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Population Change and Mental Health:
Bring the Social Context Back in

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Abstract

In this paper, changing nature of the family and aging are taken as the major consequences of the population change. The household structure, economic security of the family, and age cohorts will be the focus of analysis in examining the effect of population change on mental health. Data used for analysis are derived from the Taiwan Social Change Survey¹ (TSCS thereafter) at 1984, 1990, 1995, and 2000, respectively. Four major findings are found: 1) Household effect on mental health varies according to the domains of the mental health measure. However, this pattern does not remain when the public domain of mental health, the mental health at social level, is of concern, indicating a useful distinction between private and public domains. 2) Family as a unit for economic security is a useful buffer for the presence of psychological disturbance and a facilitator for the psychological and social well being regardless one's share of contribution to the total amount of family resources. 3) The elderly suffers more psychological disturbance, chronic disease. They are reluctant to involve in public affairs. They are more likely to consider others fickle. 4) A persistent and penetrating educational effect on mental health is observed. To conclude, a change of buffering structure for mental health appears to be associated with a change in age composition and the dependent ratio of the population. Population change generates needs for creating a safety net for not only financial security but also social and psychological security as well.

¹ With the sponsorship of the National Science Council, the first Taiwan Social Change Survey was launched in 1984 as a one-year project. The second TSCS is carried out in five consecutive years since 1989, with different topics selected for study for each year. The topics will be repeated every five years. For each wave, information on social stratification, education, family, health, political and social participation, work and labor market, and so forth are collected periodically. In other words, modules covering different issues are organized into ten sets of questionnaires to be administered in five consecutive years. By Year 2001, the TSCS project is at its fourth wave.

Population Change and Mental Health: Bring the Social Context Back in

Not too long ago, Economic Construction Committee of the Executive Yuan expressed a deep concern with a further drop on fertility in 2002 in Taiwan. Subsequently a reward of NT\$35,000 (US\$1,000 equivalent) to the family for a new born baby and the so called "Never Married Tax", a taxation on those aged 40 and over and remain single, were proposed by different Central Governments at different occasions. Although these two proposals generated heated debates, the debates haven't touched the central issue for which this proposal was raised. The unmistakable trend of population aging and its related implications deserves more attention.

The issue of the impact of demographic change on mental health is not new in the literature. Nonetheless, it still remains a challenge to the researchers in the field of mental health. The relationship between demographic change and mental health poses three major challenges to the researchers in the field: 1) to identify the trend of demographic change over time and to estimate the projections; 2) to construct the concept of mental health and its theoretical foundation, and to develop respective measures accordingly; and 3) to formulate the theoretical reasoning with regard to the impact of demographic change on mental health of different measures.

In this paper, changing nature of the family and aging are taken as the major consequences of the population change. The household structure, economic security of the family, and age cohorts will be the focus of analysis in examining the effect of population change on mental health. Data used for analysis are derived from the Taiwan Social Change Survey² (TSCS thereafter) at 1984, 1990, 1995, and 2000, respectively. Multi-stage sampling is designed to draw a national representative sample with respective different years. Since the TSCS data set covers a wide range of issues, it allows me to construct different measures of mental health and to explore the possible effect of household structure and age cohort on mental health measures, net of sex, education, and economic power within family.

The following sections are arranged as follows: Section 1 provides a review of

² With the sponsorship of the National Science Council, the first Taiwan Social Change Survey was launched in 1984 as a one-year project. The second TSCS is carried out in five consecutive years since 1989, with different topics selected for study for each year. The topics will be repeated every five years. For each wave, information on social stratification, education, family, health, political and social participation, work and labor market, and so forth are collected periodically. In other words, modules covering different issues are organized into ten sets of questionnaires to be administered in five consecutive years. By Year 2001, the TSCS project is at its fourth wave.

the population change in Taiwan, while Section 2 deals with the issue of measuring mental health. Sections 3 and 4 describe the analysis of the TSCS data and the findings. Section 5 provides the conclusions and policy implications.

