, seven of which are member institutions of the Asia Pacific Academic Consortium for Public Health (APACPH). It is in keeping with the mission of APACPH that this study examined selected factors that support or hinder a curriculum change so that it becomes a medium for addressing sensitive social issues such as the sex ratio, in schools of public health in China. The following is a description of APACPH:

APACPH is a network of 33 schools of public health and departments of community medicine in 16 Asia and Pacific nations. For the past ten years, APACPH has actively pursued its mission of improving the quality of professional education for public health. Support for these activities have come from the Western Pacific and South East Regional Office of the World Health

Organization, the East Asia and Pacific Regional Office of UNICEF, the China Medical Board of New York, inc., UNEP, USAID, the Institute of Public Health (Japan), and the University of Hawaii.

Emphasis in the coming years will be placed on setting common standards for teaching and research. APACPH expects not only to respond to change during the next ten years but also to lead the way in making public health more effective in the region (Hayakawa, 1994).

In May of 1994, APACPH held its 22nd Formal Meeting of its Board of Directors, along with a Workshop on Reform and Renewal of Public Health Education in China, at the Beijing Medical University. In his Keynote Address, Dr. Min-Zheng Chen, China's Minister of Public Health, stated that China is entering a new era of reforming public health education to address existing problems as well as the new challenges of the years ahead. Chen admitted that some aspects of the current public health educational model are out-of-date and undesirable. He noted that, for instance, "our current model is a direct descendent of U.S.S.R. public health education, based on a biomedical model without deserved attention to the social-behavioral sciences, modern management, demography and health education" (Chen, 1994, p. 11). In addition, Chen stated that "social and economic developments in China have resulted in significant changes

in the population and disease spectrum" (1994, p. 11).

The report from the May, 1994 APACPH Workshop in China, recommended competencies necessary for graduate public health students in China. Among them were: behavioral, social and cultural competencies, as well as a solid understanding of political and ethical issues. The report stated that these competencies are critical in order to create, nourish, support and extend public health education and services at all levels and in all reasonable circumstances.

Lee, Dean of the School of Public Health at Beijing Medical University noted that "present day professional public health education in China is not suitable for the development of modern health care" (1994, p. 1). Although it has been reformed several times, the pattern of the educational system remains much like the U.S.S.R. model. "The main education content is the biological sciences," Lee states, "with the teaching method mainly classroom lecturing and laboratory experimentation...and the evaluation method is through exam, by reciting and repeating from memory" (1994, p. 1). The structure of the schools within universities are dictated by the Ministry of Education in China. The schools of public health, are currently organized into the following departments: toxicology, chemistry, health statistics, epidemiology, child and adolescent health, environmental health, work hygiene &

occupational diseases, nutrition & food hygiene, maternity & child health, social medicine & health care management, preventive medicine, health education, and health economics.

According to Lee, as economic and health conditions improve, education becomes more complex and problems of adjustment more acute. He states that "China requires a new generation of leaders who will have the capacity and skills to meet new public health problems and emerging challenges" (1994, p. 2).

The Rising Sex Ratio in China

It has been recognized that since 1980 the sex ratio of males born to females has been rising in China. The ratio is normally 106 males to 100 females. In China it has risen to 111/100 in 1985 and 116/100 in 1990. Although the causes for the rising sex ratio are undetermined, it is agreed by the government of China that the rising sex ratio is a major public health problem. The Directors of the International Education & Communications Department, and the Department of Planning & Statistics, of the State Family Planning Commission in Beijing China, have identified the increasing sex ratio as a priority issue (Y. Jiang & E. Zhang, personal communication, October 16, 1994).

Problem Statement

It is generally expected that schools of public health, as academic institutions, are in the forefront of knowledge, advocacy and social change. Faculty of those schools are in

a position to conduct research on priority issues, train students, and collaborate with official and non-official personnel, permitting them to share their advice and opinions based on that research. However, it is suspected that social issues such as the increasing sex ratio in China, which challenge values & beliefs, social structure, and policy decisions, are not addressed by academics as part of their research and curriculum development.

Behavioral and social sciences are increasingly appreciated as being central to contemporary public health problems such as increasing rates of AIDS/HIV, and other STDs, contributing factors such as prostitution, and inadequate health promotion/disease prevention programs. Intervention programs such as China's One-Child-Per-Family Policy become increasingly less effective, and perhaps even destructive, if social and behavioral issues such as the increasing sex ratio, along with the underlying cultural values and beliefs are ignored, and appropriate social input is not received.

Given the importance of social issues to public health, there is a need to find out what is known and what is being done about such sensitive social issues such as the sex ratio in China. The driving forces that determine what is known and what is being done are more than simply intellectual. The forces also include the processes by which people selectively acquire the values and attitudes,

the interests, skills and knowledge of social issues within the profession.

Purpose of the Study

This exploratory study was designed to examine selected factors (individual, cultural, organizational, and socio-political), and how they influence the knowledge, perceptions, and academic practices of faculty in schools of public health about the increasing sex ratio as a priority social issue in China. The purpose was to assist a curriculum change so that it becomes a force for helping to address sensitive social issues such as the sex ratio in China.

In this study, curriculum is defined to be the total program of teaching and learning experiences within the schools of public health. This includes: 1)teaching (courses as well as other learning experiences); 2)research conducted; 3)internal and external collaboration; and 4)socialization (the processes by which people selectively acquire the values, attitudes, interests, skills, and knowledge of the group).

Research Questions

1. What are the knowledge, perceptions, and academic practices of selected faculty from schools of public health in China about the increasing sex ratio?

2. How do the selected factors (individual, cultural, organizational, and socio-political) influence the faculty

knowledge, perceptions, and academic practices about the increasing sex ratio, supporting or hindering a curriculum change in schools of public health in China?

Significance of the Research Study

The focus of this study rests on two points: 1) that faculty determine what and how they teach within the prescribed curriculum; and 2) that teaching and learning experiences are forces for social change.

This study uses a method of applying Lewin's Force Field Theory of Social Change to examine how four selected factors (individual, cultural, organizational, and socio-political) can affect faculty knowledge, perceptions and academic practices about the sex ratio. This method assists in identifying what factors support or hinder a curriculum change in schools of public health in China to address the sex ratio. Findings from this study can be used to assist faculty to address the sex ratio issue as well as other such sensitive social issues. These findings could contribute to using the social sciences more effectively in order to shape the services and programs that are needed to meet objectives of a nation as well as the World Health Organization's (WHO) goal of "Health for All by the Year 2000." "The WHO couples the goal of "Health for All" with the values of social justice and human development" (Supannatas & Grossman, 1990, p. 2).

CHAPTER II
LITERATURE REVIEW

Schools of Public Health in China

Introduction

Few countries have experienced as dramatic changes in health policy, health strategy, and health education in recent years as China. This section describes public health education and training, as it came to be today, in China.

Prior to 1928, except for the uncoordinated efforts of a few government and private groups, little progress was made toward establishing a professional health bureaucracy to deal with China's health problems in a systematic manner (Yip, 1982).

In a report to the China Medical Board in 1922, a western physician, Dr. John B. Grant, who held an appointment at the Peking Union Medical College (PUMC), wrote that he observed that "one of the most important, if not the greatest, of outstanding problems in China is the lack of perspective amongst those in authority who shape medical and public health affairs; during the first two decades of the twentieth century, private groups, notably medical associations and medical missionary organizations, were far more active in health education activities than the government" (Grant, 1922, p. 3).

Initial Chinese Efforts

The Chinese Medical Missionary Association and the National Medical Association were two of the most important organizations promoting Western medicine in China (Wong & Wu, 1936). The latter, founded in 1915, was composed primarily of Western-trained Chinese physicians (Wong & Wu, 1936). One of its objectives was to "expedite the spread of modern medical science in China and to arouse interest in public health and preventive medicine among the people" (Wong & Wu, 1936, p. 601).

Organized attempts to promote public health education in the mission field became important in late 1910s and early 1920s. A Joint Council on Public Health was formed in 1916 with the support of the Y.M.C.A., the Chinese Medical Missionary Association and the National Medical Association (Yip, 1982). In 1920 the Chinese Christian Education Association, the Nurses' Association of China and the Y.W.C.A. joined the effort and in 1920 the Joint Council's name was changed to the Council on Health Education (Yip, 1982).

Between 1922 and 1924 the Council produced and distributed huge volumes of health education materials such as bulletins, charts, posters, and pamphlets. Yet, because of widespread illiteracy, the impact of these materials was small. Their messages also revealed a lack of understanding of Chinese socio-economic realities. For example, one

poster, entitled "Hygienic Eating", urged the use of special serving spoons or chopsticks while eating. Another, entitled "An Uninvited Guest", stressed the use of mosquito netting for beds or play-pens. In rural China, an extra spoon or a mosquito net were items not many could afford. In the final analysis, the influence of the Council's health campaigns proved to be quite superficial in the broader context (Yip, 1982).

Other major private agencies that played important roles in public health education during this period were The China Medical Board, the Rockefeller Foundation, and the Peking University Medical College. These groups were primarily interested in the introduction of scientific medicine to China. The rise of the new public health movement in the U.S. at the turn of the century was viewed by public health experts as largely the result of the effective application of new scientific methods which had allowed them to understand the underlying causes and processes of disease. The New Public Health Movement therefore had reduced the importance of the social and physical environment for the control of disease and redefined these diseases in bio-scientific terms (Berliner, 1977).

During the early 1900s, attention was on the disease process rather than the diseased. Rosenkrantz (1974) points out that instead of non-medical volunteers who had been

active in public health matters, physicians and nurses became the chief agents in the public health movement. The features of American public health - the emphasis on medical experts, bio-scientific research in the laboratory and the separation of scientific and social welfare roles of public health - were by and large duplicated in China.

Early Development of Public Health Education

In the 1920s it was reported that the Rockefeller Foundation aimed to promote and advance the interest and knowledge of scientific medicine in China through schools and universities. Activities were set up to focus on the prevention and eradication of one or two widespread diseases. In 1924, a Department of Public Health and Preventive Medicine was established at PUMC, under Dr. John B. Grant of the Rockefeller Foundation (Bullock, 1980).

According to Seipp (1963, p. 94), Grant had the vision of a "university-administered social laboratory to serve as a controlled environment for teaching purposes", and as an "organizational core of a regionalized system" of community health care. This establishment was called the Health Station, and was a significant departure from the then current public health teaching. It succeeded in bringing health education to the community by involving the people in the actual process of change.

Seip grouped the education at the Health Station into three divisions: General Sanitation, Vital Statistics and

Communicable Diseases, and Medical Services. He describes the functions of education and how public health measures were implemented into the curriculum.

Students concerned with general sanitation were sanitary inspectors. They did door-to-door inspections, and were responsible for educating the people on general sanitary principles. They recommended measures for matters such as control and protection of clean water sources. Students concerned with medical services maintained a health service for the community through providing weekly preventive and curative clinics at the Station. Students administered small-pox, cholera and typhoid vaccinations. They educated the children in personal hygiene through routine examinations, lectures, and the formation of first aid clubs in the schools. The public health nurses conducted home visits and health publicity work (1963, p. 94).

Seipp also stated that attendance at the clinics showed significant annual increases, as well as increases in the percentage of total services rendered. In contrast to the character of the health work of the Council on Health Education, Grant's efforts had the effect of educating the community as well as training public health workers. Another important consequence of Grant's work was that many PUMC students became officials in the medical agencies of

the Nationalist government (Seipp, 1963).

These American-trained experts played important roles in shaping Chinese public health policies.

Public Health Education Under the Nationalists

According to Yip (1982), the inauguration of the Chinese Ministry of Health in 1928 was the first step in the creation of a professional health bureaucracy by the Nationalist government. It directly controlled the National Hygienic Laboratory, the National Epidemic Prevention Bureau and the National Midwifery Board (Yip, 1982). With the cooperation of the Health Commission of the League of Nations, a Central Field Health Station was established in 1932 to act as the technical headquarters for the study of public health problems and as the nucleus of an eventual national field health service (Yip, 1982).

The government propagated the theme of health and national strengthening: "A physically strong people would not be conquered" (Chen, 1937, p. 70). In fact, stated Chen, "an important component of the New Life Movement launched by Chiang Kai-shek in 1934 was the education of the people on the importance of personal hygiene and general cleanliness, to work toward social regeneration and national strengthening" (1937, p. 70).

Crozier (1968) explained that the health organizations at this time were dominated by Western-trained physicians who were generally unsympathetic toward traditional doctors.

According to Crozier, these physicians attempted to regulate or abolish traditional medicine, which led to a prolonged and bitter feud between the two groups. A significant number of traditional doctors became opponents of public health activities sponsored by the government, and the government therefore lost the opportunity to use this large and influential group of Western-trained physicians to act as an agent of public health education.

The Nationalist government attempted to duplicate the experience of Grant's Health Station in 1935, with the aim of establishing health centers throughout the country (Chen, 1937). However, curative work and the control of specific communicable diseases were the chief concerns of the centers, and the extent of public health education carried out was not been significant.

The outbreak of war and the evacuation of Nanking at the end of 1937 seriously disrupted the national health system. "Health workers became occupied with the relief of wounded soldiers and refugees. The movement of the population created situations favorable to the outbreak of epidemics, especially plague and cholera" (Yip, 1982, p. 1203). Wartime limitations of facilities and personnel also prevented any significant expansion of public health services or education (Yip, 1982). After the Communist victory in 1949, Yip points out that the public health programs initiated prior to 1937 formed an important part of

the medical legacy that the Communists inherited. Through the efforts of the medical missionaries, the Rockefeller Foundation, the Nationalist government and other private agencies and reformers, a Western style health system was had been started and public health education and techniques had been introduced.

Health Workers

Under the influence of advisers from the U.S.S.R., the main emphasis during the 1950s and 1960s was to develop medical schools and hospitals and educate doctors (Taylor, Parker, & Zeng, 1991, Chap. 17). All parts of China including rural areas were covered by services provided by barefoot doctors. According to Taylor, et.al., the government set up an extensive program of retraining; after about six months work in a township or countryside hospital, the barefoot doctors could take a certification exam and become certified village doctors. Of the 1.5 million barefoot doctors, about 1.3 million had, by 1986, become village doctors (Chi, 1986). Preventive services suffered during this time, especially maternal and child health (MCH) services.

According to Taylor, et.al., the United Nations Children's Fund (UNICEF) was able to help as the Government re-emphasized preventive services for children and their mothers. Thirty Model MCH programs around the country were established to promote collaboration between county health

services and local medical and public health schools.

Public Health Training

In 1985, China had 117 university level medical schools (Chi, 1986) of which 24 were based on Chinese traditional medicine, an increase from 38 medical schools in 1949. The intensity of training in the schools varied greatly. In the approximately ten national or key medical schools, managed under the ministries of health and education, the curriculum provided for seven or eight years of training (Chi, 1986). These universities tended to follow the Soviet medical model of having five faculties - medicine, pediatrics, public health, dentistry, and pharmacy.

In 1994 according to the then Minister of Public Health, Dr. Min-Zheng Chen, there were 36 Schools of public health in China. They were affiliated with the medical universities, but have their own dean, faculties, and facilities (Chen, 1994). Within each medical university there is a ranking of preferences, with public health falling considerably below the clinical faculties (Taylor, et. al., 1991). The public health curriculum provides basic training in clinical medicine, but with public health courses distributed throughout the five year program and without the advanced clinical work taught in medical faculties.

There are 515 secondary medical schools, in which students take an average of three years to train in

medicine, public health, maternal and child health, dentistry, laboratory, biological products, maintenance of medical apparatus, health statistics, and health management (Taylor, et.al., 1991,). Traditional medicine is taught exclusively in 19 secondary medical schools and is integrated into the teaching of 79 more.

Future Plans for Health Education

The Ministry of Health in Beijing is presently examining the development of standards to define the roles of health personnel, partly by standardizing entrance examinations and exams required for licensure (Taylor, et.al., 1991,). Reform of educational methods is being intensively discussed in schools and universities. Awareness is growing that the previous patterns of didactic presentation and memorization do not produce the kinds of problem-solving personnel needed for modern professional work (Lee, 1994). According to many researchers and academics, public health education needs to be reformed greatly, in order to modernize public health in China. (Taylor, et.al, 1991), (Lee, 1994), (Zhan, personal communication, December 15, 1994), (Ni, personal communication, December 22, 1994) These individuals note that emphasis will be placed, through the educational reforms, on promoting creativity and innovations that encourage learning by doing. One of the top priorities of China's public health educational reform is to "underline

human science, social science, medical demography, human behavior, and mental health, in order that students are better able to address public health conditions in the future" (Lee, 1994, p. 2).

Influence of U.S. Standards on Chinese Schools of Public Health

In January, 1979 (extended & amended in 1985 & 1993), a protocol for Shared Progress and Cooperation in Science and Technology of Medicine and Public Health was developed and signed into agreement between the U.S. Department of Health and Human Services and the Ministry of Public Health of the People's Republic of China. This protocol promotes collaboration between the two countries in disease control and prevention, public health protection and education, biomedical research, health services and health policy research, and health administration and finance. The principal objectives of this cooperation are to provide opportunities to exchange ideas, information, skills and techniques, and to collaborate on problems of mutual interest.

Taylor and Leslie (1973) point out how government health workers in China recognize their need for assistance from the U.S., especially in the area of family planning. "This is an area of strong official commitment in Chinathey are aware of, and eager for research on the social and cultural roots of popular thinking about health,

procreation and family structure, in the hope that it will facilitate the effective implementation of their national family planning program" (Taylor & Leslie, 1973, p. 311).

Schools of Public Health in the United States:

An International Standard

The history of the development of schools of public health and the public health system in the U.S. is vastly different from the development of schools of public health and the public health system in China. The schools of public health in the United States (U.S.) are discussed (see Appendix A) because of the leadership role they have taken in international as well as national public health service and education. The review found in Appendix A points out how the U.S. concept of public health became an international standard for schools of public health through the massive national and international investments by such government and private agencies as: the U.S. Public Health Service; the US Army; the Ford and Rockefeller Foundations; and the U.S. Agency for International Development (USAID). This review also describes the Chinese system of public health and public health education, and how the U.S. standards for schools of public health have begun influence China.

The Increasing Sex Ratio in China

Introduction

This section reviews of the reported rise in the sex

ratio at birth in China. The major Chinese demographic data collection systems are reviewed, and the studies and reports in the literature which discuss the available demographic data are analyzed.

The three main proposed explanations found in the literature for the rising sex ratios are: (1. concealment or under-reporting of births, 2. gender-specific abortion, and 3. gender-specific infanticide or abandonment) are presented.

As a result of its family planning programs, China has achieved great success since the 1970s in slowing its population growth, according to reports by researchers Cheng (1991), Yi, Ping, Liu, Ying (1991), Gu and Yang (1991), and Bohua (1990). However, the sex ratios at birth have risen since implementation of the One Child for One Couple Policy (Article 25 of the Constitution of the People's Republic of China) in 1973, and implementation of strict birth control regulations to obtain the One-Child Per Couple goal (Peiyun, 1992; Zili, 1992). "In recent years, male live births have exceeded those of females by amounts far greater than those that occur naturally in human populations, a trend with significant demographic consequences" (Tuljapurka, Li, & Feldman, 1995, p. 874).

Stability of The Sex Ratio Among Live Births

Demographers regularly calculate sex ratios (the number of males per 100 females) for two quite different purposes

First, if the sex ratio is assumed to be accurate, it indicates the gender balance in the society. This balance is determined by the sex ratio at birth and by sex-specific mortality and migration over the life course (Hull, 1990). According to Hull, the measured sex ratio at birth can be compared with a suitable selected standard sex ratio reflecting known biological patterns to determine the degree to which infants of one sex suffer excess mortality.

Second, if the sex ratios are thought to be inaccurately measured, they may be examined to determine the degree to which one gender group is systematically under-counted in a register, survey, or census (Johansson, 1984). "In the first instance, the data can be used to identify a social problem such as a gender-determined abortion or infanticide... in the second instance, the immediate aim is to correct a statistical error such as accidental under-enumeration or concealment of information" (Hull, 1990, P. 63). Identification of the sources of such errors may also reveal an underlying bias against some individuals in a society based on their gender (Wen, 1992).