1. The Demographic Trends and the Projections

Population change is a net outcome of births, immigration, deaths, and out-migration. It appears in the form of age/sex/ethnic/racial/regional composition. Birth rate and death rate together generate natural growth of the population referring to the consequences of change in fertility, death rate, and life expectancy of the population, while immigration and out-migration together define the social growth of the population. Sustainability of the population, fertility future, and family formation and dissolution are brought to the central stage of the policy debates for policy makers as well as researchers in many countries, Taiwan is no exception. Demographers have called for attention regarding the age composition of population (Chen 2000). The trend of population change is summarized as follows:

1. Population aging: Vital Statistics of Taiwan between 1971 and 2001 indicates the unmistakable trend to population aging. During the period between 1971 and 2001, birth rates decreased significantly while death rate decreased only moderately. Specifically speaking, fertility rate dropped from 3.71 in 1971 to 1.40 in 2001 for women in age between 15 and 49. Age specific fertility rates continue to decrease. The fertility rate in 2002 further dropped to 1.34 (Vital Statistics, 2002). Death rate also dropped from 0.48% in 1971 to 0.57% in 2001. Moreover, life expectancies for men and women increase over time. Life expectancy for men in 2001 was 75 while was 78 for women. Proportion of those aged 65 and over increased over time. As the elderly become a visible age group, low quality of life of the elderly, strong need for health care, high risk for emotional and psychological distress and organic disorders have been documented in the literature for many years. Living arrangement of the elderly is suggested to be one of the determining factors.

2. Zero population growth: Accordingly, the natural growth rate of the population in Taiwan decreased monotonically and reached a level of 0.579% in 2001. It is estimated that in 2027 Taiwanese population will reach zero growth (Directorate General of Budgeting, Accounting, and Statistics). That is, population will approach a complete replacement in 2027.

3. Age composition of the population: Change in dependent ratio, a ratio of the dependents (i.e., those under 14 plus those over 65) over the productive population (i.e., those aged 15 to 64), is the core. Both the dependent ratios increase as the birth

rates decrease constantly and the death rates have reached to a level which appears to be very difficult to push further. It is estimated that the dependent ratio will start rise significantly in next 10 years considering the trends of fertility and mortality of the Taiwan population and long expectancy for men and women. The major jump will be from the elderly dependent ratio, while the young dependent ratio will be on the opposite direction, i.e., to continue to drop.

4. Changing family structure and family size: Lone person family, childless family (couple only), co-habitation continue to increase.

5. Changing nature of family life: Child care, care for the elderly and disability, economic security, close family support (including both instrumental and expressive), domestic violence, and homeless people summarized the issues which we all have to face following the change of family structures in accordance with the unmistakable trend of population aging.

While population aging and zero population growth are brought as major concerns for most of the developed countries, the discussions on resolutions are always related to a call for social security system in response to the changing nature of family life. As early as in 80's, a need for a social security system was raised for attention in Taiwan considering the increasing dependent ratio and changing family structure together (Chang, Hsiao, and Chen 1981). Over the past two decades, the trend to childlessness, delayed first marriage, delayed first pregnancy, small number of children, long life expectancy, and thus care of the older people, transitions in living arrangement summarized the issues in response to the unmistakable trend of population aging.

What are the most salient mental health issues mentioned in relation to the trends of population change? Given the trend of population change, we may want to ask whether contemporary family system is still functioning? Whether one, regardless his/her age and marital status, can solicit enough support from family members when support is in need? Whether family still implies a safety net? Whether family becomes a source of daily hassle? The issues such as mental health status of the elderly, single parent effect, burden of care giving, domestic violence are all hinged upon the answers to the aforementioned questions.

2. The Data and the Analytic Strategies

When age composition and household structure are a crucial aspect of demographic change, In this paper, we will specifically explore the following five

research questions. The age effect and the effect of living arrangement (household structure) and economic resources will be examined in relation to the mental health outcomes. The research questions are described as follows:

1. Is the form of household structure one dwells associated with different measures of mental health?
2. Is one's economic power associated with different measures of mental health?
3. Is private vs. public aspects of mental health a meaningful typology?
4. Is there any age difference in different measures of mental health?
5. Gender difference and education effect

Data used for analysis in this paper are extracted from the TSCS at 1984, 1990, 1995, and 2000, respectively. Since the topics are repeated every five years, trends of mental health condition in terms of different measures can be assessed.

1. The measures of mental health

Early this year, *Journal of Health and Social Behavior* (2002) put out a special issue on sociological research in mental health. One of key issues covered in this special edition is the measurement of mental health. Aneshensel, the guest editor of the special issue, comments:

"Although the domain of mental illness encompasses three broad types of impairment: emotional, cognitive, and behavior. Most research within the sociology of mental health emphasizes the emotional component. This emphasis means that other components of mental health have received less attention." (Aneshensel 2002:)

I agree with Aneshensel and the authors of the papers in that special issue, the over concentrated on emotional impairment is problematic for sociological study of mental health. The pool of relevant outcomes needs to be expanded. The measurements of these outcomes need to be reconsidered. Why do you want to hear this problem, as all of you are psychiatrists? To answer this question, we must go back to Emile Durkheim and his classic research on suicide. He forcefully pointed out in his book "Suicide" how the organization of society shapes the likelihood that someone will feel emotional pain, think bizarre ideas, or act in peculiar way. He linked social solidarity and social integration to mental illness.

The influence of social context on mental health poses a challenge to sociologists in the field. One of the issues raised has to do with the lack of attention on cognitive and behavioral aspects of impairment the measurement of mental health. I thus propose a 2x2 table for the definition of mental health, shown in Table 1. Of them, the status of one's mental health refers not only to the inner state of the individual, but also to his/hers relationship with others, labeled as the private aspect of

mental health measures as well as public aspect of mental health measure, respectively. Moreover, many people remain free of mental illness each year and over their lifetime, however, whether is the absence of mental illness reflective of genuine mental health? To this question, I will join Keyes (2002) to define the status of mental health in terms of the presence of mental health and the absence of mental health. They are labeled by Keyes as *flourishing* and *languishing*, respectively.

(Insert Table 1 about here.)

Based on this table, empirical data are used to explore the theoretical power of these outcome measures. In response of the aforementioned review and given the availability of the data, I will focus on the association of household structure, economic security, age cohort, gender and education with different mental health measures, except for the behavioral aspect of individual pathological model, i.e., deviant behavior, violence, and suicide. The status of mental health is thus operationally defined in terms of three dimensions based on the questions summarized in Table 2. In total seven measures are developed. There are psychosomatic complaints, physical health, psychological disturbance, psychological well-being, alienation, social trust, and social participation. The first four of the seven dimensions refer to the state of the private domain. The last three refer to of public domain.

(Insert Table 2 about here.)

(1) Psychosomatic complaints

The variable “Complaints” is a summation of respondents’ responses of "not at all" on the experience of headache, palpitation, chest tightness, tremor and sleepless. It is ranged between 0 and 5, while large number indicates worse health.

(2) Physical health

The variable “Health” is a summation of respondents’ responses on the absence of the effect on daily functioning of illness and chronic disease. It is ranged between 0 and 2, while large number indicates worse health.

(3) Psychological disturbance

The variable “Psychological disturbance” is a summation of respondents’ responses of "not at all" on the experience of burdensome, loss of confidence, hopelessness, nervousness, and meaninglessness. It is ranged between 0 and 5, while large number indicates more psychological disturbance.

(4) Psychological well-being

Psychological well-being includes two questions: whether respondents feel they have good prospect in the future and whether they are happy. Answers have been recoded according the direction of the question. On a scale from 1 to 4, respondents indicated whether they agreed or disagreed strongly, moderately, slightly that an item

described how well they functioned (i.e. thought or felt), “1” indicates “strongly disagree” while 4 “strongly agree”. In other words, larger number indicates good prospect and being happy.

(5) Alienation

Alienation includes two questions about neighboring and public affairs, such as "in order to avoid trouble, better not to have close contact with neighbors" and "better not get involved in public affairs since it is too difficult to deal with". On a scale from 1 to 6 (4 in 1990), respondents indicated whether they agreed or disagreed strongly, moderately, slightly on the questions, “1” indicates “strongly disagree” while 4 “strongly agree”. Negative items were reverse-coded according the direction of the question. Larger number indicates higher level of alienation from their neighbors and public affairs.

(6) Social trust

Social trust refers to one’s judgement about general others. Social trust is measured according to answers on two questions: whether there is a trust between persons and whether others are reliable. Answers have been recoded according the direction of the question. Each variable is ranged between 1 and 6 (4 in 1990). Larger number indicates higher level of distrust and less accountable.

(7) Social participation

Quality of interpersonal relations includes three questions: "I feel I can influence social development", "citizen can affect governmental policies", and "it is not difficult to bring a change on the society and politics". Answers have been recoded according the direction of the question. Each variable is ranged between 1 and 6 (4 in 1990). “1” indicates “strongly agree”, while 6 (4 in 1990) “strongly disagree”.