Statistics from developed countries with reliable data covering the past 200 years show that the true sex ratio at birth is biologically stable, remaining around 106 (106 male births per 100 female births) in the absence of social and behavioral interference (Wen, 1993; Johansson and Nygren, 1991; Bohua, 1990; and Hull, 1990).

Hull (1990) explains that the reported sex ratio at birth is enumerated by survey, census, or civil registration. In the absence of such occurrences as sex-selective under-reporting, sex-selective abortion, and sex-selective infanticide, the reported sex ratio should be equal to the true sex ratio of around 106 (Hull, 1990).

Chinese Demographic Data Collection Operations

Several major demographic data collection operations were carried out in China during the 1980s. Most studies of the Chinese population found in the literature since 1982 have been based on one or more of these survey reports (Feeney, Wang, Zhou, Xiao, 1989).

The following is a synopsis of the four major surveys.

- 1) Tabulations of The 1987 One Percent Population Sample Survey (State Statistical Bureau (SSB), 1988) include responses from questions concerning whether respondents had given birth during the 18 months preceding the July 1, 1987 enumeration date. Tables show the date, sex, and parity of the recorded birth. The survey tables permit the calculation of sex ratios by province, region (designated as cities, towns, and counties), and birth order, for six- or 12 month periods between January 1, 1986 and June 30, 1987.
- 2) Comparable data is available from tabulations of the 1982 and 1990 Population Census of the People's Republic of China (State Statistical Bureau (SSB), 1985

& 1991).

3) The 1982 One per Thousand Population Fertility Sampling Survey (State Family Planning Commission (SFPC), 1988) contains data which is comparable to the above two surveys as well as additional data concerning the prevalence of use of contraceptives. This survey can be used to examine apparent long term trends as it covers the years 1966-1982.

4) The 1988 Two-Per-Thousand Fertility and Contraception Survey (State Family Planning Commission (SFPC), 1990) contains information on a) the male and female population, by age, at mid-1988, and b) on the numbers of births by sex and birth date and the numbers of deaths by sex, birth date, and death date (both expressed in terms of month and year). This data can be used to estimate the expected numbers of births and the minimum under-count of births in the years prior to the survey, and to adjust the sex ratio at birth accordingly. The survey covers 95 percent of all counties, with a total sample size of 2.15 million individuals from half a million households. About 460,000 married women aged 15-57 were interviewed. The age range makes it possible to describe changes in demographic behavior for women of reproductive age from 1980-1987.

Analysis of Survey Reports in the Literature

The reported sex ratio at birth in China remained very close to 106 during most years of the 1960s and 1970s, according to data from the Two-per-Thousand Fertility and Contraception Survey conducted by the State Family Planning Commission (SFPC) in 1988 (see table 1). However, the reported sex ratio increased to 108.5 in 1981 (based on the 1982 census), 110.9 in 1986 (based on the 1987 One percent Population Sample Survey), 111.0 in 1987 (based on the 1988 Two-per-Thousand Survey, (SFPC, 1990) and 113.8 in 1989 (based on the 10 percent sampling tabulation of the 1990 population census of the People's Republic of China (SSB, 1991).

These sex ratios are based upon birth data which are actually estimates, obtained by summing the reported number of cohort survivors and the reported number of deaths (not adjusting for under-reporting of deaths (or missing females) belonging to the corresponding cohort.

Hull (1990) uses the following formula to estimate the number of missing female births:

$(B_m/1.06) - B_f$, where B_m and B_f
are the recorded number of male
and female births respectively.

By using this calculation and the figures from the One Percent Survey reflecting the year 1986 (total population = 1.0679 billion, total number of births = 22,500,100, total #

of male births = 11,942,800, total # of female births = 10,557,300), it can be calculated that 709,492.5 female births were somehow "missing" from the population counts of China in 1986. These figures agree with such scholars and researchers as Feeney, Wang Zhou, & Xiao (1989), Johansson & Nygren (1991), as well as the reports in the press providing figures for missing females in China, such as "Stop Sex" (1989), "Study Finds" (1993), and Anderson (1993).

It is not clear why there are discrepancies between the reported sex ratios based on the Two-per-Thousand Fertility and Contraception Survey, the One Percent Population Sample Survey, and the census reports. In 1981 and 1986 the two-per-thousand fertility survey reported sex ratios at birth of 107.1 and 112.3, while the census reported sex ratios of 108.5 and 113.8. The reported sex ratios at birth based on the One Percent Sample data from the 1990 census are 114.7 in 1989 and 116.9 in 1990. The reported sex ratio at birth based on the 1990 10 percent tabulation of the census was 113.8 in 1989, but figures are not available for 1990. Notwithstanding these discrepancies, the sex ratio at birth appears to have increased considerably during the 1980s, reaching a level that was much higher than the normally expected value by the decade's end.

Table 1 presents the sex ratios among live births in China between 1960 and 1990, as reported by families in the 1988 Two-per-Thousand Fertility and Contraception Survey,

and the tabulations of the 1990 Census. A peak in 1966 is followed by an equally obvious trough in 1968. However, neither the peak nor the trough is verified by the other sources such as the 1982 One-per-Thousand Fertility survey for live births or by the population sex ratios reported in the tabulations of the 1982 and 1990 census. It could be hypothesized from the erratic peak and trough points that the data on births in the Two-per-Thousand fertility survey are less reliable for the earlier years of the period 1960-1987.

Table 1. Sex ratios among live births in China, 1960-1990

YEAR	SEX RATIO	YEAR	SEX RATIO	YEAR	SEX RATIO
1960	110.3	1970	105.9	1980	107.4
1961	108.8	1971	105.2	1981	107.1
1962	106.6	1972	107.0	1982	107.2
1963	107.1	1973	106.3	1983	107.9
1964	106.6	1974	106.7	1984	108.5
1965	106.2	1975	106.4	1985	111.4
1966	112.2	1976	107.4	1986	112.3
1967	106.6	1977	106.7	1987	111.0
1968	102.5	1978	105.9	1988	113.8
1969	104.5	1979	105.8	1989	114.7
				1990	116.9

Source: The 1988 Two-per-Thousand Fertility and Contraception Survey (SFPC, 1990). Tabulations of the 1990 Population Census of the People's Republic of China (SSB, 1991).

It has been reported by such researchers as Haupt

(1983), Johansson (1984), Coale (1984), Banister (1987), and Hull (1990) that the true sex ratio at birth (under normal conditions) tends to decline very slightly, or at least remain constant, as a woman's parity (birth order) increases. However, the SFPC (1990) survey and the SSB (1991) 10 percent tabulation on the 1990 population census show that the sex ratio in 1989 was 104.9 at parity 1, but reached 120.9, 124.6, and 131.7 at parity 2, 3, and 4+ (see table 2). The reported sex ratio at parity 2 and above showed an increasing trend during the 1980s. Similarly, the 1987 One Percent Survey also shows quite a dramatic pattern of high sex ratios for second and higher order births, in contrast to virtually normal ratios for first births. It could be hypothesized that this finding of abnormally high sex ratios among reported higher-parity births in China is reliable since it is replicated by three independent studies.

When the formula, $(B_m/1.06) - B_f$ is used to calculate the missing females in the 1988 One Percent Sample Population Survey figures on reported births by counties (rural areas), and large cities in China, most of the missing females appear to be located in rural areas (see table 3). This is also pointed out in studies by Gu & Yang (1991), Johansson & Nygren (1991), and Wen (1992). The reported sex ratios at ages 0-4 from the 1953, 1964, 1982, and 1990 censuses are 107.0, 106.2, 107.1, and 110.2,

illustrating an increase in the sex ratio within this age group during the 1980's as well.

Table 2. Reported sex ratios at birth in China by birth order, selected years 1982-1989

YEAR	1st	2nd	3rd	4th	all births
1982	106.5	105.0	109.4	111.9	107.2
1983	107.5	107.2	108.2	109.3	107.7
1984	102.1	113.6	112.6	122.2	108.3
1985	106.1	116.1	114.3	121.5	111.2
1986	105.2	116.8	123.2	124.7	112.1
1987	106.7	112.6	118.9	121.2	110.8
1989	104.9	120.0	124.6	131.7	113.8

Note: Data for 1988 are not available.

Sources: Figures for 1982-1987 are from The Two-per Thousand Fertility & Contraception Survey (SFPC, 1990: 183-194). Figures for 1989 are from the Ten Percent Population Survey (SSB, 1991: 461-462).

Table 3. Sex ratios at birth by Nation/Province/City in 1986

NATION, PROVINCE or CITY	SEX RATIO	PROVINCE	SEX RATIO	PROVINCE	SEX RATIO
China as a Whole	110.94	Zhejiang	118.47	Guizhou	107.14
* Beijing	110.77	Anhui	117.27	Yunnan	106.48
* Tianjin	101.95	Fujian	110.70	Xizang	109.37
Hebei	111.92	Jiangxi	109.46	Shaanxi	109.52
Shanxi	106.23	Shandong	112.71	Gansu	106.75
Nei Monggol	106.46	Henan	117.28	Qinghai	102.26
Liaoning	109.34	Hubei	109.11	Ningxia	104.78
Jilin	109.82	Hunan	107.55	Xinjian	101.16
Heilongjian	105.57	Guangdon	108.70		
* Shanghai	103.46	Guangxig	114.69		
Jiangsu	116.45	Sichuan	112.67		

* indicates metropolitan cities.

Table 4. Sex ratio by communities in 1986

REGION	SEX RATIO
Cities	108.73
Towns	111.20
Counties	111.35

Source: Provinces/cities/regions listed according to the One Percent Population Survey of China Report (State Statistical Bureau, 1988).

Reported Causes of the Increase in Sex Ratio at Birth

The increase of the reported sex ratio has attracted the attention of scholars, policymakers, and the general

public. (Aird, 1990; Banister, 1992a, 1992b, & 1987; Coale, 1992; Duan, 1991; Hull, 1990; and Johansson & Nygren, 1991).

In June 1986, the Chinese State Family Planning Commission organized a seminar on the topic of sex ratios. About 50 scholars attended and some 40 papers were presented (Zhao, 1987). The three major potential explanations for the rising sex ratios at birth which are found in these papers are: 1) concealment of births; 2) gender-specific abortion; and 3) gender-specific infanticide or abandonment. All of these explanations are believed to be related to either pressures created by the One-Child-Per-Couple Policy, or a strong preference for sons (Hull, 1990).

Researchers have speculated that the high reported sex ratio at birth in China in the 1980s is largely the result of 1) the failure to report the births of surviving female children or under-reporting of female-baby adoption (Johansson & Nygren, 1991; Wen, 1992); and 2) prenatal sex identification followed by gender-specific induced abortion (Hull, 1990). Others suggest that it is due to 3) unreported female infanticide (Aird, 1990, Coale, 1984; Hull, 1990 and Johansson & Nygren, 1991).

Some researchers regard the high reported sex ratio as a statistical fact, and proceed to analyze the available interpretations for the rising reported ratios. These studies link the possible connections with China's One-Child Policy and or a strong preference for sons, and their

conclusions urge the Chinese government to devote greater attention to this issue (Arnold & Zhaoxiang, 1986; Bohua, 1990; Cheng, 1991; Feeney, Wang, Zhou, Xiao, 1989; Gu & Yang, 1991; and Wen, 1993); and Yi, Ping, Liu, Ying, 1991.

Under-Reporting of Female Births

The proposed explanation for the rising sex ratios, based on the hypothesis that the missing female births and missing young female children are a statistical artifact, supposes that the births took place and the children are alive, but that the female children were concealed from interviewers who collected birth data.

No direct validating information is available from the survey data to confirm under-reporting of female babies who have stayed with their parents. However, Hull (1990) found that female births were more severely under-reported than male births in China, as a result of attempts to evade penalties for having too many children in violation of government policies. Given a strong son preference, especially in rural areas, Hull points out that couples who have a high order female birth will consider it not worthwhile to report the birth and thus to be penalized. He notes that couples who have a high order male birth generally consider it worthwhile to pay the penalty and report the birth so that the son can continue the family name.

Yi, Ping, Baochang, Yi, Bohua, and Yongping (1993, P.

290) found that couples who have a high order female birth will try to hide the birth from the authorities in one of the following ways.

1) By giving the girl away for adoption or to friends and relatives living elsewhere; 2) By not reporting the birth of the girl but reporting her as an immigrant at a later time; and 3) Simply not reporting the birth of a girl at all, whether she lives with her own parents or other relatives - one group among whom this practice may be easily carried out is the floating population, namely persons living away from their native towns.

Johansson and Nygren (1991) estimated that half of the missing girls in the surveys of the 1980s were adopted children not reported as live births by their natural mothers. This estimate was obtained through a reverse survival method of calculation. Many more female than male babies were given away for adoption according to the Two-per-Thousand Fertility and Contraception Survey (1990), however, it is not clear at what stage of family building the children were adopted. It was not clear whether the adopting parents were urban couples who were childless, or rural couples who had only one child before they adopted the children. It would be desirable to investigate the family size and sex composition of the adopting parents, since those couples were under the same constraints as the couples

who gave their babies away. It would also have been useful to determine why the adopting parents willingly reported or registered their adopted children, when the children's natural parents did not.

While studies such as Hull (1990), and Yi, Ping, Baochang, Yi Bohua, & Yongping, (1993) indicate that the reported sex ratio at birth is inflated by under-reporting of female births by perhaps half of the missing females, the sex ratios at birth in 1983-1989 would still be higher than the normal value of 106, even after adjusting for such estimated under-reporting.

Gender-Specific Abortion

A second explanation for the rising sex ratios, while difficult to validate, is that pregnant women have obtained information about the gender of the fetuses they are carrying and that numbers of them have selectively aborted female fetuses.

There are three relatively common methods of determining the sex of a fetus: chorionic biopsy, amniocentesis, and ultrasound examination (Pritchard, MacDonald, & Gant, 1985). It should be recognized that neither amniocentesis nor ultrasound examination is accurate in determining the sex of a fetus until well into the second trimester of pregnancy (Pritchard, et al, 1985). However Pritchard, et al. explain that under the guidance of ultrasound, the chorionic biopsy procedure can detect the

gender of a fetus as early as 9 or 10 weeks gestation. It is well known in the medical field that induced abortions after the first trimester of pregnancy are technically more difficult, involve substantially increased levels of risk to a woman's health, and impose a greater cost to the medical system than earlier abortions. Little is reported about the availability of any of these procedures outside of large cities in China where the sex ratios are most abnormal. Hull (1990) explains that even where the methods are available, The State Family Planning Commission (SFPC) regulations prohibit their use for purposes of aborting female fetuses. Press reports (Stop Sex, 1989) indicate widespread government concern that ultrasound examination is being used for this purpose in many regions, and that charges have been made that local officials are easily bribed by more affluent peasants to ignore SFPC regulations. It is difficult to gauge the prevalence of such practices.

Although there is no direct statistical evidence of the incidence of gender-specific abortions, Yi, Ping, Baochang, Yi, Bohua, and Yongping (1993) reported that with economic development and the concomitant improvements in medical technology in the 1980s, a large number of ultrasound B machines were introduced in China. "Intended for various diagnostic purposes and for pregnancy monitoring and checking IUD placement, these machines also permit prenatal sex identification, which makes sex-selective induced

abortion possible" (Yi et al., 1993, P. 285). Wen (1992) reported records of the Customs Administration which show that 2,175 high-quality color ultrasound B machines were imported in 1989, with the peak years of importation falling between 1985 and 1989. He estimates that "China now has the capacity to produce over 10,000 such devices per year, enough to provide every county in China with four machines" (Wen, 1992, P. 32).

To be regarded as valid, the explanation of gender-specific abortion requires that first the technology must be available to determine the sex of the fetus, and second, that women must have access to abortion facilities following a decision to terminate a pregnancy. Hull (1990), and Gu & Yang (1991) claim that to date, ultrasound technology in China is largely confined to major urban hospitals. Yet, Yi, et al. (1993) write in their study report that according to the Ministry of Health, China began to introduce ultrasound B technology on a large scale in 1982, and now every county is equipped with machines of high quality, operated by skilled technicians.

Female Infanticide and Abandonment

The third explanation for the rising sex ratio assumes that the missing females were born, but died soon after birth as a result of deliberate action by parents or through neglect to the point of neonatal illness, then death.

Female infanticide has a long tradition in China,

according to Hull (1990), with particularly high incidences reported in the eastern and southeastern provinces, where the estimated sex ratios were particularly high. Two centuries ago the practice of exposing female infants to the elements was conducted openly and missionaries reported that thousands of infants were abandoned in the streets of Beijing to be collected regularly by carriers, who placed them in a large common grave outside the city (Warren, 1985). "The resurgence of infanticide in recent years was highlighted in the early 1980s in local press reports in China, and the government has made numerous statements condemning the practice" (Honig and Hershatter, 1988, P. 189).

It is not known whether contemporary infanticide usually involves direct methods, such as smothering or exposure, or indirect methods, such as withholding of care until newborn girls weaken, become ill, and die. It is speculated by Coale (1984) that infanticide of females is significant in rural areas and small towns, where levels of education are lower and reliance on family labor is acute. Coale notes that infanticide has long been practiced in the densely settled southeastern plains.

Yi, Ping, Baochang, Yi, Bohua, & Yongping (1993) report in their study that both the social and administrative structure and the close bond among neighbors in China make it difficult to conceal a serious crime such as infanticide.

These researchers claim that as sex identification of the fetus becomes increasingly more available at moderate cost, couples who wish to have a boy avail themselves of this technology rather than commit female infanticide, with its very high risk of criminal penalty and its psychological and moral impact.

Hull (1990) found that some parents may abandon a female infant, but usually in a place where she can be easily found by others. "Anyone who finds an abandoned baby can send her (or him) to the local department of civil affairs, which by government regulation is responsible for the infant's care" (Hull 1990, p. 76).

Abandonment as an explanation for the high sex ratios may not be validated, however, if most abandoned babies are in fact delivered to the local department of civil affairs. Presumably, this department would report the delivery to the appropriate census agency, which would then register the birth. Although there could be concern about double counting, where the abandoned infant's birth was already registered, it would seem likely that the vast majority of abandoned babies would not be registered prior to abandonment.

Summary

The schools of public health in China, along with the rest of China, are undergoing dramatic changes as a result of the general wave of reforms since 1980. U.S. Schools of

Public Health, traditionally seen as a model for public health education in China, and throughout the world, can greatly assist in these changes.

The sex ratio in China, as reported in the statistics, has been increasing since 1984. The cause for the increase, whether under-reporting, gender-specific abortion, or gender-specific infanticide, is undetermined.

No matter which explanation, or combination of explanations is eventually accepted as resulting in high and rising sex ratios at birth in China, it is clear that the collection of accurate data and further research studies on this issue are critical in order to assess the demographic situation and make sound decisions to correct it.

It is important that efforts be undertaken to improve the quality of data collection, minimize the problems of under-reporting or concealment of births, and to reduce all forms of discrimination against children born outside of the birth plan. Further research on the social, cultural, ethical, and legal issues related to prenatal sex determination needs to be conducted in order to draw valid conclusions on which to base sound policy and regulations.

Theoretical Framework

Force-Field Theory, based on the work of Kurt Lewin (1952), is a technique by which various factors included in a process can be conceptualized as dynamic helping forces/factors (in support of change toward addressing

social issues) or hindering forces/factors (resisting change toward addressing social issues).

A state of no social change is referred to as a "state of quasi-stationary equilibrium" (Lewin, 1952, p. 459). That is, according to Lewin, a state comparable to that of a river which flows with a given velocity in a given direction. A social change is comparable to a change in the velocity or direction of that river (See Fig. 1).

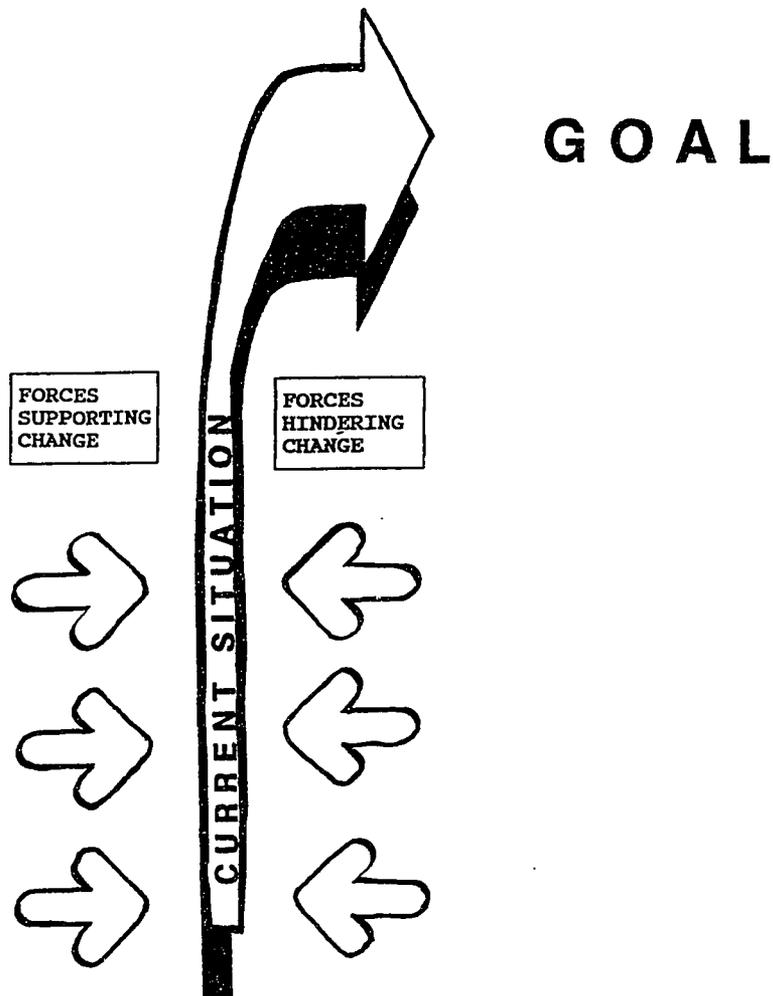


Figure 1. Force Field Analysis Diagram, Lewin (1952)

Changing Conduct

The Quasi-Stationary Equilibria can be changed in either of two ways: 1) by adding forces in the desired direction, or 2) by diminishing opposing forces. The secondary effects of #1 and #2 are, however, quite different. If a change is brought about by #1 (adding forces in the desired direction), the process would be accompanied by a state of relatively high tension. If a change is brought about by #2 (diminishing opposing forces), the process would be accompanied by a state of relatively low tension. Lewin notes that as a rule the second method is preferable to the first.

An example of an opposing force which would move schools of public health away from addressing social issues would be a situation in which individual faculty members are unaware or have misinformation regarding the increasing sex ratio in China, or other social information. These individuals, lacking knowledge of the problem, would be resistant to changes which would address the problem in their schools.

Social Habits and Group Standards

Lewin notes that the "idea of social habit implies, that in spite of the application of a force, the level of the social process will not change because of the inner resistance of individuals, groups and institutions to change" (1952, p. 459). To overcome this inner resistance,

Lewin explains that an additional force is required which is sufficient to "break the habit" and to "unfreeze the custom" (1952, p. 160).

Many social habits are anchored in the relationship between individuals and certain group standards. For example, if a particular faculty member were to diverge too much from the group standard, that person would be in increasing difficulties, and be subjected to ridicule, severe treatment, and ousted from the group. Lewin indicates that most individuals remain close to the standard of their group. In other words, the group level itself acquires value. According to Lewin, where a group of people correspond to a central force field, the force keeps the individual in line with the standards of the group.

Changing Group Conduct

Experienced leadership trainers indicate that it is easier to change individuals as a group than to change any one of them separately. If the strength of the value of the group level is diminished, the resistance to change is diminished (Lewin, 1952).

A successful change includes three aspects: "unfreezing" the present level, moving to the new level, and freezing the group on the new level. If the group level itself is changed, the resistance caused by the relation between the individual and the group standard is eliminated.

In order to "unfreeze" a school of public health which addresses only biological or quantitative science issues, it would be necessary to correct misinformation or challenge false ideas about certain social and behavioral issues (hindering forces) with groups of involved faculty. As false information is diminished (unfreezing) it would be replaced with factual, correct information about social and behavioral issues (favorable forces). This should lead to faculty beginning to address social issues in curriculum (moving). As the faculty reaches consensus on new curriculum values, content, and methods, "freezing" should occur.

Lewin (1952) states that the new force field should be made relatively secure against change. Endorsement of the change requires both acceptance of, and skill in, the social sciences. According to Boud & Feletti (1991), participation is both an effective vehicle of change and an effective means of creating a sense of commitment to the new philosophy.

CHAPTER III

METHODOLOGY

A triangulation approach of combining qualitative and quantitative research methods was used in order to answer the research questions 1)What are the knowledge, perceptions, and academic practices of selected faculty from schools of public health in China about the increasing sex ratio? and 2)How do the selected factors (individual, cultural, organizational, and socio-political) influence the faculty knowledge, perceptions, and academic practices about the increasing sex ratio, supporting or hindering a curriculum change in schools of public health in China?.

Creswell (1994) explains that a triangulation method of study is one in which the researcher uses multiple methods of data collection and analysis. Denzin (1978) used the term triangulation, borrowed from navigation and military strategy, to argue for the combination of methodologies in the study of the same phenomenon.

The concept of triangulation was based on the assumption that "any bias inherent in particular data sources, investigator, and method would be neutralized when used in conjunction with other data sources, investigators, and methods (Jick, 1979, p. 174)." Additional authors have suggested other purposes for combining methods in a single study (Creswell, 1994; Green, Caracelli, & Graham, 1989; Mathison, 1988; Swanson, 1992):

- 1) triangulation in the classic sense of seeking convergence of results.
- 2) complimentary, in that overlapping and different facets of a phenomenon may emerge (e.g., peeling the layers of an onion).
- 3) developmentally, wherein the first method is used sequentially to help inform the second method.
- 4) initiation, wherein contradictions and fresh perspectives emerge.
- 5) expansion, wherein the mixed methods add scope and breadth to a study.

In this study, the triangulation method was used for the purpose of confirmation, completeness, and development, in that the qualitative method assisted perspectives to emerge from the quantitative method. This process included several steps.

Step 1. A semi-structured questionnaire was used to collect data from faculty from schools of public health in China. Questions were asked of respondents in three categories: 1) Biographical (to determine age, gender, marital status, education, etc. of respondent) 2) Family History (to determine place of birth, number of siblings, parents' occupations, etc.) 3) Employment History (to determine position, area of research, department, etc.) and 4) Questions related to the increasing sex ratio in China (to determine the knowledge, perceptions, and academic

practices concerning the sex ratio issue). After each question was specifically answered by the respondent, the question was opened up for the respondent to describe or explain their answer, providing a broader, clearer picture of the responses.

Step 2. A five person expert panel categorized each question under the four selected factors (individual, cultural, organizational, and socio-political), using Lewin's Force Field Theory of Social Change as a guide.

Step 3. A Chinese key informant examined each response, and categorized it under the factor which most seemed to influence the respondent's answer.

Step 4. A frequency distribution was displayed which indicated how the study subjects responded to the survey questions and the mean scores, a range, and a median were determined for purposes of interpretation.

Step 5. The scores from the expert panel and key informant data were displayed in order to determine the degree of influence each force had on responses to the sex ratio questions.

Qualitative Research

Creswell (1994, p. 2) defines a qualitative study as "an inquiry process of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting."

In a sense, all data are qualitative, as they refer to essences of people, objects, and situations (Berg, 1989). Qualitative data can be in the form of words, that is, language in the form of extended text. The words are based on observation, interviews, or documents, or as Wolcott (1992) puts it, watching, asking or examining. Miles & Huberman (1994) explain that qualitative data can also appear as still or moving images.

Qualitative data are not usually immediately accessible for analysis, but require some processing. Miles & Huberman (1994) explain that raw field notes need to be corrected, edited, and/or typed up, and tape recordings need to be transcribed and corrected.

Qualitative research may be conducted in dozens of ways, many with long traditions behind them. To do them all justice is impossible here, however the following section summarizes the main features of qualitative research and outlines the main features common to the various methods of analyzing qualitative data, and describes the weaknesses and strengths of qualitative research.

Features of Qualitative Research

Wolcott (1992) emphasizes the naturalist nature of most qualitative research. The following is a combination of Wolcott's and Miles & Huberman's (1994) descriptors, suggesting some recurring features of qualitative research:

- * Qualitative research is conducted through an intense

and/or prolonged contact with a field or life situation. These situations are typically normal ones, reflective of the everyday of life of individuals, groups, societies, and organizations.

- * The researcher's role is to gain an holistic (systemic, encompassing, integrated) overview of the situation under study: its logic, its arrangements, its explicit and implicit rules.
- * The researcher attempts to capture data on perceptions from the inside, through a process of deep attentiveness, of empathetic understanding, and of suspending or bracketing preconceptions about the topics under discussion.
- * Reading through the data transcripts, the researcher may isolate certain themes and expressions that may be reviewed with informants, but which should be maintained in their original forms throughout the study.
- * A main task is to explain the ways people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations.
- * Many interpretations of the transcript material are possible, but some are more compelling for theoretical reasons or on for reasons of internal consistency.
- * Relatively little standardized instrumentation is used at the outset. The researcher is essentially the main

measurement device in the study.

- * Most analysis is done with words. The words can be assembled, subclustered, and/or broken into segments. They can be organized to permit the researcher to contrast, compare, analyze, and bestow patterns upon them.

Features Common to Analytic Methods

In the many diverse approaches to qualitative analysis there are features that recur in any style of qualitative analysis. The following are some analytic practices (moves), according to Miles & Huberman (1994), which may be used across different qualitative research methods.

- * Affixing codes to a set of field notes drawn from observations or interviews.
- * Noting reflections or other remarks in the margins.
- * Sorting through the materials to identify similar phrases, relationships between variables, patterns, themes, distinct differences between subgroups, and common sequences.
- * Isolating the patterns, commonalities and differences, and taking them to the field in the next wave of data collection.
- * Gradually elaborating a small set of generalizations that cover the consistencies discerned in the database.
- * Confronting those generalizations with a formalized body of knowledge in the form of constructs or

theories.

Weaknesses of Qualitative Research

Miles & Huberman (1994) explain that the words which are attached to fieldwork experiences are inevitably framed by the researcher's implicit concepts. Counelis (1991) suggests, a written description as "angry" (data) of someone clenching a fist and grimacing, is a conceptual substitute for the direct expression of one's own feelings and perceptions.

The processing of field notes can be problematic. As Atkinson points out, they are texts constructed by the field-worker on the basis of observation and participation: "What may be generated as data is affected by what the ethnographer can treat as writable and readable. Similarly, transcription of tapes can be done in many ways that will produce rather different texts" (Atkinson, 1992, p. 173).

Miles & Huberman (1994) point out that qualitative data are not so much about behavior as they are about actions (which carry with them intentions and meanings and lead to consequences). Some actions are relatively straightforward, explain Miles & Huberman; others involve impression management - how people want others, including the researcher, to see them. Furthermore, those actions occur in specific situations within a social and historical context, which deeply influence how they are interpreted by both insiders and the researcher as an outsider.

The apparent simplicity of qualitative data masks a good deal of complexity, requiring plenty of care and self-awareness on the part of the researcher.

Strengths of a Qualitative Study

An important feature of well-collected qualitative data is that they focus on naturally occurring, ordinary events in natural settings, revealing what real life is like. Miles & Huberman (1994) explain that the real life picture is buttressed by the fact that the data were collected in close proximity to a specific situation, rather than through the mail or over the phone. The emphasis is on a specific case, a focused and bounded phenomenon within a context. The possibility for understanding latent, underlying, or non-obvious issues is strong.

Miles & Huberman (1994) discuss the rich and holistic qualities of qualitative data, having a strong potential for revealing complexity. The data provides descriptions that are vivid, with a ring of truth that has a strong impact on the reader.

Qualitative studies are flexible, as data collection times and methods can be varied as a study proceeds. This flexibility gives further confidence that the researcher really understood what was going on (Miles & Huberman, 1994).

With their emphasis on people's experiences, van Manen, (1977, p. 205) explains that "qualitative data are

fundamentally well suited for gaining insight into the meaning people place on the events, processes, and structures of their lives (their perceptions, assumptions, and judgements)." This allows for a connection between these meanings and the social world around them.

Finally, qualitative data are useful when one needs to supplement, validate, explain, illuminate, or reinterpret quantitative data (Miles & Huberman, 1994).

Quantitative Research

According to Creswell (1994, p. 2), "a quantitative study is an inquiry into a social or human problem, based on testing a theory composed of variables, measured with numbers, and analyzed with statistical procedures, in order to determine whether the predictive generalizations of the theory hold true." Two kinds of quantitative methods are surveys and experiments.

A survey design provides a quantitative or numeric description of some fraction of the population (the sample). This design uses a data collection process of asking questions of subjects (Fowler, 1988). The data collection, in turn, enables the researcher to generalize to a population the findings from a sample of responses.

An experiment tests cause-and-effect relationships in which the researcher randomly assigns subjects to groups. The researcher manipulates one or more independent variables and determines whether these manipulations cause an outcome

(McMillan & Schumacher, 1989). The researcher is able to test cause and effect because, theoretically, all (or most) variables between the manipulated variable and the outcome are controlled in the experiment.

Contrasts of Qualitative and Quantitative Research Studies

Writers have contrasted assumptions of quantitative and qualitative research paradigms (Creswell, 1994; Firestone, 1987; Guba & Lincoln, 1988; McCracken, 1988). Although these contrasts are a heuristic device, they bring into stark contrast the nature of alternative strategies (Patton, 1988). The following is a summary of quantitative and qualitative paradigms according to Creswell (1994, p. 4).

The Nature of Reality

Quantitative:

Reality is objective and singular, apart from the researcher.

Qualitative:

Reality is subjective and multiple as seen by participants in a study.

The Relationship of the Researcher to the Researched

Quantitative:

The researcher is independent from that being researched.

Qualitative:

The researcher interacts with that being researched.

The Role of Values

Quantitative:

The study is value free and unbiased.

Qualitative:

The study is value-laden and biased.

The Language of the Research:

Quantitative:

There is a formal, impersonal voice, based on set definitions, and use of accepted quantitative words.

Qualitative:

There is an informal, personal voice, with evolving decisions and accepted qualitative words.

The Process of the Research:

Quantitative:

There is a deductive process with cause and effect, and there are categories which are isolated before being studied (static design). The generalizations lead to predictions, explanations and understandings. Accuracy and reliability is tested through validity and reliability testing.

Qualitative:

There is an inductive process with mutual simultaneous shaping of factors. Categories are identified during the research process (emerging

design). Patterns and theories are developed for understanding. Accuracy and reliability is tested through verification.

Design of this Research Study

This research study is neither a pure quantitative or a pure qualitative study. The study uses elements from each approach, combining three sets of data in order to determine how the four factors (individual, cultural, organizational, and socio-political) influenced the knowledge, perceptions, and academic practices of faculty from three schools of public health in China about the increasing sex ratio. The triangulation method used combined data collected from the survey questionnaire, from the expert panel and from the key informant.

Population and Setting

The study population consisted of a selective, purposive sampling of twenty faculty members from three schools of public health in China. Seventeen were faculty members from departments of Health Statistics & Epidemiology, Environmental Health, Health Education, and Maternal & Child Health. Two were Deans and one was a Vice Dean (of the schools), and represented in their discipline focus Health Administration and Management.

An effort was made to include all those faculty members who would be in a position to address social issues, such as the sex ratio, in either their teaching or research. The

researcher relied on the Deans from each University to identify the appropriate individual faculty members to be interviewed from the above mentioned departments. Interpreters were provided when necessary.

The three cooperating Universities are major institutions in China: Shanghai Medical University, in Shanghai, China; The West China Medical University, in Chengdu, China; and The Beijing Medical University, in Beijing, China. Acceptance letters were received from all three University Deans, with the Dean from Shanghai Medical University serving as the host for the researcher's entry into the country for this study.

Instrumentation of this Research Study

Survey Development

Data from the study population were collected using a semi-structured survey instrument (Appendix B) in order to standardize the interview process and to allow a mechanism for probing for additional information.

There were four components to the survey: 1) biographical information, 2) family history, 3) employment history, and 4) knowledge, perceptions, and academic practices regarding the sex ratio in China.

Since no appropriate survey instruments for the purposes to be investigated existed, it was suggested by Dr. Eugene Owen, an expert and lecturer in survey development from the U.S. Department of Education/Survey Development,

that the researcher develop the instrument. Due to the uniqueness of this study, and considering the possible vast differences in knowledge, attitudes and academic practices which a survey could elicit, the instrument was developed using established scaling measures (i.e., structured questions - yes/no/don't know) as well as open-ended questions. The questions were tailored to the study needs and the target population. Development and organization of the survey followed the basic guidelines from the World Health Organization (WHO, 1992).

Pre-Testing the Survey

The survey was pretested to evaluate and clarify questions, and to eliminate ambiguous, non-functioning, or non-differentiating items.

The survey was pre-tested by conducting face-to-face interviews with a preliminary study group of seven Chinese academicians who attended the 1993 Asia-Pacific Academic Consortium for Public Health (APACPH) meeting in Bangkok, Thailand. Revisions were then made to the survey and it was re-tested using three graduate students from the George Washington University in Washington, DC. Two of the students were from the People's Republic of China and one student was from Taiwan.

The experience gained during the preliminary study was taken into account when the survey was revised. Any requests from the preliminary groups for clarification

regarding particular items were duly noted, and given consideration when the survey was revised. Ambiguous items were clarified so that they could be interpreted in the way intended.

The final survey instrument included questions about biographical background, family history, employment history, and knowledge, perceptions, and academic practices regarding the increasing sex ratio in China (Appendix B).

Data Collection Procedure

Face-to-face interviews were conducted by the principal investigator only, and were audio-taped with permission from the Deans and the individual faculty member interviewed. Each interview required approximately 30-45 minutes.

After completion of the data collection, and prior to analysis, a Chinese public health professional read all of the survey responses, and made adjustments that provided consistency with the spoken commentary from the interview tapes.

Data Analysis

The data were subjected to qualitative and quantitative analysis. A descriptive analysis of the study population was made, using a chart that was formulated to display each survey response under demographic, organizational, and professional categories (Tables 5 & 6). This analysis was followed by a two phase assessment.

During the first (quantitative) phase, a sex ratio

survey frequency distribution was developed by coding responses to the sex ratio survey questions numbers 1 through 13. Totals for each survey question were tallied, and the mean, median, and range were determined (Table 7).

During the second (qualitative) phase, categories of forces were defined (individual, organizational, social/political, and cultural); an expert panel categorized each of the sex ratio questions under one of the four defined factors; and a key informant placed each response under one of the four defined factors.

Sex ratio survey frequency determination:

Responses to the sex ratio survey questions numbers 1 through 13 were coded as follows:

<u>Code</u>	<u>Response</u>
1	= no, or don't know
2	= somewhat, or yes

Totals for each survey question were tallied, and the mean, median, and the range were determined (Table 7). It was concluded that any mean more than or equal to 1.65 (the median) would indicate a response in support of change in curriculum, and any mean less than 1.65 (the median) would indicate a response which would impede a change in curriculum toward addressing the increasing sex ratio.

Categories of forces:

Four major categories of factors or forces emerged from the Lewin Force Field Analysis framework, providing a way of

grouping the responses to the sex ratio questions. The responses were grouped as: 1) individual forces; 2) organizational forces; 3) social/political forces; and 4) cultural forces. These forces were conceptualized by using Lewin (1951) and the Compact Oxford English Dictionary (1991) in the following way:

- * Individual forces are the specific attributes or identifying traits of an individual such as one's own will, personality, background, experience, knowledge, values, or beliefs. An individual is a distinct entity, distinguished by these specific attributes or identifying traits. Individual forces are regarded separately from a group or from society.
- * Organizational forces are the administrative or executive structure of an organization such as a school of public health, or those functionaries or policies which guide and allow the school to function, such as the organizational structure, rules and regulations, assigned tasks, expected attitudes, ideas, or behaviors.
- * Socio/political forces are the methods or tactics involved in managing a nation or a state, such as the activities or affairs of a government, governmental official/s, or a political party. Socio/political forces also include the principles, processes, and structure of a government in terms of how that

government functions and affects individuals (i.e. laws, regulations and restrictions).