2. The explanatory factors: Family specific variables

Demographic characteristics are presented in Table 3. As indicated in Table 3, data on personal income and family income are not available in 1984. Data on personal income are not available in 1990, either. The key explanatory variables of this study are household structure, economic security, age cohort, and gender. These four explanatory variables imply a family based boundary of private life. Their operational definitions are described as follows.

(Insert Table 3 about here.)

1) Household structure

One of the concerns in this paper is with something occurred in the context of family life. Instead of family formation and dissolution, such as number of marriage and divorce, we will focus the analysis on whether family members are sources of

support or sources of daily hassles such as child care, care for the elderly and disability, and domestic violence. In this sense, living arrangement is crucial. One's private life is bound within the context of household structure. The relationship of the family members such as marital status may not be able to catch the idea that whether family members live together so that to be able to render support to each other. Their household structure is designed to be a proxy of the availability of help and support as well as sources of tension and conflict.

We adopted the criteria of whether living together to define household structure of which individual respondent resides. Household structure includes lone person family, couple only, couple with children, single parent family with children, couple with married children, three generation extended family, and others. Couple and Children family and three-generation family remain dominant in the Taiwan family structure, 1984-2000.

2) Personal economic status and personal contribution within family

Data on personal income and family total income are available for 1995 and 2000 surveys. In 1990 survey, only family income is available, while in 1984 survey, family income is not included. Based on the information available and considering the comparability of the coding, personal income and family income are recoded into 5 categories, while "0" refers no income, "1" less than NT\$10,000, "2" less than NT\$50,000, "3" less than NT\$100,000, and "4" more than NT\$100,000.

In addition to personal income and family income, one's contribution to the family is also constructed. Economic contribution within family is estimated as a proportion of contribution of an individual to his/her family. Since both personal income and family income in 1995 and 2000 surveys are coded as ordinal categories, with a range of NT\$10,000. That is, "0" refers to no income, while "22" refers to earn a monthly income of NT\$220,000. The difference between codes of personal income and family income can be considered a rough indicator of one's contribution to the family income. Smaller of the difference indicates higher contribution.

3. The Controls: Personal characteristics

1) Age cohort

Age is included as an independent variable to logit regression analysis of the different measures of mental health. Moreover, chronological age was coded into three dummy variables: age 21 to 30, 31 to 50, and 51 and older. Aged 21 to 30 was the reference category. Age cohort distributions in different time points are in Table 3.

2) Gender.

3) Education measured as highest grade of year completed at the time of the

interview. Education was treated as an ordinal variable, “0” refers to illiteracy while “5” university graduates and above”.

A descriptive analysis of the data is provided, including the status of mental health according to seven measures. It is worth emphasizing that the seven dependent variables correspond to different dimensions of mental health. They are conceptually and empirically distinct variables, not equivalent indicators of uni-dimensional concepts. That is, the absence of psychological disturbance is not equivalent to the presence of psychological well being. Similarly, the presence of psychological well being does not imply in any sense the presence of social trust in others. Logistic regression is preferred because the dependent variables are ordinal, rather than continuous. Nonetheless, for the purpose of model comparison, ordinal regression models are estimated by using seven measures of mental health as dependent variables, net of demographic characteristics.

4. The Findings

Descriptive statistics of the measures of mental health are presented in Table 3. By and large, respondents have less one report on psychosomatic complaint and psychological disturbance (Table 3). They are in good health. They are rather modest in terms of future prospect and somewhat in between “happy” and “not happy”. In terms of social aspect of mental health, i.e., alienation, social trust, and social participation, the general pictures are interesting. In general, by using 3 (or 2 in 1990) as a cutoff point, statistics in Table 3 indicate that people still prefer to have close contact with their neighbors (Means range between 2.17 and 2.45), but inclined not get involved in public affairs (means range between 2.99 and 3.47). The respondents remain modest attitude toward entrusting others, and disfavor that statement that others can be counted on (means between 3.77 and 3.96). Interesting enough, although our respondents do alienate to some extent to public affairs and show low level of social trust, they still think they can exercise influence and change the society if they make efforts.

Based on this general pattern as a starting point, multivariate logistic regression models were performed to explore the explanatory power of household structure, economic security, age, and gender, net of educational effect. The findings are discussed in turns as follows.

(Insert Table 3 about here.)