- * Cultural forces are the socially transmitted behavior patterns, arts, beliefs, and other products of human work and thought typical of a population, community, class or society at a given time. Some examples of cultural forces are customs, traditions, values, beliefs, biases, communication styles, norms, mores, ways, and manners.

Expert panel:

An expert panel of five participants was established. A multi-disciplinary/ multi-cultural group of participants was selected in order to help limit distortions or erroneous assumptions and inferences in the analysis. This assisted in contextualizing and validating the data.

The expert panel members had backgrounds in public health, nursing, medicine, health education, curriculum development, pharmacology, law, and the military. Each participant was known to have extensive and varied international experience.

The first group member was born in Bolivia. He was a U.S. medical doctor and a Fellow of the American College of Surgeons. He retired at rank of Colonel from the U.S. Army Medical Corps and is currently a professor of surgery and an international health care consultant.

The second panel group member was born in the United

States. She holds a U.S. masters degree in nursing. A former Captain in the Army Nurse Corps, she is currently an Assistant Professor and Director of a university baccalaureate nursing program in the United States.

The third panel group member was born in Shanghai, and holds a medical degree from a Chinese university. He practiced in Shanghai as a neurosurgeon, and is a recent Master of Public Health graduate of the University of Hawaii's School of Public Health.

The fourth panel group member was born in the United States. He holds a bachelor of science degree from the College of Pharmacy at Rutgers University. A former member of the U.S. Peace Corps, he has practiced and consulted as a pharmacist in Saipan, Micronesia; Nairobi, Kenya; and various parts of the United States. He is also a recent Master of Public Health graduate of the University of Hawaii's School of Public Health.

The fifth panel group member was born in the United States. He holds a law degree from Washington University. Employed as an attorney in private practice, his emphasis is on commercial law. His international consulting experience included work in Seoul, South Korea; Bangkok, Thailand, Hanoi, Vietnam; and various cities in China.

Before beginning the discussion, the panel members were given a packet containing the sex ratio survey questions numbers 1 through 13, definitions of the four forces, and

specific process instructions (Appendix C). The group's task was to analyze and classify each survey question independently under the categories of the four forces which could influence the survey respondents to give a particular answer. Each question could fall into more than one category, but not more than three. If a question did fall into more than one category, it was to be ranked in order of importance of the force. If a question did not fit under one of the four categories of forces, it was to be placed under a "none of these" category. Ranking was coded as follows:

<u>Code</u>		<u>Ranking</u>
3	=	Most important force
2	=	2nd most important force
1	=	3rd most important force

After individually classifying and ranking each question, the panel held a discussion and debate concerning the reasons for their classification and ranking of the questions. As a result, some participants changed their final classifications or ranking of some of the responses.

Chinese researcher:

In order to validate the work of the expert panel, a Chinese researcher from Shanghai was asked to repeat the above exercise. However, he analyzed and classified each of the responses under the categories of the four forces. His task was to read each response and place it under one of the

four categories, which, in his opinion, influenced the survey respondent to give that answer. Although there were individual response differences between the expert panel categorization and the key informant categorization, the mean response categories were the same.

Frequency distributions:

Two sets of distributions were developed which included data from 1)the expert panel and Chinese researcher; and 2)the sex ratio survey questions numbers 1 through 13.

Expert panel distribution scores:

The classifications and rankings developed by the expert panel and the key informant were listed according to code numbers. The code numbers for each category were totaled for each of the sex ratio questions numbers 1 through 13. The mean scores for each of the four categories of forces individual, organizational, socio/political, and cultural, were determined for each question and for each response (Tables 8 & 9).

Data Display

The second major flow of content analysis activity was a display of the data. This is defined by Miles & Huberman as "an organized, compressed assembly of information that permits conclusion drawing and action" (1994, p. 11).

The two sets of distributions were organized into two data displays. The mean scores of responses to questions numbers 1 through 13 of the sex ratio survey were shown by a

table (Table 7), and a frequency distribution bar chart (Figure 2). The table and figure illustrate the questions that had high or low mean scores. The scores for each of the four categories of forces were displayed in tables allowing the principal investigator to readily determine the degree of the primary influence of force on each of the sex ratio questions numbers 1 through 13 (Tables 8 and 9).

Drawing Inferences

The knowledge, perceptions, and academic practices of selected faculty concerning the increasing sex ratio were determined by examining the sex ratio survey response frequency table and bar chart (Table 7, and Figure 2). Following this determination, data from two sets of data displays were matched: 1) the sex ratio survey response frequency table (Table 7) and the expert panel and key informant frequency tables (Table 8 and 9). This allowed inferences to be drawn about the selected factors (individual, cultural, organizational, and socio-political), and how they influenced the faculty knowledge, perceptions, and academic practices about the increasing sex ratio; supporting or hindering a curriculum change in schools of public health in China. The open-ended response data and the biographical and employment data provided additional information which assisted the expert panel and key informant in categorizing the data. This added to the richness of the study. Examples of actual narratives are

shown in chapter IV.

CHAPTER IV
FINDINGS

Demographics

The Three Schools of Public Health

Data were collected from schools of public health at three major universities in China: 1) Shanghai Medical University (SMU), in Shanghai, China; 2) The West China Medical University (WCMU), in Chengdu, China; and 3) The Beijing Medical University (BMU), in Beijing, China. All three Universities were located in major cities. Enrollment for these universities ranged from four to six thousand students. Enrollment in the schools of public health ranged from approximately 500 to 800 students. The male to female ratio for faculty members in the three schools of public health were: 1) SMU - 107:101; 2) WCMU - 76:61; and 3) BMU - 77:119. See Table 5 for a display of data for the schools of public health.

Study Sample

The study sample of survey respondents consisted of 17 faculty members, one Vice Dean, and two Deans, from three schools of public health in China. Of the 20 respondents, there were six full professors, seven associate professors, five assistant professors, one lecturer, and one graduate assistant. The two deans were full professors, and the vice dean was an associate professor (Table 5).

Table 5. Universities, Schools of Public Health, and Faculty Survey Responses

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>
UNIV:	SMU	SMU	SMU	SMU	SMU	SMU	WCMU	WCMU	WCMU	WCMU	WCMU	WCMU	WCMU	WCMU	BMU	BMU	BMU	BMU	BMU	BMU
UNIV.																				
ENRLMT:	4000	4000	4000	4000	4000	4000	6000	6000	6000	6000	6000	6000	6000	6000	5000	5000	5000	5000	5000	5000
SPH																				
ENRLMT:	>500	>500	>500	>500	>500	>500	780	780	780	780	780	780	780	780	--	--	--	--	--	--
EDUCATION:	MD	MD	MD	MD	MD	MD	MPH	MD	MPH	MD	MPH	MD	MD	MPH	MD	MD	MD	MD	MD	PhD
TITLE:	Asoc. Prof.	Prof.	Dean Prof.	Asoc. Prof.	Asoc. Prof.	Lectr.	Ast Prof.	Prof.	Grad. Asst.	Prof.	Asst. Prof.	Asoc. Prof.	Asst. Prof.	Dean Prof.	V. Dean Asoc. Prof.	Asoc. Prof.	Asoc. Prof.	Asoc. Prof.	Asst. Prof.	Asst. Prof.
SPLCTY:	Env.	Env.	Adm.	Demog. Adm.	Ed.	MCH	Adm. Ed.	Epi. Adm.	Env.	MCH	MCH	Adm.	MCH	Stats. Adm.	Adm. MCH	Demog.	Adm.	Epi.	Demog. MCH	Ed.
% RESEARCH TIME:	80	65	30	50	80	70	20	40	20	30	32	30	50	30	70	40	80	50	50	40

Key

SMU = Shanghai Medical Univ.	Env. = Environmental Health
WCMU = West China Medical Univ.	Adm. = Health Administration & Management
BMU = Beijing Medical Univ.	Demog. = Demography
Enrlmnt = Enrollment	Ed. = Health Education
Splcty = Specialty	MCH = Maternal & Child Health
Prof. = Professor	Epi. = Epidemiology
v. = Vice	Lectr = Lecturer
Grad. = Graduate	

Educational background:

Fifteen of the twenty respondents held a medical degree (M.D.). Of those holding an M.D. degree, two also held a Doctor of Philosophy Degree (Ph.D.); one held a Doctorate in Public Health (Dr.P.H.); and one had studied in a post doctoral program. Of these four respondents who held dual degrees, two obtained their second degree in the U.S. and one obtained the second degree in Japan. Of the five respondents without M.D. degrees, one held a Ph.D., and four held Masters Degrees in Public Health (MPH).

Employment specialty:

Three faculty members, one male from Shanghai Medical University, and two females from Beijing Medical University, specialized in demography. The remaining 17 respondents had various specialties within their school of public health. Some faculty members had more than one specialty.

Six faculty members specialized in health statistics and epidemiology, including the three faculty who specialized in demography. Three faculty specialized in environmental health, six in maternal and child health, three in health education, and seven in health administration and management (Table 5).

Research:

Table 5 provides a breakdown of approximate percentages of time spent on research by the twenty respondents. Some faculty conducted research in more than one area. The

figures in Table 5 are based on the number of research hours stated by the respondents as a percentage of the total number of hours spent by respondents for teaching, research, and administrative duties.

Ethnic & religious background:

All twenty of the study subjects were Han Chinese, with Mandarin being their primary language. None of the respondents claimed to follow a religious belief (Table 6).

Age, gender, and marital status:

The respondents ranged in age from 26 through 61 years, with a mean age of 41.8 years. The median age was 38.5, indicating that the ages were fairly evenly distributed. The three Deans were all males and their ages were 38, 52, and 53 years. Eight of the faculty members were females. Their ages ranged from 27 to 39, with a mean age of 34.3. The remaining respondents were males. Their ages ranged from 26 to 61 years, with a mean age for the males of 46.8 (Table 6). All of the subjects were married except one 32 year old female.

Table 6. Demographic Survey Responses

SUBJ.	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>
GENDER:	M	M	M	M	F	F	F	M	M	M	F	M	M	M	F	F	M	M	F	F
AGE:	41	59	53	44	34	32	39	59	26	61	27	55	46	52	38	38	33	33	34	32
M/S:	M	M	M	M	M	S	M	M	M	M	M	M	M	M	M	M	M	M	M	M
CHLDRN:	1m	1f	2m	1f	1f	0	1f	2m	0	1f	0	2m	1m	3f	1f	1f	1f	0	0	0
GR-CHLDRN:	0	0	0	0	0	0	0	1m	0	0	0	0	0	0	0	0	0	0	0	0
ETHNIC:	CH	CH	CH	CH	CH	CH	CH	CH	CH	CH	CH									
RELIGION:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prim Lng:	CH	CH	CH	CH	CH	CH	CH	CH	CH	CH	CH									
RESIDENCE:	C	C	C	C	Ct	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
RAISED:	C	Ct	Cr	C	Ct	C	Ct	C	Ct	Ct	C	Ct	C	Cr	Ct	C	C	C	C	C
FATHER:	FW	Bus	BD	FW	Act	UP	Clk	Clk	Eng	MD	Eng	Ck	Tch	Frm	MD	MD	Tch	PO	UP	FW
MOTHER:	FW	FW	FW	FW	Tch	MD	Clk	HW	Tch	HW	Eng	HW	Tch	Frm	MD	Nrs	FD	Clk	UP	FW
SIBLINGS:	2m/1f	1m/4f	2m/2f	2m/1f	2m	1m	2m/3f	2m/2f	2f	1m/1f	1f	2m/1f	1m/2f	2m/1f	1m	1m/1f	1m	3f	1m	1m/2f

Key:

MS = Marital Status	C = City	FW = Factory Worker	Act = Accountant
Prim Lng. = Primary Language	Ct = County	Bus = Business	Tch = Teacher
CH = Chinese	Cr = Countryside	BD = Bus Driver	Nrs = Nurse
HW = House Wife	Clk = Clerk	Eng = Engineer	MD = Medical Doctor
Frm = Farmer	FD = Fire Dept.	UP = Univ. Professor	PO = Public Official

Family background:

Family background information is shown in Table 6. All but one of the subjects lived in a city near the university where they taught. The faculty member not living in a city was a young woman who lived just outside of the city limits in a large suburban county.

Most of the respondents were raised in either a city or in a large county just outside of a major city, with 11 respondents raised in a city, seven raised in a large county. Two subjects spent the first 20 years of their life in the countryside.

Respondents were asked to state their parent's and grandparent's occupations. The nature of occupations in China differ from those in the U.S. Therefore occupations were only generally categorized as: 1)professional (medical doctor, university professor, public official); 2)semi-professional (accountant, teacher, engineer, nurse); and 3)working class (factory worker, bus driver, cook, clerk, farmer, house wife). There were major differences between the family backgrounds of the female and male respondents.

Six of the eight female respondents had parents who were both professionals or semi-professionals. Three of the eight females had parents who were both professionals. One had a grandfather who was a professional and a grandmother who was a semi-professional. Two of the females had parents who were both of a working class background.

Of the twelve male respondents, none had parents who were both professionals. One had parents who were both semi-professionals. Seven of the male respondents had parents who both were of working class background.

Children and siblings:

Six respondents did not have any children at the time of the survey. Ten respondents had only one child, eight of them female, and two of them male. Three respondents had two children, both male. Only one respondent had three children, all female. One respondent had one male grandchild. The average number of children per family was one. Most respondents had been raised in larger families with an average of 2.6 children (Table 6).

Appropriateness of sample:

It was believed that all of the respondents were in positions to be aware of, have perceptions about, and possibly do something about the sex ratio issue through their teaching, and or research. Because of this, they would also be in a position to assist a curriculum change so that it becomes a force for helping to address sensitive social issues such as the sex ratio in China. This is based on the understanding that the curriculum is defined as the total program of teaching and learning experiences within the schools of public health, including: 1)teaching (courses as well as other learning experiences); 2)research conducted; 3)internal and external collaboration; and

4) socialization (the processes by which people selectively acquire the values, attitudes, interests, skills, and knowledge of the group).

Sex Ratio Knowledge, Perceptions,
and Academic Practices Coding Responses

The interviews revealed interesting information about the knowledge, perceptions, and academic practices of faculty from schools of public health in China regarding the increasing sex ratio. Key findings are arranged according to the sex ratio questions, and shown in Table 7.

After coding, tallying and determining the mean response for each survey question, the median response was found to be 1.65 (see Table 7). Any survey question which received a mean response higher than the median number (1.65) indicated a positive overall response for addressing the sex ratio issue. Any survey question which received a mean response lower than the median number (1.65) indicated a negative overall response for addressing the sex ratio issue.

Overall, faculty revealed they were aware of the increasing sex ratio, and they believed it was a problem that schools of public health should be addressing. However, very little was being done to address the problem. It was also revealed that faculty felt that a strong son preference was the main underlying reason for the increasing sex ratio, coupled with the "One Child" Policy which made

having a son difficult for everyone to achieve. Under-reporting or concealment of births, and to some extent gender-specific infanticide were seen as the methods of achieving the desired sons, thereby causing the increasing sex ratio in China. Gender specific abortion was not seen as a method of achieving the desired sons.

Table 7. Coded Responses from Sex Ratio Questions

SUBJ.	Questions												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	2	1	1	1	1	1	1	2	2	1	1	2	1
2	2	2	2	1	1	1	1	1	1	1	1	2	1
3	2	1	1	1	1	1	1	2	1	1	2	2	2
4	2	2	2	1	1	2	1	2	1	2	2	2	2
5	2	2	2	1	1	1	2	2	2	1	1	2	2
6	2	2	2	2	1	1	1	2	1	1	2	2	2
7	2	2	2	1	1	1	1	2	2	2	2	2	2
8	2	2	2	1	1	1	1	2	1	2	2	2	2
9	2	2	1	1	2	1	1	2	1	1	1	2	2
10	2	2	2	1	1	1	1	2	1	2	2	2	2
11	2	2	2	1	1	1	1	2	2	2	2	2	2
12	1	1	1	1	2	1	1	1	2	2	1	2	1
13	2	2	2	1	1	1	1	2	1	2	1	2	2
14	2	2	2	1	1	1	2	2	1	2	2	2	2
15	2	2	2	2	1	2	2	1	2	1	2	2	2
16	2	2	2	2	1	2	1	2	2	2	2	2	2
17	2	2	2	1	1	1	1	2	2	2	2	2	2
18	1	1	2	1	1	1	1	1	1	2	2	2	2
19	2	1	2	1	2	1	2	2	2	2	1	2	2
20	2	2	2	1	2	1	2	2	2	2	2	2	2
TOTAL:	38	35	36	23	24	23	25	36	30	33	33	40	37
% OF 1s:	10	25	20	85	80	85	75	20	50	35	35	00	15
% OF 2s:	90	75	80	15	20	15	25	80	50	65	65	100	85
MEAN:	1.90	1.75	1.80	1.15	1.20	1.15	1.25	1.80	1.50	1.65	1.65	2.00	1.85
RANGE:	1.15 - 2.00												
MEDIAN:	1.65 (a mean > or = 1.65 reflects a positive response; < 1.65 reflects a negative response).												

Sex Ratio Survey Questions

1. Are you aware of reports concerning the increasing sex ratio in China?
2. Do you believe there is an increasing sex ratio in China?
3. If so, do you believe that the schools of public health can assist in resolving this issue?
4. Are you teaching any classes which address the sex ratio issue in China?
5. To your knowledge, is this subject addressed in the curriculum of some other class/es in your school of public health?
6. Are you, or have you in the past collaborated/networked/ advised any part of the Chinese government or a non-governmental agency regarding this issue?
7. Do you know of anyone in your school of public health who has assisted with addressing this issue?
8. Do you believe that one cause of the increasing sex ratio could be under-reporting or concealment of births, in some parts of China?
9. Do you believe that one cause of the increasing sex ratio could be gender-specific abortion, in some parts of China?
10. Do you believe that one cause of the increasing sex ratio could be gender-specific infanticide or abandonment, in some parts of China?
11. Do you believe that the "One-Child" Policy could contribute to the rising sex ratio, in some parts of China?
12. Do you believe that there is a strong preference for sons over daughters among some parents in China?
13. Do you believe that son preference could contribute to the rising sex ratio, in some parts of China?

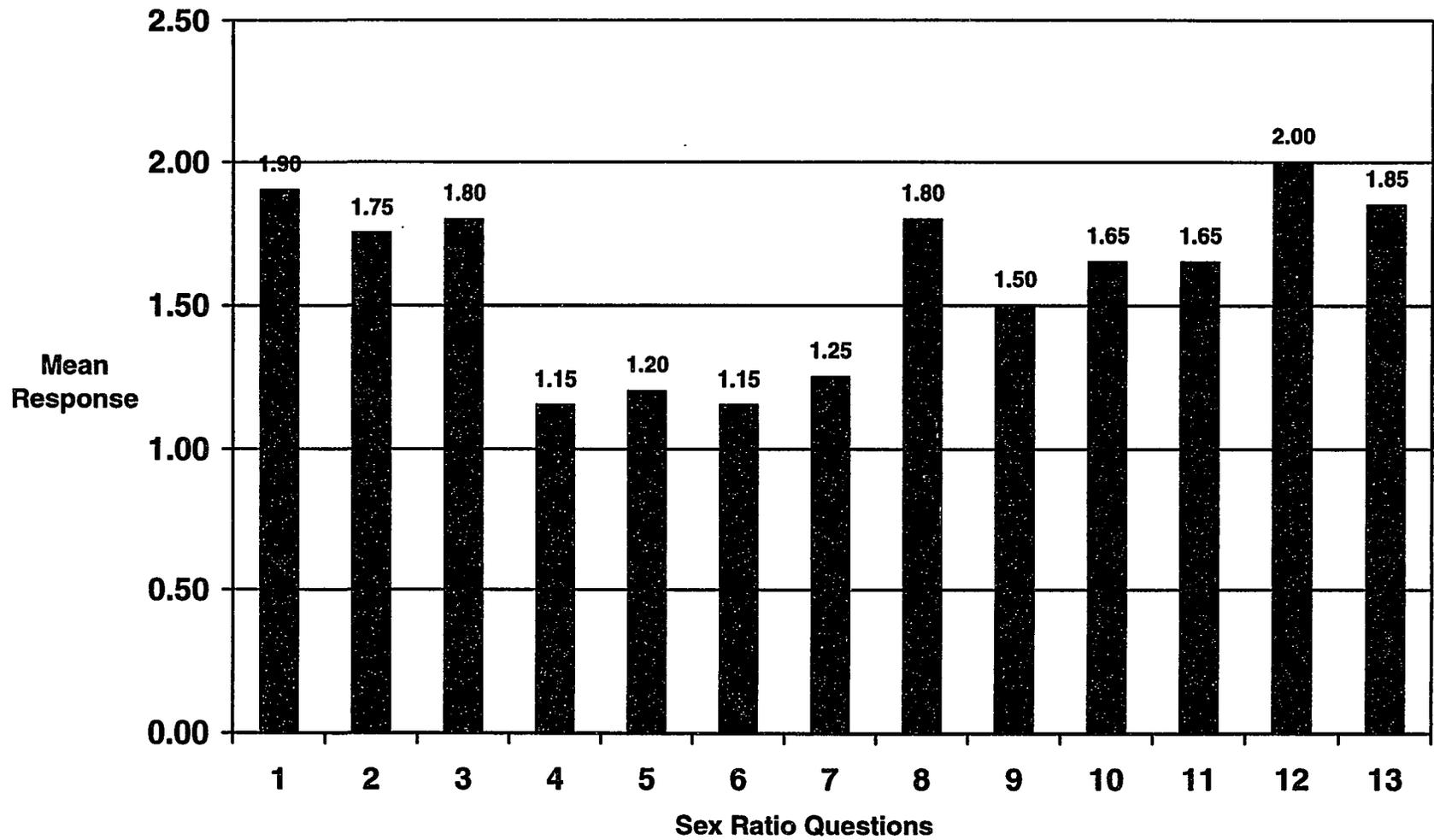


Figure 2. Mean Responses to Sex Ratio Questions

Each of the sex ratio questions numbers 1 through 13 are reviewed in the following paragraphs. Responses are illustrated by quotes from selected respondents in order to explain the frequency coding procedure.

Number 1. Are you aware of reports concerning the increasing sex ratio in China? Response data to question number 1 indicated that most of the study subjects were aware of the increasing sex ratio in China (1.90). Examples of responses and how they were coded are:

1 = (10% of the responses).

no; not sure; don't think so.

2 = (90% of the responses).

a little bit; did not read data, only hear from friends; sometimes I hear from professors and friends about this; yes; I have data showing the increase in sex ratio for the general population (sites data).

Number 2. Do you believe there is an increasing sex ratio in China? The response data to question number 2 showed that most respondents did believe that the sex ratio was increasing above normal (1.75). Examples of responses and how they were coded are:

1 = (25% of the responses)

no; just by nature can balance this; not yet; I don't know; not sure; I think more females than males in China; use to be problem, no more.

2 = (75% of the responses)

maybe; I think so; in some parts of China; especially north of China, and in countryside, relationship with daughter is close in cities; yes; especially in poor, western, rural areas, possible in other areas too.

Number 3. If so, do you believe that the schools of public health can assist in resolving this issue? Responses to question number 3 indicated that most of the study subjects believed that their schools of public health could, and should assist in resolving the sex ratio issue (1.80).

Examples of responses and how they were coded are:

1 = (20% of the responses).

no; nothing to do with this; maybe not, in some fields we can do something, with this, we follow national policy; not sure.

2 = (80% of the responses).

maybe; indirectly, by educating the students; do some research about this; yes; make some evaluation/investigation/survey, then to find out about the problem and share results and ideas with school and government; health education of students and society; students can go out to countryside to educate; put students in Gyn hospital, educating patients on abuse of sonogram exam; establish research program on how to

complete birth reporting system; research the economic development and promote other thought; give suggestions for policy management to government; through health education of students to go to countryside for field practice about this problem; have some seminar with government officials to discuss problem with faculty and clarify and provide facts.

It is important to note that responses to questions numbers 4, 5, 6, and 7 indicated that not much was being done in the schools of public health regarding the increasing sex ratio.

Number 4. Are you teaching any classes which address the increasing sex ratio issue in China? Most respondents did not address the sex ratio issue in their own classes (1.15). Only one faculty member from the three schools of public health stated that she addressed the increasing sex ratio as a social issue in her teaching. This respondent (Table 5, #16) was one of three respondents who studied outside of China. She was the only respondent who held a Dr.P.H., which she obtained from Johns Hopkins University in the U.S. Examples of responses and how they were coded are:

1 = (85% of the responses).

no; there is a chapter which deals with the sex ratio in general (definitions, numbers); the ratio is discussed generally, showing the numbers, not a

problem; just statistics of the ratio, no discussion about the problem.

2 = (15% of the responses).

when talking about population situation, I mention this question; I teach the general concept of sex ratio at birth, I introduce the problems and concerns of the increasing sex ratio; I teach them about ratio in general, then mention this is problem.

Number 5. To your knowledge, is this subject addressed in the curriculum of some other class/es in your school of public health?

Most respondents to question number 5 did not believe that the increasing sex ratio was being addressed in other courses within the school's curriculum (1.20). They thought that the sex ratio was taught as a subject in statistics, but only as a statistical fact without addressing social implications. Examples of responses and how they were coded are:

1 = (80% of the responses).

no; don't know; in Community and Social Medicine they discuss population and sex ratio for whole country...general discussion, not as a problem; Social Medicine and Statistics they probably talk about ratio but not as problem; in Health Statistics, they introduce the population index

and general information; in Medical Demographics, they teach ratio, but not issue or problem.

2 = (20% of the respondents).

Maybe, Child Health and Statistics; Maybe in Child and Adolescent Health, they report numbers; Maybe in Biostatistics; yes, my colleague, you interviewed her on Tuesday.

Number 6. Are you, or have you in the past collaborated/ networked/ or advised any part of the Chinese government or a non-governmental agency regarding the increasing sex ratio issue? Very few faculty (1.15) had collaborated, networked, or advised any part of the Chinese government or any non-governmental agency concerning the increasing sex ratio. Examples of responses and how they were coded are:

1 = (85% of the responses).

no; no, but we advocate for female students in school of public health...some schools prefer male students.

2 = (15% of the respondents).

not official meeting, an informal social talk; a little bit, working with materials on population census analysis. only back from DrPH in U.S. (Johns Hopkins) one year...reported my research at reproductive health conference in Shanghai...found birth order positively correlated with sex

ratio...focus was on second and third birth order and more, ratio very high.

Number 7. Do you know of anyone in your school of public health who has assisted with addressing this issue? Very few faculty (1.25) knew of other faculty that had collaborated, networked, or advised any part of the Chinese government or any non-governmental agency concerning the increasing sex ratio. Examples of responses and how they were coded are:

1 = (75% of the responses).

no; don't know of anyone; don't think so. we want to but we have no time...we plan to study this when we can...no time and no money to support this.

2 = (25% of the responses).

I think Chair of social medicine and statistics might have done something; maybe child health and statistics; maybe in bio-statistics...I'm not really sure; possibly someone in health statistics; someone in medical demography published paper on population census analysis and sex ratio in rural areas (Journal of Chinese Health Education).

Response data from questions numbers 8, 9, and 10 indicated that respondents strongly believed that one cause of the increasing sex ratio was the under-reporting or

concealment of births in China (1.80). They somewhat thought that gender-specific infanticide was contributing to the problem (1.65). But question number 9 indicated that it was generally not believed by respondents that gender-specific abortion was a contributing cause of the increasing sex ratio (1.50). Examples of responses and how they were coded are:

Number 8. Do you believe that one cause of the increasing sex ratio could be under-reporting or concealment of births? Examples of responses and how they were coded are:

1 = (20% of the responses).

no; don't know; information system is not good, but I do not think sex ratio is problem.

2 = (80% of the responses).

maybe in both rural and urban, but more in rural areas; I see this in rural area when I go collect data for some other research project...I survey about breast feeding and know they had a girl, but when I get there, they have sent girl away...they do not report so they can have another child; yes, this is common practice, send to relatives & friends...keep changing female children around; they usually report male child for their one child; yes, many parents want son, so if they hide daughter, they don't have to report; peasants in

all provinces around the cities have many children and don't record it; government does not have support to get exact numbers; they move a lot...on boarder of cities and countryside, control of area is difficult and not good, so parents can get by not recording births; yes...it is common to conceal the female by taking to relatives or friends, or just leave female baby in street for some kind man or woman to pick up; friends tell me that the number of births reported for immunizations was a lot higher than the government census survey; not many official registers in far rural areas, so they can not catch each birth; Much more moving around now...no more ration coupons to hold people in one area; Reporters want to keep birth rate low, so they are happy to miss female birth counts;

Number 9. Do you believe that one cause of the increasing sex ratio could be gender-specific abortion?

Examples of responses and how they were coded are:

1 = (50% of the responses).

no; don't know; technology is too poor; too difficult to get; this is illegal; I don't think parents want to do this; not possible; government and hospitals don't allow this; in rural areas, they don't have money or equipment to do this;

this action is prohibited in our country; very difficult in China, not enough technology.

2 = (50% of the responses).

maybe in some areas; maybe in county where it is a little bit rural, but there is a hospital...they have a sonogram machine to determine fetus gender...not sure how done exactly; maybe, a little bit; health education inhibits this, but if pregnant woman has a medical doctor relative she may obtain sonogram illegally; yes, they have some traditional method, perhaps some Chinese medicine to abort. woman can determine female fetus from traditional method...if mother is carrying female, she believes there are certain cravings or skin changes...then she makes herself abort.

Number 10. Do you believe that one cause of the increasing sex ratio could be gender-specific infanticide or abandonment? Examples of responses and how they were coded are:

1 = (35% of the responses).

no; in no area; this is a crime, they would be arrested and punished; we don't know; most people don't do this, but I do hear reports about diseased/deformed babies being killed.

2 = (65% of the responses).

I think so; In rural areas, but also possible in

other areas; yes, put baby in bath water and drown...just make female die somehow; yes, in low economic areas, family want son for hard work...drown daughter; hold under water to die or leave out in street; yes, I hear from many friends and colleagues about this; yes, I hear from news paper and TV that some people do this...I hear in bath water after birth; yes, we have reports on this;

Number 11. Do you believe that the "One Child" Policy could contribute to the rising sex ratio? Most respondents did believe the "One Child" Policy had something to with the increasing sex ratio. Examples of responses and how they were coded are:

1 = (35% of the responses).

no; don't know; not really, in urban area, one is enough, some young don't want any;

2 = (65% of the responses).

I think so, indirectly; yes, because of the reporting problem; yes, we must improve economic and academic level in country side to solve this problem; yes, because people only want boy for one child; on one hand policy only allows one or two children, on other hand people want only boy or maybe a lot of children for work; yes, policy enforcement not strong enough; Yes, reporters want

to keep birth rate low, so they are happy to miss female birth counts; If our policy could change a little, for more rural areas to allow more children, this could be solved.

Question numbers 12 and 13 received strongly positive responses (2.00 & 1.85). All respondents believed there was a strong preference for sons over daughters among parents in China, and that this son preference contributed greatly to the rising sex ratio. Examples of responses and how they were coded are:

Number 12. Do you believe that there is a strong preference for sons over daughters among some parents in China? Examples of responses and how they were coded are:

1 = (00% of the responses).

there were no respondents who fell into this category of coding.

2 = (100% of the responses).

yes, they rely on sons for hard work; yes, this is Asian tradition, the boy is king; yes, they need sons for hard work and old age care; customs in rural areas...sons develop family line and family name; yes, daughter is lost labor; yes, especially where medical service is poor, family want sons...stronger/more healthy...female is weak; yes, Confucian thought...son is family; yes, a Chinese habit...is all over China; yes, this

everywhere in China...parents prefer sons because is tradition and son is family name.

Number 13. Do you believe that son preference could contribute to the rising sex ratio in China? Examples of responses and how they were coded are:

1 = (15% of the responses).

no, parents can not control this, if they have female, they have female; don't know; no, sex ratio is balanced.

2 = (85% of the responses).

somewhat; yes; parents keep having babies until it is a boy; yes, if economic situation improves for woman, they will be valued more...sex ratio will balance; yes, this is social problem...when women are equal, no preference for sons and no sex ratio imbalance; yes, because parents always looking for traditional methods to have a boy; yes, there is a lot of talking about how women can conceive a boy; of course...when employment discriminates between male and female, these things show male is better than female, our society continues to prefer male...we must let people know that male and female are equal!

Influence of Factors on Responses to the Sex Ratio Survey

Findings from the key informant who evaluated each response and identified the influencing factor are shown in

Table 8. Scores for each question total twenty because the key informant examined responses from the twenty survey respondents.

Findings from the five expert panel members, who analyzed the questions and categorized them in order of priority (first, second, and/or third) of the strength of the influence of the factors, are shown in Tables 9. The highest possible score for any one factor per question is fifteen, if each panel member were to give the highest influence score of three for a factor. A score of zero is possible if none of the panel members thought a particular factor was an influence for a specific question.

The influencing factor for each survey question is explained below, along with response quotes, indicating why responses were classified in each category.

In general, socio-political factors were found to be the primary influence on respondents in answering question numbers 1, 3, and 6. Question number 1 sought to determine the awareness of respondents concerning the increasing sex ratio. Question number 3 explored whether or not respondents believed they should be doing something about the increasing sex ratio, and question number 6 sought to determine whether or not respondents were actually taking any action to assist in addressing the issue. Respondents were aware of the increasing sex ratio, and they believed it was a problem that schools of public health should be

addressing. However, very little was being done to assist with addressing the problem.

Organizational factors were found to be the primary influence on respondents in answering question numbers 5 and 7. These questions sought to determine the respondent's knowledge of activities of other faculty or of their school of public health in addressing the sex ratio. Respondents stated that they had almost no knowledge of any activities taking place regarding the increasing sex ratio, which strongly indicated that the schools of public health were not in fact undertaking such activities.

Individual factors were found to be the primary influence on respondents in answering question numbers 2 and 4. Question number 2 explored the respondent's beliefs as to whether or not the sex ratio was increasing in China. Question number 4 sought to determine whether or not the respondents were teaching any classes which addressed the sex ratio issue. Respondents did believe there was an increasing sex ratio, but only one faculty had introduced the problem, and two faculty had only somewhat mentioned the issue in their classrooms.

Finally, Cultural factors were found to be the primary influence on respondents in answering question numbers 8 through 13. These questions explored the respondent's beliefs as to the specific causes for the increasing sex ratio. Under-reporting or concealment of births, gender-

specific infanticide, a strong son preference, and the "One Child" Policy, were all seen as causes for the increasing sex ratio. Gender specific abortion was not seen as a cause.

Table 8. Key Informant Scores of the Influencing Factors
(According to Response Data)

<u>FACTORS</u>	<u>QUESTIONS</u>												
	1	2	3	4	5	6	7	8	9	10	11	12	13
INDIVIDUAL	4	18	0	20	0	0	0	1	0	0	0	0	0
CULTURAL	0	2	0	0	0	0	0	19	20	20	20	20	20
ORGANIZATION	1	0	0	0	20	0	20	0	0	0	0	0	0
SOCIO/POL.	15	0	20	0	0	20	0	0	0	0	0	0	0

Table 9. Expert Panel Scores of the Influencing Factors
(According to the Question)

<u>FACTORS</u>	<u>QUESTIONS</u>												
	1	2	3	4	5	6	7	8	9	10	11	12	13
INDIVIDUAL	9	13	5	12	7	4	7	11	11	10	10	7	10
CULTURAL	1	9	4	0	2	0	0	12	14	15	15	15	15
ORGANIZATION	6	1	6	2	15	3	15	1	0	0	0	0	1
SOCIO/POL.	11	5	15	6	2	15	3	4	4	4	3	2	1

Each of the sex ratio questions, numbers 1 through 13 are reviewed in the following paragraphs and responses are illustrated by quotes from selected respondents in order to explain the coding procedure for the influencing factors.

Number 1. Are you aware of reports concerning the increasing sex ratio?

Most respondents were aware of reports concerning the increasing sex ratio. The expert panel and key informant found the most influencing factor to be socio-political.

It was decided by the expert panel that it was first up to the government (socio-political) to get the word to the population regarding this issue, prior to it being up to the individual to read and receive this information.

Examples of responses which supported this finding were:

yes, I have data showing the increasing sex ratio for general population; not in detail, I have not read that data yet; yes, I hear this, I know of this data. Other responses were simply yes or no.

Number 2. Do you believe there is an increasing sex ratio in China?

Most respondents did believe there was an increasing sex ratio. It was decided by the expert panel and key informant that it was first up to the individual to believe the reports or commentary they had heard based on their individual knowledge and background.

Examples of responses which supported this finding were:

I think perhaps this is in countryside; I think in rural, small areas; yes, especially north of China

and in countryside, but I think relationship with daughters is close in cities.

Number 3. Do you believe that the schools of public health can assist in resolving this issue?

Most respondents believed that their school of public health could assist in resolving the increasing sex ratio. It was decided by the expert panel and key informant that the Socio-Political factor was the primary influencing factor for this question because of the control that the Chinese Government had over the structure of the curriculum and funds available for specific research projects. It was generally thought that if the government did not support a change in terms of funding or otherwise, the organization or the individual would not support it either. This type of control would affect the individual's thinking regarding what could or could not be done. Examples of responses which supported this finding were:

Yes, through investigation to reveal facts, then present to government to make policy; Make some evaluation/investigation/survey, then to find out about the problem and share results with government for support; Provide some research evidence, then give suggestions for policy management to government; In this field we follow national government; We can teach...do research...advise; faculty can advise government

about research; Yes, teaching, research and collaboration with the State Family Planning Commission and other government agencies to help.

Number 4. Are you teaching any classes which address the sex ratio issue in China?

Most respondents were not teaching any classes which addressed the increasing sex ratio issue. It was decided by the expert panel and key informant that the individual factor was the primary influencing factor for this question because it was up to the individual faculty member to teach the specific content that they felt necessary within their required classes.

Examples of responses which supported this finding were:

There is a chapter in disease statistics that deals with sex ratio in general (definitions / numbers / but not why); The ratio is discussed in general, not showing numbers as a problem; Just the statistics of the ratio...no discussion about the problem; I teach a small part on birth rates, demographics in general, not issue; In family planning I talk about population situation of China, I mention this question; When I teach the general concept of sex ratio at birth, I introduce the problems and concerns of the increasing sex ratio.

Number 5. To your knowledge, is this subject addressed in the curriculum of some other class/es in your school of public health?

Most respondents were not aware of this subject being taught in any classes in their school of public health. It was decided by the expert panel and key informant that the Organizational factor was the primary influencing factor for this question because it was up to the schools of public health to support and encourage involvement with issue topics of concern to the discipline; guiding the functioning of the school of public health (organization).

Examples of responses which supported this finding were:

In health statistics, they introduce the population index and general information; Maybe in child and adolescent health they report sex ratio numbers; Maybe in bio-statistics; My colleague in health statistics talks about this...she was interviewed on Tuesday. Other responses were simply no.

Number 6. Are you, or have you in the past collaborated/ networked/ advised any part of the Chinese government or a non-governmental agency regarding this issue?

Most respondents had not collaborated/networked/ or advised any part of the Chinese government or a non-

governmental agency regarding the increasing sex ratio. It was decided by the expert panel and key informant that the Socio-Political factor was the primary influencing factor for this question because it was believed that academics would not collaborate/network/or advise the government unless the government directed or at least encouraged them.

Examples of responses which supported these findings were:

Yes, participated in research on population census data analysis and fertility rates nation wide; yes, I had informal talk with Ministry of Public Health (Department of Primary Health)...I understand problem is just beginning; all other responses were "no". Would like to very much, but must do other research...no time and no money to support this. Government must first make survey to find true ratio, then give education to schools and community about problem...must view male and female the same. First government must explain that reporting is important to improve economic conditions and plan for community. Government must first improve reporting system to see what real situation is. Very difficult problem...maybe government keep secret the true statistics...they know the numbers but maybe conceal this information to protect themselves. I am very

interested in this work and would like to be involved...family planning policy is effective in decreasing population but not effective in balance of gender. I am interested to do some research about this but no support.

Number 7. Do you know of anyone in your school of public health who has assisted with addressing this issue?