1) Household structure effect

The effects of household structure differ in terms of whether it belongs to private or public domains (Table 4, 5, and 6). On the issues with respect to public domains such as social alienation, social trust, and social participation, whether one resides in what types of household does not make much difference on their attitude. However, the household where one resides does affect one's assessment on the status of physical, of mental health, and psychological well-being. People residing in single parent family and lone person family tend to have more symptom complaints and more psychological disturbance. They are more likely to have physical problems which affect their daily functioning and have chronic disease. Moreover, they are less likely to feel a good prospect about the future. They are less happy in general. One thing worthy noting is in Table 4. Those who reside in stem family (three generation family) shows higher level of happiness than lone persons.

(Table 4 about here)

(Table 5 about here)

(Table 6 about here)

2). Economic status within family and economic status of the family

Contrary to expectation, economic status with family does not show effect on one's mental health. Moreover, the amount of income one earns shows no explanatory power on all measures of mental health, regardless of its domains, direction, and levels. Nonetheless, family income shows positive impact on several aspects of mental health. For example, those with family income higher than NT\$10,000 are less likely to suffer less psychosomatic symptoms and are more happy than those with no income or income less than NT\$10,000. The economic secured are also more willing to interact with neighbor and to trust others than the economic deprived. The important points here is that the level of personal income and personal contribution to the family does not make much difference on one's mental health in terms of all different measures.

3). Age cohort

Elderly cohort suffers more chronic diseases and psychological disturbance. They are more reluctant to get involved in public affairs. They also tend to consider others to be unreliable, although they remain optimistic about their ability to influence governmental policies. By and large, while keeping gender, education, household structure, and economic security constant, age cohorts show no difference on aspects of private as well as public domains. Age cohorts show no difference on the private

issues such as functional disability, good prospect about future, and happy life. Age cohort show no difference on the public issues such as no neighboring, distrust, influence, and ability to change.

4). Gender difference

Compared with men, women have more complaints, more psychological disturbances and more health problems. They are more likely to feel nothing one can really count on. Women have less intention to interact with their neighbors, they also agree better not involve in any public affair, although they are more likely to agree that citizen can affect government policies (Not In My Back Yard philosophy). Men and women are no difference on their health condition such as chronic disease, Men and women share similar attitude about the aspects such as good prospect about future, happy life, distrust others, ability to influence social development and governmental policies, and ability to change the society, and so forth.

5). Education effect

Highly educated reported less psychosomatic complaints, less functional disability and feel happier than the non-educated. They are less agreeable on the question of avoidance of close contact with neighbors, less agreeable on keeping out of public affairs, and more agreeable on citizen can influence governmental policies. As compared with those who received less than 9 year education, those received education beyond senior high school reports less psychological disturbance. They show trust on others and less likely to consider others unreliable.

Suffering of chronic disease does not vary according to education. It is interesting to note that people with different level of education do not vary on their assessment for the future, that is, whether they perceive a good prospect about the future. Attitude toward social and political change does not vary according to the levels of education. Only highly educated (that is received at least college education) tend to think they are able to influence social development if they advocate enough.

5. Conclusion

To answer the questions posed in this study, it is found in this study that the household effect on mental health varies according to the domains of the mental health measure. To be specific, two types of household structure stand out as being clearly disadvantaged in comparison with the persons living with couples and/or the elderly and/or the children: (1) lone person and (2) single parent family. However,

this pattern does not remain when the public domain of mental health, the mental health at social level, is of concern, indicating a useful distinction between private and public domains. Family dissolution is found to be detrimental. Second, family as a unit for economic security is a useful buffer for the presence of psychological disturbance and a facilitator for the psychological and social well being regardless one's share of contribution to the total amount of family resources. The elderly suffers more psychological disturbance, chronic disease. They are reluctant to involve in public affairs. They are more likely to consider others fickle. In this study, a persistent and penetrating educational effect on mental health is also observed.

What are found in this study imply that a change of buffering structure for mental health appears to be associated with a change in age composition and the dependent ratio of the population. Population change generates needs for creating a safety net for not only financial security but also social and psychological security as well.