Most respondents did not know of anyone in their school of public health who was addressing this issue. It was decided by the expert panel and key informant that the Organizational factor was the primary influencing factor for this question because, as with question #5 it was up to the schools of public health to encourage involvement with issues of concern to the discipline, as well as to keep the faculty informed, guiding the functioning of the school of public health (organization).

Examples of responses which supported these findings were:

Maybe someone in family planning teaching but probably very little; not exactly, maybe someone in department of statistics.

Number 8. Do you believe that one cause of the increasing sex ratio could be under-reporting or concealment of births?

Number 9. Do you believe that one cause of the increasing sex ratio could be gender-specific abortion?

Number 10. Do you believe that one cause of the increasing sex ratio could be gender specific infanticide or abandonment?

Number 11. Do you believe that the "One Child" Policy could contribute to the increasing sex ratio?

Number 12. Do you believe that there is a strong preference for sons over daughters among parents in China?

Number 13. Do you believe that son preference could contribute to the increasing sex ratio?

Most respondents thought that under-reporting or concealment of births, gender specific infanticide or abandonment, and the "One Child" Policy were contributing causes to the increasing sex ratio. However, the majority of respondents did not believe that gender-specific abortion was a cause. All respondents believed there was a strong preference for sons among parents, and most believed this contributed to the increasing sex ratio.

It was decided by the expert panel and key informant that the Cultural factor was the primary influencing factor for each of these questions because the respondents would base their answer on their knowledge of their culture's beliefs, traditions, customs, habits, and mores. These questions asked about socially transmitted behavior patterns which are typical of the respondent's population or society.

Examples of responses which supported these findings

were:

Question Number 8. Do you believe that one cause of the increasing sex ratio could be under-reporting or concealment of births?

information system is not good; maybe in both rural and urban area, but more in rural areas; I see this in rural area when I go collect data for some other research project...I survey about breast feeding and know they had a girl, but when I get there, they have sent girl away...they do not report so they can have another child; yes, this is common practice, send to relatives & friends...keep changing female children around; they usually report male child for their one child; yes, many parents want son, so if they hide daughter, they don't have to report; peasants in all provinces around the cities have many children and don't record it; government does not have the support to get the exact numbers; they move a lot...on boarder of cities and countryside, control of area is difficult and not good, so parents can get by not recording births; yes...it is common to conceal the female by taking to relatives or friends, or just leave female baby in street for some kind man/woman to pick up; friends tell me that the number of births reported for

immunizations was a lot higher than the government census survey; not many official registers in far rural areas, so they can not catch each birth; There is much more moving around now because no more ration coupons to hold people in one area; Reporters want to keep birth rate low, so they are happy to miss female birth counts;

Question number 9. Do you believe that one cause of the increasing sex ratio could be gender-specific abortion?

technology is too poor; too difficult to get; this is illegal; I don't think parents want to do this; not possible; government and hospitals don't allow this; in rural areas, they don't have money or equipment to do this; this action is prohibited in our country; very difficult in China, not enough technology; maybe in some areas; maybe in county where it is a little bit rural, but there is a hospital...they have a sonogram machine to determine fetus gender...not sure how done exactly; maybe, a little bit; health education inhibits this, but if pregnant woman has a medical doctor relative she may obtain sonogram illegally; yes, they have some traditional method, perhaps some Chinese medicine to abort. woman can determine female fetus from traditional method...if mother is carrying female, she

believes there are certain cravings or skin changes...then she makes herself abort.

Question Number 10. Do you believe that one cause of the increasing sex ratio could be gender-specific infanticide or abandonment?

this is a crime, they would be arrested and punished; we don't know; most people don't do this, but I do hear reports about diseased/deformed babies being killed. I think so; In rural areas, but also possible in other areas; yes, put baby in bath water and drown...just make female die somehow; yes, in low economic areas, family want son for hard work...drown daughter; hold under water to die or leave out in street; yes, in bath water after birth.

Question Number 11. Do you believe that the "One Child" Policy could contribute to the increasing sex ratio?

in urban area, one is enough, some young don't want any; indirectly; yes, because of the reporting problem; yes, we must improve economic and academic level in country side to solve this problem; yes, because people only want boy for one child; on one hand policy only allows one or two children, on other hand people want only boy or maybe a lot of children for work; yes, policy

enforcement not strong enough; Reporters want to keep birth rate low, so they are happy to miss female birth counts; If our policy could change a little, for more rural areas to allow more children, this could be solved...as Chinese people get older they want many people in family.

Question Number 12. Do you believe that there is a strong preference for sons over daughters among parents in China?

yes, they rely on sons for hard work; yes, this is Asian tradition, the boy is king; yes, they need sons for hard work and old age care; customs in rural areas...sons develop family line and family name; yes, daughter is lost labor; yes, especially where medical service is poor, family want sons...stronger/more healthy...female is weak; yes, Confucian thought...son is family; yes, a Chinese habit...is all over China; yes, this everywhere in China...parents prefer sons because is tradition and son is family name.

Question Number 13. Do you believe that son preference could contribute to the increasing sex ratio?

yes; parents keep having babies until it is a boy; yes, if economic situation improves for woman, they will be valued more...sex ratio will balance; yes, this is social problem...when women are

equal, no preference for sons and no sex ratio imbalance; yes, because parents always looking for traditional methods to have a boy; yes, there is a lot of talking about how women can conceive a boy; of course...when employment discriminates between male and female, these things show male is better than female, our society continues to prefer male...we must let people know that male and female are equal!

Summary

Interpretation of the frequency distributions of the responses to the survey, and responses by the expert panel and key informant regarding influences of the four factors have been presented in this chapter. This presentation of what has been found is a prelude to the discussion of what these findings mean in the context of this investigation.

CHAPTER V

DISCUSSION and CONCLUSIONS

Discussion of the Findings

This discussion focuses on addressing the research questions, and interpreting the findings detailed in Chapter IV in relation to those research questions which are repeated below:

1. What are the knowledge, perceptions, and academic practices of selected faculty from schools of public health in China about the increasing sex ratio?

2. How do the selected factors (individual, cultural, organizational, and socio-political) influence the faculty knowledge, perceptions, and academic practices about the increasing sex ratio, supporting or hindering a curriculum change in schools of public health in China?

Summary of Findings for Research Question Number 1

The findings, presented in Chapter IV, indicated that the faculty were aware of the increasing sex ratio, and that they believed it was a problem that schools of public health should be addressing. However, the faculty members were doing very little to address the problem. The findings also revealed that faculty members felt that a strong son preference was the main underlying reason for the increasing sex ratio, which coupled with the "One Child" Policy made having a son difficult for everyone to achieve. Under-

reporting or concealment of births, and to some extent gender-specific infanticide were seen as the methods by which sons were achieved, thereby causing the increasing sex ratio in China. Gender specific abortion was not seen as a method of achieving the desired sons.

Summary of Findings for Research Question Number 2

The findings, presented in Chapter IV, indicated that socio-political factors were the primary influence on the respondents' awareness of the increasing sex ratio, their belief that their school of public health should be doing something about the increasing sex ratio, and their lack of activity in assisting to address the issue.

Organizational factors were found to be the primary influence on the respondent's lack of knowledge of activities of other faculty or in their school of public health in addressing the sex ratio issue.

Individual factors were found to be the primary influence on the respondents' beliefs that the sex ratio was increasing in China, and the respondents' not addressing the sex ratio as a problem in their classes.

Finally, Cultural factors were found to be the primary influence on the respondent's beliefs that under-reporting or concealment of births, gender-specific infanticide, strong son preference, and the "One Child" Policy, were causing the increasing sex ratio, and their belief that gender-specific abortion was not a cause.

In eliciting a curriculum change using Lewin's force field diagnosis, it would be first necessary to determine what needs to be changed in terms of the faculty's knowledge, perceptions, and academic practices regarding the increasing sex ratio, in order to move the schools of public health in the direction of assisting to address the problem. Because faculty believed there was an increasing sex ratio, and they thought their schools of public health should be assisting with addressing this issue, their knowledge and perceptions need not be changed to any great extent. The change indicated would be to move the faculty, in terms of their teaching, research, or collaboration (academic practice), from belief to action.

By examining the factors which were identified as influencing the faculty's academic practices, it is possible to determine which factors are hindering a curriculum change to address the increasing sex ratio in schools of public health in China. The questions that sought to determine the faculty's academic practices regarding the increasing sex ratio were Numbers 4, 5, 6, and 7. Positive responses to these questions were all very low (see Chapter IV, Table 7). Responses to question Number 4 (Are you teaching any classes which address the increasing sex ratio issue?) were found to be influenced by the individual factor (see Chapter IV, Tables 8 and 9).. Responses to question Number 5 (Is this subject addressed in the curriculum of some other class/es

in your school of public health?) were found to be influenced by the organizational factor. Responses to question Number 6 (Are you, or have you in the past collaborated/networked/advised any part of the Chinese government or a non-governmental agency regarding the increasing sex ratio?) were found to be influenced by the socio-political factor. Finally, responses to question #7 (Do you know of anyone in your school of public health who has assisted with addressing this issue?) were found to be influenced by the organizational factor. In addition to the sex ratio questions it was found that there were not any faculty members who were personally involved in research regarding the increasing sex ratio (question Number 9 under employment history). Responses to question Number 9 would have been reflected in question Number 6 of the sex ratio had there been any research involvement with the increasing sex ratio.

In order to begin the change process of moving faculty from belief to action, the individual forces such as background, knowledge, experience, and one's own will would be examined with regard to why faculty are not teaching anything about the increasing sex ratio problem. The socio-political forces such as the principles, processes, and structure of the government would be examined with regard to why faculty are not collaborating/networking/ or advising any part of the Chinese government or a non-governmental

agency regarding the increasing sex ratio. The organizational forces such as the executive structure of the school of public health, or those functionaries or policies which guide and allow the school to function would be examined with regard to why faculty are not aware of activities going on in their schools of public health regarding the increasing sex ratio.

Interpretation

This section is an interpretation of the findings related to the Lewin force field framework.

In addition to examining the primary influencing factors which were found to influence why there were few academic practices regarding the increasing sex ratio, the following inferences can be drawn:

Individuals, organizations, and societies are made up of many forces, and many forces affect our actions, as can be demonstrated by observing the key informant and expert panel findings. This study focused on the primary influencing factors, but it must be noted that once those forces are examined, other forces should not be ignored. In other words, "everything is related to everything" (Knatson 1961, p. 1699). Thinking of personalities and behavior in this way, Knatson gives the example of peeling off concentric circles, the overlapping layers of the artichoke in order to understand the influences more directly applied to the core. Each socio-cultural variable that surrounds

each individual, influences his thoughts and behaviors. Just as the individual influences the cultural climate in which he lives, his physical, emotional, and psychological well-being is directly or indirectly influenced by that climate. To understand the faculty members as individuals, one must gradually remove the various forces from which they are encased and seek to understand as best we can by available research means, the nature of the impact of each of the forces.

The fact that faculty members are aware, and do believe the sex ratio is increasing, and that they feel their schools of public health should be addressing it, yet they are not, indicates that a force or forces beyond their control are preventing them from taking action. This force may be one of the examined factors, or some other force. When it is considered that the government strongly controls the curriculum, and little is being done in the curriculum to assist with the increasing sex ratio, it can be inferred that it is the government (socio-political system), and to some extent the schools of public health (organization) that are the primary causes for the inactivity in this area. Considering that, in China, the organization (schools of public health) is largely the same as the socio-political system (government), it is appropriate to wonder how much input or control the individual faculty member really has in terms of what they teach in a course. Furthermore, is

merely teaching about the increasing sex ratio enough to elicit an entire curriculum change that would assist in addressing sensitive social issues such as the increasing sex ratio in China?

Faculty member's lack of activity could also be an indication of what the psychologist, Leon Festinger describes as cognitive dissonance. Festinger's cognitive dissonance theory concerns the relationship between two or more cognitive or mental elements (ideas or beliefs). Bourne & Ekstrand (1979) explain that a consonant relationship exists when one of the elements implies the other in some psychological sense. A dissonant relationship exists when a cognition that a person holds is inconsistent with another cognition he or she also holds. If a person holds cognitions A and B, and A implies not B, the cognitions are in a dissonant relationship. The amount of dissonance is a function of the importance of a cognition and the number of dissonant elements, says Bourne & Ekstrand. In general, "dissonance can be reduced in two ways, either by increasing the ratio of consonant to dissonant elements or by decreasing the judged importance of the dissonant elements" (Bourne & Ekstrand, 1979, p. 385).

It may be that the tension (cognitive dissonance) has its source in the government. The government has an obligation to report priority problems of their nation, and they seem to have done that in regard to the increasing sex

ratio in China. But the government also has an obligation to do something about the problem.

The dissonance (or tension) could be that the "One Child" Policy is working in order to reduce the population growth in China, and is seen as a vital national goal, and therefore the resulting increase in the sex ratio is being ignored. This dissonance (or tension) would likely filter down from the government to the organization (school of public health) and finally to the individual (faculty), through policies which discourage, through prohibition or lack of support, the school and faculty from addressing the issue.

Conclusion

Findings from this study indicate that the socio-political factor and to some extent the organizational factor are the primary factors influencing why faculty members from three schools of public health are not assisting to address the increasing sex ratio in China in their curriculum. As with other social issues there are numerous other questions and concerns raised.

Where could the change agent come from? It would appear as if the change must originate from the government (socio-political system), and then the academic organization (universities and their schools of public health). Organizations such as The World Health Organization (WHO) and the Asia Pacific Academic Consortium for Public Health

(APACPH) may not have much influence unless requested and supported by the government. This could mean that efforts to assist the schools of public health in their efforts to address this issue should be first directed toward the government. Initiating efforts directed to the universities and their schools and faculties without governmental support might be ineffective.

Since the curriculum is primarily guided by the government (Ministry of Education), how much control do individual faculty members have? If it is true that individual faculty members have little control over their curriculum, and that the curriculum is basically dictated from governmental agencies, it would seem that change under these conditions would be most difficult. This indicates that there is a need for change in the structure of the system, (more than just changing courses) and that there is a need to look at "system factors", such as the processes and structure (framework) of those parts of the government that affect university activities.

It could be projected that in keeping with the findings that this research has set out, that a change in curriculum to assist in addressing the increasing sex ratio would be very difficult at this time. There does not seem to be any other evidence to indicate that the schools of public health will move in this direction, even though the faculty members would seem to desire such a change.

The findings from this study could serve as a starting point for future analysis, and provide a foundation for indicated planning and action steps needed to carry out a continuing change process. Once blockages against change are identified, action plans can be considered by the faculty members to implement indicated new or modified strategies.

Implications for Research and Practice

Moving in the direction of desired change is something that organizations such as the U.S. Public Health Faculty/Agency Forum and APACPH must struggle with in shaping the future of public health.

The research methods used in this study could provide a technique to assess desired curriculum changes, as well as to identify factors necessary to "unfreeze" educational institutions so that they can move in a strategic direction of positive change. This notion could help to shape research opportunities of interest to public health educators and international consultants in the future.

Limitations of the Study

While the principal investigator provided selection criteria for the study population, the final selection of the study participants was made by the heads of the three schools of public health. This could have compromised the data, as the deans may have inadvertently selected a biased sample.

Although the expert panel was composed of multicultural, multidisciplinary participants, the analysis of the four factors may have been more representative of the survey population if there were more participants from China. The one Chinese participant in the expert panel and the Chinese key informant offered great insight into Chinese culture, government and education. However, validation of the influence of the factors could have been made stronger by having more individuals from China as participants in the expert panel group.

The structure of the sex ratio inquiry was designed, in part, with closed questions. As such, it was focused and pertinent to the study objectives and it allowed for uniformity, and ease in administering as well as analyzing the data. However, by designing the survey with all open ended questions to allow for greater probing, the respondents might have talked more freely and in a greater range of topic. This would have possibly given a greater depth of content to their responses.

Values and beliefs are difficult to analyze. Although the survey was designed to clear up possible assumptions by asking the respondents to explain or describe their responses, it is possible that too much can be read into the responses. This could have underscored unfounded assumptions.

The principal investigator was an English speaking U.S.

citizen conducting a survey inquiry from Mandarin speaking subjects in China. Although recordings and transcripts were reviewed by a Mandarin speaking public health professional from China, interpretation difficulties and misunderstandings due to language and communication differences were possible.

An Alternative Methodology

The interview:

This study was concerned with identifying the knowledge, perceptions, and academic practices of faculty from schools of public health in China regarding the increasing sex ratio. The study was also concerned with how selected factors (individual, cultural, organizational, and socio-political) could have influenced the faculty knowledge, perceptions, and academic practices about the increasing sex ratio, supporting or hindering a curriculum change in schools of public health in China. These concerns were analyzed in a framework of Kurt Lewin's force field change theory. With this in mind, a pure qualitative study might have been conducted in the following manner.

In mapping the knowledge, perceptions, and academic practices of the faculty regarding the increasing sex ratio, the following questions could be addressed in a survey questionnaire:

1. What do the faculty from schools of public health know about the increasing sex ratio in China? Are they

aware of reports from the government, media, and the literature?

2. What do the faculty from schools of public health believe about the increasing sex ratio in China? Do these beliefs agree with or contradict what the government, media, and the literature state about the issue?
3. What are the faculty from schools of public health doing, in terms of research, collaboration, and teaching, regarding the increasing sex ratio in China? Do they believe they should be involved with such an issue?

A series of questions could be designed in open-ended interviews to elicit the above information. These open-ended questions should allow for probing for additional information and clarification. Careful attention could be directed toward eliciting objective responses rich in information. For example some approaches could be:

1. Tell me what you know about the sex ratio in China.
2. What do you believe is going on in China that is resulting in the reported increasing sex ratio?
3. What is your school of public health doing to assist with this issue? What do you believe your school of public health could be doing to assist with this issue?

In order to address the concern of how various factors could have influenced the faculty knowledge, perceptions,

and academic practices about the increasing sex ratio, the following qualitative approach could have been taken:

The same group of faculty members from China could be asked to describe what they think influenced their own responses to each question; e.g., personal experience, something or someone in their school of public health, government reports, or certain cultural beliefs.

This approach could add validity to the influence of each factor, as well as allow for new categories of factors to emerge.

Finally, in order to address the concern of whether a curriculum change in schools of public health in China regarding addressing issues such as the increasing sex ratio is supported or hindered, the following approach could be taken:

Continuing the survey interview with the same group of respondents, specific questions could then be asked about the schools of public health curriculum change process, such as:

1. What is the decision making process regarding what is to be taught, and how, in your school of public health?
2. What is the process by which curriculum is changed in your school? How would you as an individual instructor initiate a change in the curriculum? Is such an action by an individual instructor possible?
3. How much latitude do you have as an individual

instructor, to teach what you determine appropriate in your specific classes?

4. What are the barriers within your education system that you perceive would hinder a curriculum change in your school of public health to address more sensitive social issues?
5. What are the supports within your education system that you perceive would aid in a curriculum change for your school of public health to address more sensitive social issues?

These questions move out from the framework of Lewin's field theory, and could elicit information which would indicate the direction in which the schools of public health are moving: toward or away from the goal of addressing sensitive social issues. The answers themselves would be intended to serve as a starting point for qualitative data analysis, providing a foundation for indicated planning and action steps needed to move toward the intended outcome.

A different type of data analysis:

In keeping with the vein of a pure qualitative study, the following steps could be undertaken to analyze the data. Step Number 1. Once the notes and transcripts are typed up from interview recordings and tapes, small group discussions, consisting of all Chinese investigators, could be held for content analysis. The small groups

could be made up of faculty members from the schools under study. Investigators could study the transcript material to discover themes and patterns.

Step Number 2. The investigators could identify the responses which support or block the schools of public health in moving toward addressing such sensitive issues as the increasing sex ratio. Each response would be placed under the supportive or hindering category and then categorized under the four forces (individual, organizational, socio-political, and cultural), or under any additional forces which may have emerged from the data. The resulting outline would be a compilation of descriptive elements illustrated within the Lewin force field framework, and arranged as in Table 10.

Table 10. Force Field Analysis Framework

SUPPORT RESPONSES	RESTRAINING RESPONSES
(Individual)	(Individual)
(Organizational)	(Organizational)
(Socio-Political)	(Socio-Political)
(Cultural)	(Cultural)
(Additional force)	(Additional force)

Step Number 3. The investigators could then construct a single profile of the school's standing in relation to addressing the increasing sex ratio, as well as identify what is supporting or hindering a curriculum to address such sensitive issues as the increasing sex ratio in China.

This process was adapted in part from the APACPH Guidelines and Standards for Self Assessment and Collegial Review (Grossman, 1989). Grossman points out that it is

during the small group discussions that views and values are expressed and discussed. This process enhances the opportunity for the investigators to understand each other's perspective and hopefully create a more solid foundation for further analysis and improvement.

Recommendations for Further Research

The major findings of this study lead to related issues and opportunities for future research. A process question is to determine how the validity of the strength of the factors found by the expert panel can be increased. One approach for increasing that validity would be to conduct the expert panel process in China, using the survey respondents as the panel group after they responded to the survey questions. This would add to the strength of the valence of the four influencing factors.

Another area for further research would be the exploration of the possible relationships between the age, gender, educational background, and family background of the respondents, and their attitudes toward the increasing sex ratio issue. For example, how did the responses of the females in this study differ from the responses of the males? Were there any relationships of the faculty members who were addressing the sex ratio to their educational background or experience? As an example, the one respondent who addressed the sex ratio in her teaching was the only respondent who possessed a Doctor of Public Health degree.

In addition all of the female respondents had parents who were professionals and/or semi-professionals. Were any of the respondents trained in education? Was there a relationship between the responses of the medical doctors and the responses of the respondents who held a PhD.? These relationships could be explored using a larger sample size to foster quantitative analysis. This could give insights, as to whether these relationships are statistically significant and enable conclusions to be drawn which would be helpful in determining strategies for positive curriculum change within the organization (the university and its schools of public health).

Another area for further research would be a study similar to the alternative qualitative study which would change research question Number 2, to allow the interview data to determine "factors". A slightly different research question could be: What are the factors that influence the faculty knowledge, perceptions, and academic practices about the increasing sex ratio? By examining the direct responses to the interview data, factors could be developed which are directly related to the data and which are not imposed upon the data.

One fact which is suggested by the literature review and from the survey results is that there is no clear consensus as to the cause of the increasing sex ratio. It is speculated that the cause involves female infanticide,

under-reporting or concealment of female births, or gender-specific abortion. Whether one or all of these are possible causes, or if there are other causes, has not been agreed upon. A clearer definition may not be forthcoming through quantitative studies. That could be in part because it is unlikely that quantitative surveys would obtain reliable answers to questions which have such serious underlying emotional, cultural and legal implications. What family is likely to give straight forward answers to questions from a surveyor concerning abandonment, infanticide, and illegal gender-specific abortion in any society?

No studies of the sex ratio using qualitative analysis were found in the review of the literature. However, qualitative research could provide an opportunity for a crisper determination of the specific causes of the increasing sex ratio. While interviews with families would still face problems of the level of truthfulness, in-depth interviews with health care providers, social workers, directors of orphanages, and the like could help researchers to achieve reliable findings.

APPENDIX A
SCHOOLS OF PUBLIC HEALTH IN THE UNITED STATES:
AN INTERNATIONAL STANDARD

Background for the Influence of Social Issues

Efforts are ongoing to increase the priority given to social issues in the curriculum of schools of public health in the United States. The revised accreditation criteria for graduate schools of public health published by the Council on Education for Public Health (CEPH) in 1993 state that:

A school of public health shall provide an organizational setting conducive to teaching and learning, research and service. The organizational setting shall facilitate interdisciplinary communication, cooperation and collaboration and shall foster the development of professional public health values, concepts and ethics (CEPH, 1993, p. 5).

Also included among these criteria are the five areas of knowledge basic to public health. One of the five is "Social and Behavioral Sciences - concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems" (CEPH, 1993, p. 8).

The 1988 report by the Institute of Medicine, titled The Future of Public Health, notes that: "In a society,

public activities ultimately rest on public understanding and support, not on the technical judgement of experts" (1988, p. 2). The growth in technical knowledge of public health has been extraordinary, but the ability to implement this knowledge to benefit health and social reform has not advanced very much (Fee, 1991, Chap. 1).

Fee (1991, Chap. 1) emphasizes, in The Oxford Textbook of Public Health: Influence of Public Health, Volume 1, that public health education needs to build an infrastructure that prepares graduates to respond to endemic health and social problems as well as to new crises. Graduates must be able to understand the community and its services, and demonstrate the benefits of prevention to the public at large. Finally, Fee adds that, public health graduates must perceive themselves as effective change agents in the community in order to accomplish their goals.

Early Development of Public Health Education

In 1898, the United States entered the Spanish-American War, expanded the army from 25,000 to 250,000 men, and sent troops to Cuba and the Philippines. That war, according to Fee (1991, Chap. 1), demonstrated that the US could not afford military adventures overseas unless more attention was paid to sanitation and public Health. There were 968 men that died in battle during the war, but 5,438 died from infectious diseases.

In 1900 when yellow fever endangered the US troops in

Cuba, the response was efficient and effective. A U.S. Army commission under Dr. William Gorgas and Dr. Walter Reed was sent to Cuba to study the disease. In a dramatic series of human experiments, Reed confirmed the hypothesis of a Cuban physician that yellow fever was spread by mosquitoes, that there was an incubation period in the mosquito, and that the mosquito itself bred in close proximity to human habitats. These discoveries were quickly followed by a quasi-military operation which eliminated yellow fever from Havana (Fee, 1991, Chap.1).

Gates noted that the newly appointed Tropical Disease Board worked for years on the new diseases found in the Philippines as well as on the more familiar problems of Malaria, diarrhoeal diseases, venereal disease, dengue fever, and beriberi (Gates, 1973). These experiments illustrated the importance of public health for successful U.S. military efforts overseas (Fee, 1991, Chap. 1).

In 1909 in the United States, John D. Rockefeller agreed to provide \$1 million to create the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease in the South, with Wickliffe Rose, originally a philosophy professor in Tennessee, as Director (Fosdick, 1962). This was the first instalment in Rockefeller's massive national and international investment in public health (Ettling, 1981).

In 1910, as a result of the funding provided by the

Sanitary Commission, county appropriations for public health work in the South increased from a total of \$240 to \$110,000 (Ettling, 1981). The organizational experience gained in the southern States enabled the Rockefeller Foundation to extend its hookworm control program to the Caribbean, Central America, and South America (Ettling, 1981).

Meanwhile, in Washington D.C., the Committee on National Health campaigned for federal regulation of public health (Rosen, 1972). In 1912, the Federal Government made its first real commitment to public health when it expanded the responsibilities of the U.S. Public Health Service, empowering it to investigate the causes and spread of disease and the pollution and sanitation of streams and lakes (Williams 1951). In 1913, the New York State legislature passed a law requiring public health officers to have specialized training (Fee, 1991, Chap. 1).

At this point in time, public health had been defined in terms of its aims and goals - "to reduce disease and maintain the health of the population - rather than by any specific body of knowledge" (Fee, 1991, Chap. 1, p. 7). Many different disciplines contributed to effective public health work:

physicians diagnosed contagious diseases; sanitary engineers built water and sewerage systems; epidemiologist traced the source of disease outbreaks and their modes of transmission; vital statisticians

provided quantitative measures of births and deaths; lawyers wrote sanitary codes and regulations; public health nurses provided care and advice to the sick in their homes; sanitary inspectors visited factories and markets to enforce compliance with public health ordinances; and administrators tried to organize everyone within the limits of health department budgets (Fee, 1991, Chap. 1, p. 7).

By this description, public health thus involved the disciplines of economics, sociology, psychology, politics, law, statistics, and engineering, as well as the biological and clinical sciences.

These developments all led to an increasing demand for people trained in public health to direct the new programs being developed on local, state, and national levels. But where were these people to be found, and what training should they receive?

Professionalization of Public Health

The first school for formal training of public health personnel was formed in 1913 as the Harvard-Massachusetts Institute of Technology School of Public Health, which later became the Harvard School of Public Health (Michael & Bourne, 1995). Basic courses were: "public health administration; epidemiology; biostatistics; and environmental sanitation. Emphasis was placed on microbiology, and field experience was combined with

lectures, symposia and laboratory work" (Michael & Bourne, 1995, p. 19-20).

The Rockefeller Foundation held a conference in 1914 that resulted in a recommendation that a fully endowed institute of hygiene be established with full-time staff as an integral part of a university and for the major purpose of training public health personnel (Michael & Bourne, 1995). This recommendation resulted in the opening of the Johns Hopkins School of Hygiene and Public Health in 1916.

Smillie (1963) notes that the founding of the schools of public health at Harvard and Johns Hopkins set the standard for public health studies in America and resulted in the subsequent development of other schools of the same type. According to Smillie, the influence of these schools has been worldwide, and has been the most important stimulus to the promotion of public health.

Smillie, (1963, p. 20) also reported that it was felt such institutions "would not only train health officers but would react upon the medical schools of the universities and contribute to advanced training of physicians, especially those going into general practice." However, public health did not become a part of medical school training for 40 more years.

While the broader conceptions of public health required an understanding of economics, politics, and sociology, the dominant model of public health knowledge was based almost

exclusively on the biological sciences. Aronson (1959) discussed how the definition of public health in bio-scientific terms reinforced the medical profession's claim to pre-eminence in the field.

Fee (1991, Chap. 1) points out that the relationship between the emerging profession of public health and the well-established profession of medicine became problematic and controversial. "As most bacteriologists and epidemiologists concentrated on specific disease-causing organisms and the individuals who harbored them, only a minority continued to relate the problems of ill-health and disease to the larger social environment, and to issues of occupational health, poverty, and nutrition" (Fee, 1991 Chap. 1, p. 9).

It was hoped in the 1910s and 1920s that young physicians would take advanced training in public health after graduating from medical school. But according to Fee (1991, Chap. 1), few young medical graduates entered schools of public health as "...the prospects and remuneration in public health paled beside the glamorous inducements of curative medicine and surgery" (Fee, 1991, Chap. 1, p.10). As a result, explained Fee, important positions in public health were offered to physicians without special training in public health in preference to non-physicians with doctorates in public health as the demand for physicians was such that they rarely needed public health training as a

professional job requirement. This structural problem in the relationship between medicine and public health, already clear by 1920, has never seemed to be fully resolved.

It was clear that standards of training and experience needed to be defined in areas of learning essential to work in public health. In 1941, the Association of Schools of Public Health was organized, and together with the American Public Health Association, developed a means and a series of criteria for accrediting schools of public health (Vaughan, 1963). The first accreditation criteria was published in 1947 (Evans, p. personal conversation, May, 1995).

According to Fee (1991, Chap. 1), Federal funding supported basic research in the biomedical sciences, more than in the applied sciences, and schools of public health participated in this growth by strengthening their basic science departments. Fee explains that the numbers of students being trained at schools of public health in the U.S. fell by half, during the period 1946-1956. Ennes (1957), reported that there were 20,000 professional workers employed by governmental and voluntary health agencies who had absolutely no specialized training in public health, or no understanding of how to cope with new health hazards.

Two United States Congressmen, Hill and Rhodes, responded to the public health situation with sympathy and attention, and the Hill-Rhodes Act was passed. It authorized \$1 million per year to the schools of public

health for training (Michael & Bourne, 1995). In 1958, the First National Conference on Public Health Training was held in Washington DC, resulting in a request for \$15 million to aid construction costs, new teaching facilities, and training grants (Michael & Bourne). According to Fee (1991, Chap. 1), there were by then ten accredited schools of public health in the U.S. at Berkeley, Columbia, Harvard, Johns Hopkins, Michigan, Minnesota, North Carolina, Pittsburgh, Tulane, and Yale. None of them, reports Fee, had adequate budgets.

Social Issues in Schools of Public Health

According to Fee (1991, Chap. 1) the Depression created a major stimulus for increased social awareness of the plight of the poor and their need for public health services. As a result, the Social Security Act, passed in 1935, included a provision for expanded financing of the U.S. Public Health Service and provided federal grants to states to assist them in developing their public health services and training. Fee explains that it was no longer sufficient for state programs to employ any willing physician; some form of professional public health training was required. For the first time, says Fee, physicians eagerly sought public health positions, and there was an integration between the social and medical sciences. Epidemiology was broadening its scope to place more emphasis on the social environment (Corwin 1949, Galdston, 1953).

Smillie (1950) describes how the small group of people interested in social and economical conditions became optimistic about the possibilities for new approaches to the chronic diseases. This new approach to public health proved politically popular. According to Corwin (1949), Members of Congress voted funds for particular groups. He explains that priority was given to Health and welfare services, especially for children and mothers.

Federal grants for maternal and child health services and aid to handicapped children were provided beginning in the 1930's. Venereal disease control grants were established in 1938, tuberculosis in 1944, mental health, industrial hygiene, and dental health in 1947, and these programs dealt with social as well as medical issues (Fee 1991, Chap. 1).

This pattern of funding stimulated a trend to develop social programs that would help control specific diseases for targeted populations. As a result, the public health organizations in the U.S. began to develop an understanding of the social and political forces swirling about them as they addressed professional issues.

The 1960's with the civil rights movements, riots in the urban ghettos, and federal support for the "war on poverty" brought a growing concern over access to medical care. Medicare and Medicaid legislation was passed in 1965 to cover medical care costs for those on social security and

for the poor (Starr 1982). However, Medicare and Medicaid reflected the old priorities of the medical care system in favoring highly technical interventions and hospital care while failing to provide adequately for preventive services (Starr 1982).

Fee (1991, Chap. 1) reported that the accredited schools of public health responded to the new federal initiatives by developing new programs in health administration, hospital administration, mental health, health education, population control, maternal and child care, family planning, environmental health, and international health. Enrollments quadrupled between 1958 and 1973, with an expanded interest in population control, health administration, and international health (Hume, 1974).

By 1972 there were 19 accredited schools of public health, and by 1989 another five schools were accredited (Sheps, 1974). The orientation to federal programs meant new growth and development for the schools, but it also made them more vulnerable to changes in federal priorities. When federal funds were cut, the schools had difficulty maintaining their programs (Hoggness, 1974). By the early 1970s, more than half of the schools' financial support came from the Federal Government (Bowers & Purcell, 1974).

During the Reagan Administration in the 1980's federal funds for public health programs were cut (Omenn, 1982).

State health departments were left to deal with the adverse consequences of reductions in social programs, and the problems of a growing poverty population, says Omenn, as evidenced by increased drug abuse, alcoholism, teenage pregnancy, family violence, and homelessness, as well as the increasing health and social problems of growing populations of illegal immigrants.

As Fox (1988) has argued, the acquired immune deficiency syndrome (AIDS) epidemic made obvious a national crisis which revealed the weaknesses in the U.S. health system, health education process, and effective health policy. Much of the AIDS funding, says Fox, went into research and medical care; and once again, education and prevention received much less attention.

As of 1993 there were 27 accredited schools of public health in the United States, at nine private and 18 public universities (Levin, 1993). Michael and Bourne (1995) report that graduate education in each of the schools of public health is organized around nine major specialties: Biostatistics; Epidemiology; Health Services Administration; Public Health Practice & Program Management; Health Education & Behavioral Science; Environmental Sciences; Occupational Safety & Health; Nutrition; and Biomedical & Laboratory Sciences.

APPENDIX B

Sex Ratio Survey

Part I: Biographical

1. GENDER: Male _____ Female _____
2. AGE: _____
3. MARITAL STATUS:
Single ___ Married ___ Divorced ___ Widowed ___
4. RESIDENCE:
Province _____ District _____ City _____
5. HOW LONG? _____
6. NUMBER OF CHILDREN: _____ (Male) _____ (Female) _____
7. NUMBER OF GRANDCHILDREN: _____ (Male) _____ (Female) _____
8. ETHNIC BACKGROUND: _____
9. RELIGION: _____
10. PRIMARY LANGUAGE: _____
11. EDUCATIONAL LEVEL/BACKGROUND:
 Medical Doctor (area) _____
 PhD (area) _____
 DrPH (area) _____
 MPH (area) _____
 MSN (area) _____
 MS (area) _____
 Other (area) _____

Part II. Family History

1. BORN (Provence) _____
2. RAISED (Provence) _____
3. FATHER'S EMPLOYMENT _____
Living? (Yes) _____ (No) _____
4. MOTHER'S EMPLOYMENT _____
Living? (Yes) _____ (No) _____
5. GRANDFATHER'S EMPLOYMENT _____
Living? (Yes) ___ (No) ___ ; (Yes) ___ (No) ___

6. GRANDMOTHER'S EMPLOYMENT _____
 Living? (Yes) ____ (No) ____ ; (Yes) ____ (No) ____
7. # OF SIBLINGS: _____ ; (Males) _____ (Females) _____

Part III. Employment History

1. UNIVERSITY: _____
2. CITY/DISTRICT/LOCALITY: _____
 (Urban/Rural)
3. UNIVERSITY ENROLLMENT: _____
4. SCHOOL OF PUBLIC HEALTH ENROLLMENT _____
5. DEPARTMENT OF EMPLOYMENT _____
6. PRIMARY FIELD OF SPECIALTY _____
7. PRIMARY PROFESSION _____
- Administrator _____
- Professor _____
- Clinician _____
- Other _____
8. SECONDARY PROFESSION _____
- Administrator _____
- Professor _____
- Clinician _____
- Other _____
9. AREA/S OF RESEARCH: _____
- _____
- _____
- _____
10. HOURS OF TIME SPENT ON RESEARCH PER WEEK:
- Research area 1. _____ Research area 3. _____
- Research area 2. _____ Research area 4. _____
11. PERCENTAGE OF TIME BREAKDOWN:
- Teaching _____ %
- Administration _____ %
- Research _____ %

Part IV. Sex Ratio Questions

1. ARE YOU AWARE OF REPORTS CONCERNING THE INCREASING SEX RATIO IN CHINA?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___
2. DO YOU BELIEVE THERE IS AN INCREASING SEX RATIO IN CHINA?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___
3. IF SO, DO YOU BELIEVE THAT THE SCHOOLS OF PUBLIC HEALTH CAN ASSIST IN RESOLVING THIS ISSUE?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___

IF SO, HOW DO YOU THINK YOUR UNIVERSITY COULD ASSIST?

IF NOT, WHO DO YOU BELIEVE WOULD BE APPROPRIATE PARTIES TO ADDRESS THIS ISSUE?

4. ARE YOU TEACHING ANY CLASSES WHICH ADDRESS THE SEX RATIO ISSUE IN CHINA?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___

IF so, what are they, and how do they address the sex ratio issue?

Do you have a syllabus? (Yes) _____; (No) _____

5. TO YOUR KNOWLEDGE, IS THIS SUBJECT ADDRESSED IN THE CURRICULUM OF SOME OTHER CLASS/ES IN YOUR SCHOOL OF PUBLIC HEALTH?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___;
(Explain) _____
-

6. ARE YOU, OR HAVE YOU IN THE PAST COLLABORATED/NETWORKED/ADVISED ANY PART OF THE CHINESE GOVERNMENT OR A NON-GOVERNMENTAL AGENCY REGARDING THIS ISSUE?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___

If so, who, and how? _____

7. DO YOU KNOW OF ANY ONE IN YOUR SCHOOL OF PUBLIC HEALTH WHO HAS ASSISTED WITH ADDRESSING THIS ISSUE?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___

IF SO, WHO, AND HOW HAVE THEY ASSISTED? _____

8. DO YOU FEEL THAT ONE CAUSE OF THE INCREASING SEX RATIO COULD BE A UNDER-REPORTING OR CONCEALMENT OF BIRTHS?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___

(Explain) _____

9. DO YOU FEEL THAT ONE CAUSE OF THE INCREASING SEX RATIO COULD BE GENDER-SPECIFIC ABORTION?
(Yes)___; (Somewhat)___; (Don't Know)___ (No)___;

(Explain) _____

IF SO, HOW DO YOU THINK THIS IS BEING ACCOMPLISHED?

10. DO YOU FEEL THAT ONE CAUSE OF THE INCREASING SEX RATIO COULD BE GENDER-SPECIFIC INFANTICIDE OR ABANDONMENT?
(Yes)___; (Somewhat)___; (Don't Know)___; (No)___;
(Explain) _____

IF SO, HOW DO YOU THINK THIS IS BEING ACCOMPLISHED?