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Table 1: Dimensions of mental health measures

Perspectives	Individual			Social
Pathological model (<i>Languishing</i>)	Psychosomatic complaints	Psychological disturbance	Deviant behavior Violence Suicide	Social distrust Social alienation
Well-being model (<i>Flourishing</i>)	Sense of fulfillment Sense of contention Being happy			Social participation Sense of control

Table 2: Measures of Mental Health and Questions used,

Dimensions of Mental Health	Questions and Codes
Psychosomatic complains	Do you have headache over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you have palpitation over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you have chest tightness over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you have tremor over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you have sleeplessness over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
Psychological Disturbance	Do you feel it is burdensome as being a person over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you feel losing confidence on yourself over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you feel losing hope on life over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you feel nervous over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Do you feel it is meaningless as being a person over the last two weeks? How do you rate it? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
Physical Health	Whether your health limited you "a lot," "some," "a little," or "not at all" from doing daily life activities over the last two weeks? 1 as "not at all" while 4 "a lot"
	Do you suffer any chronic disease? 1 as "no" 2 "yes"
Psychological Well-being	Over the last two weeks, do you feel that you have a good prospect in the future? 1 as "not at all", 2 "same as before", 3 "more serious than before", and 4 "very serious"
	Are you happy? 1 as "very happy", 2 "happy", 3 "not happy".

Alienation	In order to avoid trouble, better not to have close contact with neighbors. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1990 Survey: 1 as “strongly disagree”, while 4 “strongly agree”; 1995, 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”
	Better not get involved in public affairs since it is too difficult to deal with. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1990 Survey: 1 as “strongly disagree”, while 4 “strongly agree”; 1995, 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”
Social Trust	There is no trust in these days. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1990 Survey: 1 as “strongly disagree”, while 4 “strongly agree”; 1995 and 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”
	People are always fickle. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1990 Survey: 1 as “strongly disagree”, while 4 “strongly agree”; 1995 and 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”
Social Participation	I can influence social development if I express my opinion. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1990 Survey: 1 as “strongly disagree”, while 4 “strongly agree”; 1995 and 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”
	A citizen like myself also can influence governmental policies. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1990 Survey: 1 as “strongly disagree”, while 4 “strongly agree”; 1995 and 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”
	If we all make efforts, it is difficult to change the society and the politics. 1984 Survey: 1 as “strongly disagree”, while 6 “strongly agree”; 1995 and 2000 Surveys: 1 as “strongly disagree”, while 6 “strongly agree”

Table 3: Descriptive Statistics of the Variables Used, 1984, 1990, 1995, and 2000

	1984	1990	1995	2000
Sex				
Men	2,597 (61.85%)	2,433 (48.06%)	1,068 (51.32%)	952 (50.24%)
Women	1,602 (38.15%)	2,629 (51.94%)	1,013 (48.68%)	943 (49.76%)
Total	4,199	5,062	2,081	1,895
Age Cohort				
Under 30	1,101 (26.22%)	1,567 (30.96%)	413 (19.90%)	333 (17.60%)
30-50	2,066 (49.20%)	2,658 (52.51%)	1,075 (51.81%)	962 (50.85%)
Over 50	1,032 (24.58%)	837 (16.53%)	587 (28.29%)	597 (31.55%)
Total	4,199	5,062	2,075	1,892
Education				
Illiteracy	507 (12.07%)	356 (7.07%)	207 (9.99%)	170 (8.98%)
Elementary	1,693 (40.32%)	1,327 (26.23%)	584 (28.19%)	406 (21.44%)
Junior High	610 (14.53%)	855 (16.90%)	320 (15.44%)	269 (14.20%)
Senior High	806 (19.20%)	1,436 (28.38%)	531 (25.63%)	523 (27.61%)
Junior College	236 (5.62%)	561 (11.09%)	217 (10.47%)	270 (14.26%)
University	347 (8.26%)	525 (10.38%)	213(10.28%)	256 (13.52%)
Total	4,199	5,060	2,072	1,894
Household Structure				
Lone Person	127 (3.02%)	108 (2.13%)	87 (4.18%)	90 (4.75%)
Couple only	126 (3.00%)	313 (6.18%)	151 (7.26%)	153 (5.61%)
Couple + Children	2,272 (54.11%)	1,777 (35.10%)	755 (36.28%)	715 (37.71%)
Single-parents	189 (4.50%)	117 (2.31%)	77 (3.70%)	78 (4.11%)
Three Generation	1,002 (23.86%)	1,197 (23.65%)	479 (23.02%)	382 (20.15%)
Two Generation	146 (3.48%)	211 (4.17%)	63 (3.03%)	51 (2.69%)
Others	337 (8.03%)	1,339 (26.45%)	469 (22.54%)	427 (22.52%)
Total	4,199	5,062	2,081	1,896
Personal Income				
None			545 (26.68%)	473 (25.16%)
Under 10,000			151 (7.39%)	132 (7.02%)
10,000~50,000			1,081 (52.91%)	949 (50.48%)
50,000~100,000			224 (10.96%)	277 (14.73%)
Over 100,000			42 (2.06%)	49 (2.61%)
Total			2,043	1,880
Family Income				
None		10 (0.24%)	70 (3.56%)	66 (3.64%)
Under 10,000		223 (5.42%)	82 (4.17%)	54 (2.98%)
10,000~50,000		2,894 (70.28%)	815 (41.48%)	698 (38.50%)
50,000~100,000		801 (19.45%)	736 (37.46%)	683 (37.67%)
Over 100,000		190 (4.61%)	262 (13.33%)	312 (17.21%)
Total		*4,118	1,965	1,813