11. DO YOU FEEL THAT THE "ONE-CHILD" POLICY COULD CONTRIBUTE TO THE RISING SEX RATIO?
(Yes)___; (Somewhat)___; (Don't Know)___ (No)___

IF SO, HOW? _____

12. DO YOU BELIEVE THAT THERE IS A STRONG PREFERENCE FOR SONS OVER DAUGHTERS AMONG PARENTS IN CHINA?
 (Yes)___; (Somewhat)___; (Don't Know)___; (No)___

IF SO, WHY? _____

IS THE PREFERENCE STRONGER IN SOME PARTS OF CHINA THAN IN OTHERS?

(Yes)___; (Somewhat)___; (Don't Know)___; (No)___

(Explain) _____

13. DO YOU BELIEVE THAT PREFERENCE FOR SONS COULD CONTRIBUTE TO THE RISING SEX RATIO?
 (Yes)___; (Somewhat)___; (Don't Know)___; (No)___

IF SO, HOW? _____

14. ACCORDING TO CHINESE STATISTICS, THERE ARE MANY FEMALES MISSING FROM THE DEMOGRAPHIC COUNTS OF CHINA. DO YOU KNOW OF OTHER FACTORS WHICH MAY BE CONTRIBUTING TO THIS?
- _____
- _____
- _____

15. DO YOU HAVE ANY FINAL THOUGHTS ABOUT THE ISSUE OF THE RISING SEX RATIO IN CHINA?
- _____
- _____

APPENDIX C

Expert Panel Group Instructions

You will be given 13 survey questions. Please analyze each question to determine which of the following forces would influence the respondents to give a particular answer. Each question may land in more than one category, but not more than three. If a question falls into more than one category, please rank in order of most to least influence.

Categories of ForcesIndividual Forces

Individual forces are the specific attributes or identifying traits of an individual such as one's own will, personality, background, experience, knowledge, values, or beliefs. An individual is a distinct entity, distinguished by these specific attributes or identifying traits. Individual forces are regarded separately from a group or from society.

Organizational Forces

Organizational forces are the administrative or executive structure of an organization such as a school of public health, or those functionaries or policies which guide and allow the school to function, such as the organizational structure, rules and regulations, assigned tasks, expected attitudes, ideas, or behaviors.

Socio/Political Forces

Socio/political forces are the methods or tactics involved in managing a nation or a state, such as the activities or affairs of a government, governmental official/s, or a political party. Socio/political forces also include the principles, processes, and structure of a government in terms of how that government functions and affects individuals (i.e. laws, regulations and restrictions).

Cultural Forces

Cultural forces are the socially transmitted behavior patterns, arts, beliefs, and other products of human work and thought typical of a population, community, class or society at a given time. Some examples of cultural forces are customs, traditions, values, beliefs, biases, communication styles, norms, mores, ways, and manners.

None of These

This category is for questions that do not fit into any of the above categories.

1. Are you aware of reports concerning the increasing sex ratio in China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

2. Do you believe there is an increasing sex ratio in China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

3. If so, do you believe that the schools of public health can assist in resolving this issue?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

4. Are you teaching any classes which address the sex ratio issue in China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

5. To your knowledge, is this subject addressed in the curriculum of some other class/es in your school of public health?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

6. Are you, or have you in the past collaborated/ networked/ advised any part of the Chinese government or a non-governmental agency regarding this issue?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

7. Do you know of anyone in your school of public health who has assisted with addressing this issue?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

8. Do you believe that one cause of the increasing sex ratio could be under-reporting or concealment of births, in some parts of China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

9. Do you believe that one cause of the increasing sex ratio could be gender-specific abortion, in some parts of China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

10. Do you believe that one cause of the increasing sex ratio could be gender-specific infanticide or abandonment, in some parts of China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

11. Do you believe that the "One-Child" Policy could contribute to the rising sex ratio, in some parts of China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

12. Do you believe that there is a strong preference for sons over daughters among some parents in China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

13. Do you believe that son preference could contribute to the rising sex ratio, in some parts of China?

INDIVIDUAL ORGANIZATIONAL SOCIO/POLITICAL CULTURAL NONE

REFERENCES

Aird, J. (1990). Slaughter of the innocents: Coercive birth control in China. Washington, DC: American Enterprise Institute.

Anderson, J. (1993, February 4). Third world, second class: Born oppressed. The Washington Post, p. A25.

Arnold, F., & Zhaoxiang, L. (1986). Sex preference, fertility, and family planning in China. Population and Development Review, 12, 221-246.

Aronson, J. (1959). The politics of public health: reactions and summary. American Journal of Public Health, 49, 300.

Atkinson, P. (1992). Understanding ethnographic texts: qualitative research methods series (Vol. 25). Newbury Park, CA: Sage.

Banister, J. (1987). China's Changing Population. Paper presented at the Workshop on China's 1982 Population Census, Honolulu, HI.

Banister, J. (1992a., April). China: Recent mortality levels and trends. Paper presented at the Annual Meeting of the Population Association of America, Denver, CO.

Banister, J. (1992b.). Implications and quality of China's 1990 census data. Paper presented at the International Seminar on China's 1990 population census, Beijing, China.

Berg, B. (1989). Qualitative research methods for the

social sciences. Boston: Allyn & Bacon.

Berliner H. (1977). Philanthropic foundation and scientific medicine. Unpublished doctoral dissertation, Johns Hopkins University, Baltimore.

Besher, A. (1991). The Pacific Rim almanac. New York: Harper-Collins.

Bloom, S. (1995). Editorial: Reform without change? Look beyond the curriculum. American Journal of Public Health, 85, 907-908.

Bohua, L. (1990). Levels, trends and determinants of fertility in China: 1973-1987. Asia-Pacific Population Journal, 5, (2), 3-16.

Boud, D., & Feletti, G. (1991). The challenge of problem based learning. New York: St. Martin's Press.

Bourne, L., & Ekstrand, B. (1979). Psychology: Its principles and meanings. New York: Holt, Rinehart & Winston.

Bowers, J., & Purcell, E. (1974). Schools of public health: Present and future. New York: Josiah Macy Jr. Foundation.

Bullock, M. (1980). An American transplant: The Rockefeller Foundation and Peking Union Medical College. Berkeley, CA: University of California Press.

Chen, L. (1937). Public health in national reconstruction. Nanking, China: National Council of International Affairs.

Chen, M. (1994). Academic renewal and reform. Paper presented at the meeting of the Asia-Pacific Academic Consortium for Public Health, Beijing, China.

Cheng, C. (1991). A speculative analysis of socio-economic influences on the fertility transition in China. Asia-Pacific Population Journal, 6, (3), 3-24.

Chi, Y. (1986). Public health in the Peoples's Republic of China. Beijing: People's Publishing House.

China Medical Board. (1922, November). John B. Grant's Report. (Record Group 4, Series 1, Box 78, Folder 1804). New York: John B. Grant.

Coale, A. (1992). High ratios of males to females in the Population of China. Paper presented at the International Seminar on China's 1990 Population Census, Beijing, China.

Coale, A. (1984). Rapid population change in China, 1952-1982. (Report No. 27). Washington, DC: Committee on Population and Demography.

The Compact Oxford English dictionary (2nd ed.). (1991). Oxford, Great Britain: Clarendon Press

Corwin, E. (Ed.). (1949). Ecology of health. New York: The Commonwealth Fund.

Council on Education for Public Health (CEPH). (1993). Criteria for accreditation of graduate schools of public health. Washington, DC.

Counelis, J. (1991). Review of B.L. Berg, Qualitative

research methods for the social sciences. Qualitative Studies in Education, 4, (3) 267-269.

Creswell, J. (1994). Research design: Qualitative & quantitative approaches. Thousand Oaks, CA: Sage.

Crozier, R. (1968). Traditional medicine in modern China. Cambridge, MA: Harvard University Press.

Denzin, N. (1978). The research act: A theoretical introduction to sociological methods. New York: McGraw-Hill.

Duan, J. (1991). Sex selection and birth control in the process of family formation in China. Chinese Journal of Population Science, 3.

Ennes, H. (1957). Manpower - the Achilles' heel in public health. American Journal of Public Health, 47, 1390.

Ettling, J. (1981). The germ of laziness: Rockefeller philanthropy and public health in the new South. Cambridge, MA: Harvard University Press.

Feather, N. (1975). Values in education and society. New York: The Free Press.

Fee, E. (1991). The origins and development of public health in the United States. In W. Holland, R. Detels, & G. Knox (Eds.), Oxford textbook of public health: Influences of public health: Vol. 1. (2nd ed., pp. 3-22). New York: Oxford University Press.

Feeney, G., Wang, F., Zhou, M., Xiao, B. (1989). Population and Development Review, 15, (2), 297-322.

Firestone, W. (1987). Meaning in method: The rhetoric of quantitative and qualitative research. Educational Researcher, 16, (7), 16-21.

Fosdick, R. (1962). Adventure in giving: The story of the general education board. New York: Harper & Row.

Fowler, F. (1988). Survey research methods. Newbury Park, CA: Sage.

Fox, D. (1988). AIDS and the American health policy: The history and prospects of a crisis of authority. In E. Fee & D. Fox (Eds.), AIDS: The burdens of history (p. 316). Berkeley, CA: University of California Press.

Galdston, I. (1953). Epidemiology of health. New York: New York Academy of Medicine, Health Education Council.

Gates, J. (1973). Schoolbooks and Kraggs: The United States Army in the Philippines, 1898-1902. Westport, CT: Greenwood Press.

Grant, J. (1922). China Medical Board, record group 4. (Rockefeller Archives Center: Series 1, Box 78, Folder 1804). New York: China Medical Board.

Green, J., Caracelli, V., & Graham, W. (1989). Toward a conceptual framework for mixed-method evaluation designs. Educational Evaluation and Policy Analysis, 11 (3), 255-274.

Grossman, J. (Ed.). (1989). Guidelines and standards for self assessment and collegial review. Honolulu, HI: Asia-Pacific Academic Consortium for Public Health.

Gu, B., Yang, S. (1991). Fertility trends in rural China in the 1980s: Cohort effect versus period effect. Asia-Pacific Population Journal, 6 (4), 3-34.

Guba, E. & Lincoln, Y. (1988). Do inquiry paradigms imply inquiry methodologies? In D. M. Fetterman (Ed.), Qualitative approaches to evaluation in education (pp. 89-115). New York: Praeger.

Haupt, A. (1983). The shadow of female infanticide. Washington, D.C. Intercom, 11 (1), 13-14.

Hayakawa, J. (1994). Academic renewal and reform. Proceedings of the Asia-Pacific Academic Consortium for Public Health. Beijing, China.

Hogness, J. (1974). The future of schools of public health in relation to government. In J. Bowers & E. Purcell (Eds.), Schools of public health (p. 124). New York: Josiah Macy Jr. Foundation.

Honig, E. & Hershatter, G. (1988). Personal voices: Chinese women in the 1980s. Stanford, CA: Stanford University Press.

Hull, T. (1990). Recent trends in sex ratios at birth in China. Population and Development Review, 16 (1), 63-83.

Hume, J. (1974). The future of schools of public health: The Johns Hopkins School of Public Health. In J. Bowers & E. Purcell (Eds.), Schools of public health: Present and future (p. 64). New York: Josiah Macy Jr. Foundation.

Institute of Medicine. (1988). The future of public health. Washington, DC: National Academy Press.

Jick, T. (1979). Mixing qualitative and quantitative methods: Triangulation in action. Administrative Science Quarterly, 24, 602-611.

Johansson, S. (1984). A Swedish perspective on sex ratios and other intriguing aspects of China's demography. A Census of One Billion People Report (pp. 410-434) Beijing, China: State Statistical Bureau.

Johansson, S., Nygren, O. (1991). The missing girls of China: A new demographic account. Population and Development Review, 17 (1), 35-51.

Jouvenel, B. (1967). The art of conjecture. New York: Basic Book.

Knutson, A. (1961). Psychological basis of human behavior. American Journal of Public Health, 51 (11), 1699-1707.

Lee, L. (1994). Health, development and economic, public health education reform: China experience. Paper presented at the World Medical Education Conference, Beijing, China.

Levin, M. (1993, August). Association of Schools of Public Health data report on applicants, new enrollments and students. Washington, DC: Association of Schools of Public Health.

Lewin, K. (1951). Field theory in social science.

New York: Harper & Row.

Lewin, K. (1952). Group decision and social change. In G. Swanson, T. Newcomb, & E. Hartley (Eds.), Readings in social psychology (pp. 459-473). New York: Henry Holt.

Mathison, S. (1988). Why triangulate? Educational Researcher, 17 (2), 13-17.

McCracken, G. (1988). The long interview. Newbury Park, CA: Sage.

McCullough, L., Wilson, N., Teasdale, T., Kolpakchi, A., & Skelly, J. (1993). Mapping personal, familial, and professional values in long-term care decisions. The Gerontologist, 33 (3), 324-332.

McMillan, J., & Schumacker, S. (1989). Research in Education: A conceptual introduction. New York: HarperCollins.

Michael, J., & Bourne, J. (1995). History, demography, problems and funding of public health education in a changing cross-cultural environment. (HRSA Contract No. 94-344 (P)). Honolulu, HI: University of Hawaii, School of Public Health, Bureau of Health Professions Health Resources and Services Administration.

Miles, M., & Huberman, A. (1994). Qualitative data analysis: An expanded sourcebook. Thousand Oaks, CA: Sage.

Morse, J. (1992). Qualitative health research. Newbury Park, CA: Sage.

Omenn, G. (1982). What's behind those block grants in

health? New England Journal of Medicine, 306, 1057.

Patton, M. (1988). Paradigms and pragmatism. In D.M. Fetterman (Ed.), Qualitative approaches to evaluation in education (pp. 116-137). New York: Praeger.

Patton, M. (1990). Qualitative evaluation and research Methods. (2nd ed.). London: Sage.

Peiyun, P. (1992). The population of China: problems and strategy. Population and Development in China. Beijing, China: China Population Information & Research Center.

Posner, G., & Rudnitsky, A. (1986). Course design: A guide to curriculum development for teachers. (3rd ed.). New York: Longman.

Pritchard, J., MacDonald, P., & Gant, N. (1985). Williams Obstetrics (17th ed.). Norwalk, CT: Appleton-Century-Crofts.

Rosen, G. (1972). The Committee of One Hundred on National Health and the campaign for a national health department, 1906-1912. American Journal of Public Health. 62, 261.

Rosenkrantz, B. (1974). Cart before horse: Theory, practice and professional image in American public health, 1870-1920. Journal of the History of Medicine, 29, 55-73.

Seipp, C. , Ed. (1963). Health care for the community: Selected papers of Dr. John B. Grant. Baltimore, MD: The Johns Hopkins University Press.

Sheps, C. (1974). Trends in schools of public health in the United States since World War II. In J. Bowers & E. Purcell (Eds.), Schools of public health: Present and future (p. 1). New York: Josiah Macy Jr. Foundation.

Singh, R. (1991). Education for the twenty-first century: Asia-Pacific perspectives. Bangkok: UNESCO.

Smillie, W. (1950). The responsibility of the state. In Tomorrow's horizon in public health, Transactions of the 1950 conference of the Public Health Association of New York City (p.95). New York: Public Health Association.

Smillie, W. (1963). The beginning of formal university training of public health personnel in the United States. In The Past, Present and Future of Schools of Public Health: Dedication program addresses. Chapel Hill, NC: University of North Carolina Press.

Sorensen, A., & Bialek, R., (Eds.) (1994). The public health faculty/agency forum: Linking graduate education and practice. Gainesville, FL: University Press of Florida.

Spence, J. (1990). The Search for Modern China. New York: W.W. Norton & Company.

Starr, P. (1982). The social transformation of American medicine. New York: Basic Books.

State Family Planning Commission (SFPC). (1988). Tabulation of major figures from China's 1982 One-per-Thousand Population Fertility Sampling Survey. The New World Publishing House.

State Family Planning Commission (SFPC). (1990). Collection of the 1988 National Two-per-Thousand Fertility and Contraception Survey Data, national volume. Department of Population Statistics, State Statistical Bureau, China Population Press.

State Statistical Bureau (SSB). (1983). Ten percent sampling tabulation of the 1982 Population Census of the People's Republic of China. Beijing, China: State Statistical Bureau.

State Statistical Bureau (SSB). (1985). 1982 Population Census of China, (results of computer tabulations). Beijing, China: Statistical Publishing House, pp. 390-391.

State Statistical Bureau (SSB). (1988). Tabulations of the 1987 China One Percent Population Sample Survey, National Volume. Beijing: Department of Population Statistics, China Statistical Press.

State Statistical Bureau (SSB). (1991). Ten percent sampling tabulation on the 1990 Population Census of the People's Republic of China. Beijing, China: China statistical Press.

State Statistical Bureau (SSB). (1991). Major figures of 1990 Fourth National Population Census of China. Beijing: China Statistical Publishing House.

Stop sex checks of fetuses. (1989, July 10-16) Beijing Review, 28, 8-9.

Study finds men outnumber women their age 10-1. (1993, January). New China News Agency, p. 17.

Supannatas, S. & Grossman, J. (Eds.). (1990). Public health preparation as leadership development: Exploring new approaches to teaching and learning. Bangkok, Thailand: Mahidol University, Department of Health Education and Behavioral Science, Faculty of Public Health.

Swanson, S. (1992 April). Mixed-method triangulation: Theory and practice compared. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco.

Taylor, C., & Leslie, C. (1973). Asian medical systems: A symposium on the role of comparative sociology in improving health care. Sociological Science and Medicine, 7, 307-318.

Taylor, C., Parker, R., & Zeng, D. (1991). Public health policies and strategies in China. In W. Holland, R. Detels, & G. Knox (Eds.), Oxford textbook of public health: Influences of public health: Vol. 1. (2nd ed., pp. 3-22). New York: Oxford University Press.

Tuljapurka, S., Li, N., & Feldman, M. (1995). High sex ratios in China's future. Science, 267, 874-876.

van Manen, M. (1977). Linking ways of knowing with ways of being practical. Curriculum Inquiry, 6, (3), 205-228.

Vaughan, H. (1963). Schools of public health: The

past. In The Past, Present and Future of Schools of Public Health: Dedication program addresses. Chapel Hill, NC: University of North Carolina Press.

Warren, M. (1985). Gendercide: the implications of sex selection. Totowa, NJ: Rowman and Allanheld.

Weed, D. (1995). Epidemiology, the humanities, and public health. American Journal of Public Health, 85, (7), 914-918.

Wen, X. (1992). The effect of sex preference on subsequent fertility in two provinces of China. Asia-Pacific Population Journal, 7 (4), 25-40.

Wen, X. (1993). The effect of son preference and population policy on sex ratios at birth in two provinces of China. Journal of Bio-social Science, 25, 509-521.

Williams, R. (1951). The United States Public Health Service, 1798-1950. Washington, DC: Government Printing Office.

Wolcott, H. (1992). Posturing in qualitative inquiry. In M. D. LeCompte, W. L. Millroy, & J. Preissle (Eds.), The handbook of qualitative research in education (pp. 3-52). New York: Academic Press.

Wong, K., & Wu, L. (1936). History of Chinese medicine. Shanghai: National Quarantine Service.

World Health Organization. (1992). Health research methodology: A guide for training in research methods. Manila, Philippines: Author.

Yi, Z., Ping, T., Baochang, G., Yi, X., Bohua, L., Yongping, L. (1993). Causes and implications of the recent increase in the reported sex ratio at birth in China. Population and Development Review, 19 (2), 283-302.

Yi, Z., Ping, T., Liu, G., Ying, X. (1991). A demographic decomposition of the recent increase in crude birth rates in China. Population and Development Review, 17 (3), 435-458.

Yip, K. (1982). Science, medicine, and public health in twentieth century China. Sociological Science and Medicine, 16, 1197-1205.

Zhao, X. (1987). A summary report of the whole China seminar on population sex ratios. Family Planning Yearbook (pp. 32-33). Beijing: People's Hygiene Publishing House.

Zili, X. (1992). Population situation and family planning program in China. Population and Development in China. Beijing: China Population Information & Research Center.