* About 20% of respondent answered "don't know" on amount of total family income.

Table 3: Descriptive Statistics of the Measures of Mental Health.

	1984	1990	1995	2000
Complaints (0-5)	---	0.44 (0.93)	0.57 (1.06)	0.63 (1.12)
Psycho Disturbance (0-5)	---	---	0.52 (0.91)	0.54 (0.94)
Functional Disability (1-4)	---	1.24 (0.55)	1.31 (0.67)	1.28 (0.62)
Chronic Diseases (1-2)	---	1.16 (0.37)	1.26 (0.44)	1.25 (0.43)
Good Prospect (1-4)	---	3.16 (0.51)	3.12 (0.49)	3.14 (0.53)
Happiness (1-3)	---	---	2.19 (0.55)	2.23 (0.54)
No Neighboring (1-6)	2.17 (1.16)	1.93 (0.56)*	2.40 (1.14)	2.45 (1.12)
No Public Affairs (1-6)	2.99 (1.38)	2.46 (0.67)*	3.46 (1.34)	3.47 (1.39)
Distrust (1-6)	2.80 (1.22)	2.23 (0.61)*	2.96 (1.15)	2.98 (1.26)
Fickleness (1-6)	3.77 (1.20)	2.70 (0.60)*	3.83 (1.12)	3.96 (1.31)
Influence (1-6)	3.99 (1.24)	2.71 (0.62)*	3.86 (1.19)	3.95 (1.26)
Participation (1-6)	3.90 (1.30)	2.62 (0.65)*	3.43 (1.33)	3.64 (1.41)
Change (1-6)	4.95 (0.98)	---	4.45 (1.10)	4.58 (1.03)

Standard deviations are in parenthesis.

* The answers are ranged between 1 and 4, while 1 indicating “strongly disagree”.

Table 4: Logit Regression of the Status of Mental Health

	Complaints	Psychological Disturbance	Functional Disability	Chronic Disease
Women	0.28***	0.24**	0.25**	-0.09
Education (Illiteracy)				
Grade S	-0.41**	-0.20	-0.38**	0.06
Junior High	-0.52***	-0.19	-0.80***	-0.07
Senior High	-0.58***	-0.43**	-0.67***	-0.11
College	-0.87***	-0.58**	-0.71***	-0.01
University	-0.89***	-0.61**	-0.74***	0.03
Master +	-0.92**	-0.50	-0.43	-0.26
Age Cohort (Age – 30)				
31 - 50	-0.06	-0.18	-0.04	0.64***
51 +	-0.12	-0.38**	0.19	1.76***
Personal Income (no income)				
- 10,000	-0.11	0.04	0.07	-0.10
10,001~50,000	0.04	-0.04	0.18	-0.30*
50,001~100,000	-0.06	-0.23	0.10	-0.36
100,001 +	0.18	-0.44	0.17	-0.60
Family Income (no income)				
- 10,000	-0.33	-0.16	0.03	-0.59*
10,001~50,000	-0.50*	-0.33	-0.28	-0.55*
50,001~100,000	-0.61*	-0.45	-0.53	-0.41
100,001 +	-0.80*	-0.43	-0.99*	-0.20
Economic power	0.01	-0.03	0.04	-0.04
Household Structure (Lone person)				
Couple only	-0.03	-0.01	-0.30	-0.28
Couple + Children	-0.05	-0.12	-0.59**	-0.22
Single Parent	0.23	0.55*	-0.07	0.19
3 Generation	0.02	-0.20	-0.67***	-0.34
2 Generation	-0.14	-0.02	-0.13	-0.69*
Others	0.05	-0.04	-0.32	-0.28
Period (1995)				
2000	-0.15*	-0.07	0.06	0.09
R ²	0.01	0.02	0.04	0.10

N=3,753

Table 5: Logit Regression of Alienation and Social Trust

	No Neighboring	No Public Affairs	Distrust	Fickleness
Women	0.23*	0.04	-0.03	0.01
Education (Illiteracy)				
Grade S	-0.03	-0.52**	0.06	-0.02
Junior High	-0.43*	-1.03***	-0.22	0.11
Senior High	-0.60**	-1.43***	-0.39*	-0.29
College	-0.88***	-1.68***	-0.92***	-0.66**
University	-0.80**	-2.05***	-1.06***	-0.79***
Master +	-0.81	-2.09***	-1.05**	-1.06***
Age Cohort (Age – 30)				
31 – 50	-0.08	-0.22	-0.02	-0.09
51 +	0.24	-0.31*	0.22	-0.31*
Personal Income (no income)				
- 10,000	0.17	0.23	0.37*	0.44*
10,001~50,000	0.30	-0.03	0.23	0.16
50,001~100,000	0.39	-0.07	0.13	0.24
100,001 +	1.02*	0.02	0.27	-0.03
Family Income (no income)				
- 10,000	-0.48	0.12	-0.78**	-0.96**
10,001~50,000	-0.75**	-0.20	-0.55*	-0.37
50,001~100,000	-1.13***	-0.34	-0.82**	-0.54
100,001 +	-1.69***	-0.63	-0.99**	-0.80*
Economic power	0.03	0.02	0.03	0.04
Household Structure (Lone person)				
Couple only	-0.08	-0.13	-0.14	0.03
Couple + Children	-0.23	-0.05	0.08	0.12
Single Parent	-0.18	0.18	0.14	0.22
3 Generation	-0.18	0.06	-0.04	0.09
2 Generation	-0.08	0.29	0.54	0.10
Others	-0.05	0.23	0.15	0.27
Period (1995)				
2000	-0.31***	-0.15*	0.20**	-0.05
R ²	0.05	0.07	0.04	0.02

N=3,109

Table 6: Logit Regression of Psychological Well-being and Social Participation

	Good Prospect	Happiness	Influential	Participation	Change
Women	0.10	0.38**	0.02	0.10	0.15
Education (Illiteracy)					
Grade S	-0.17	0.68**	0.32	0.22	0.31
Junior High	0.34	0.61*	0.32	0.25	0.21
Senior High	0.16	0.68**	0.34	0.20	0.19
College	-0.37	0.91**	0.50*	0.13	0.24
University	0.22	0.78*	0.69***	0.25	0.10
Master +	0.75	2.02*	0.24	-0.21	0.42
Age Cohort (Age – 30)					
31 – 50	-0.13	0.01	0.00	0.13	-0.06
51 +	-0.13	0.11	0.21	0.33**	0.21
Personal Income (no income)					
- 10,000	-0.39	-0.26	-0.07	-0.05	0.04
10,001~50,000	-0.43	0.30	0.00	0.08	0.07
50,001~100,000	-0.85*	0.45	0.19	0.19	0.05
100,001 +	-0.41	1.09	0.30	0.37	-0.24
Family Income (no income)					
- 10,000	-0.07	0.56	0.14	-0.39	0.24
10,001~50,000	-0.17	0.96**	-0.35	0.02	-0.14
50,001~100,000	0.15	1.54***	-0.46	-0.10	-0.15
100,001 +	0.28	1.87*	-0.40	-0.15	0.02
Economic power	-0.07	0.00	0.01	0.02	0.01
Household Structure (Lone person)					
Couple only	-0.63	0.33	-0.14	-0.26	-0.23
Couple + Children	-0.71*	-0.08	0.06	-0.27	0.20
Single Parent	-0.05	-1.22***	0.25	-0.10	-0.03
3 Generation	-0.67	0.45	-0.03	-0.34	0.01
2 Generation	-1.55*	-0.38	-0.27	-0.50	0.01
Others	-0.26	-0.53	0.00	-0.24	0.01
Period (1995)					
2000	-0.17	-0.19	-0.09	-0.08	-0.02
R ²	0.03	0.09	0.01	0.01	0.01

N=3,398

