The HKU Scholars Hub   The University of Hong Kong   香港大學學術庫

Title	Leisure participation amongst Hong Kong Chinese older adults
Author(s)	Chou, KL; Chow, NWS; Chi, I
Citation	Ageing And Society, 2004, v. 24 n. 4, p. 617-629
Issued Date	2004
URL	http://hdl.handle.net/10722/43490
Rights	Creative Commons: Attribution 3.0 Hong Kong License

Leisure participation amongst Hong Kong Chinese older adults

KEE-LEE CHOU*, NELSON W. S. CHOW* and IRIS CHI*

ABSTRACT
Gerontologists have recognised the important influence of leisure activity on the mental and physical health of older adults. To date, however, there have been few studies of the patterns of participation in leisure activity among older adults in Hong Kong. This study examines a large representative sample of Hong Kong older adults and the associations between their socio-economic and health characteristics and their leisure activities. The data are from a cross-sectional survey of 2,180 respondents aged 60 or more years, conducted in 2000 by the Hong Kong Census and Statistics Department. There were full records for 2,144 respondents. Among the participation rates in the seven categories of leisure activities, watching television or listening to radio was the highest, while the lowest was for playing mahjong or cards. The characteristics that significantly correlated with the level of participation differed by the activity. Although no consistent pattern emerged, gender, education, employment status, receiving welfare benefits, self-rated health and functional impairment were the strongest correlates for most types of leisure activity. The paper is concluded by comparing the results with previous findings, and by discussing the service implications of the findings, the limitations of the study, and directions for future research.

KEY WORDS – leisure activity, Chinese older adults, participation pattern, Hong Kong.

The leisure activities of older people

Increasing average life expectancy coupled with low fertility has resulted in a rapidly ageing population in Hong Kong, where it is expected that the number of people aged 60 or more years will increase from 999,700 in 2001 (14.8% of the total population) to 1,936,000 in 2021 (22.9% of the total) (Hong Kong Special Administrative Region Government, Department of Census and Statistics (HKDCS) 2002 *a*). The rapid growth of the older population presents a serious challenge to policy makers, and one particularly important issue is how to maintain and improve the physical

* Sau Po Centre on Ageing, University of Hong Kong.

health and psychological wellbeing of older adults. It has been well established by previous research, that among older adults, spending time in leisure activity is positively associated with physical health, life satisfaction and psychological wellbeing (Iwasaki and Smale 1998). It has further been argued that further increases in life expectancy, improvements in health status and expanding early retirement will mean that leisure activities have rising importance in the promotion of the quality of life in old age (Hendricks and Cutler 2003).

Studies of leisure participation in old age have a comparatively long history in social gerontology (Abrams 1978; Havighurst 1961). A recent United States study confirmed the normal finding that solitary and passive activities, such as listening to radio and watching television, had the highest rates of participation and consumed most time, whereas playing cards was the most uncommon reported activity (Strain *et al.* 2002).

Correlates of participation

Previous studies have found that socio-demographic and health-related variables are significantly associated with leisure participation in later life. Bijnen *et al.* (1998) found in a Dutch sample a negative relationship between age and leisure participation. Verbrugge, Gruber-Baldini and Fozard (1996) found that older women in the Baltimore Longitudinal Study were more likely to participate in leisure activities than older men, while Freysinger (1993) found this to be especially the case for organised or formal activities. Other American studies found that older adults with high socio-economic status, education level and income had a higher likelihood of participation in leisure activities (Satariano, Haight and Tager 2002; Strain *et al.* 2002). Moreover, being employed was significantly associated with a high rate of participation (Iwasaki and Smale 1998). Lastly, older adults who lived alone were less likely to engage in a leisure activity than those living with their spouses (Satariano, Haight and Tager 2002).

Physical health is another important correlate of leisure participation. It has been found that poor self-rated health status was significantly related to low participation (Searle and Iso-Ahola 1988), although another study found no relationship between leisure pursuits and self-rated health (Bevil, O'Connor and Mattoon 1993). A decline in functional capacity was associated in a Quebec study with lower rates of participation in some leisure activities (Lefrancois, Leclerc and Poulin 1998). Chronic illness, such as arthritis, was found to have a negative effect on leisure participation in later life (Zimmer, Hickey and Searle 1997).

The objectives of this paper are to specify the leisure participation patterns of older adults in Hong Kong, and to identify the correlates of

participation. It examines whether the associations between socio-economic and health characteristics and leisure participation reported in the cited diverse western studies are replicated among Hong Kong older adults. To the best of our knowledge, although there have been several previous studies of older people's leisure activities in Hong Kong, none have involved a large representative sample of older adults since Kwan (1990).

Methods

The sample and sources of data

The data for the study were collected by the *General Household Survey* (GHS) of the HKDCS (2001). The GHS has been conducted continuously (month-to-month) since 1981 with the primary purpose of collecting data on the employment status of Hong Kong residents and on the city's labour force. The population of interest is the land-based non-institutional population of Hong Kong, which constitutes about 99 per cent of the total Hong Kong resident population, but the survey does not cover people living in institutions or on vessels.

   Each GHS selects respondents by a systematic random sample of households, and so produces samples that are very good representations of the general Hong Kong population. For this paper, the sample, interviewed face-to-face between September and December 2000, were screened to identify people aged 60 or more years. There were 2,907 households with at least one member aged at least 60 years, and 2,180 older adults were successfully interviewed (a response rate of 75%). The survey asked respondents for socio-demographic descriptors and about their financial situation, health and leisure activities. No information about race was collected. The more recent population census in 2001 reported that 98.9 per cent of older people in Hong Kong were of Chinese nationality (HKDCS Census and Statistics Department 2002*b*).

Definition of variables

The dependent variable was a measure of participation in leisure activity. Respondents were asked to report how many times during an average week they engaged in seven categories of leisure activity, using a five-point scale with the following categories: '0' not at all; '1' less than one day a week; '2' one to two days a week; '3' three to six days a week; and '4' every day. The specified leisure activities were watching the television or listening to the radio; reading newspapers, books or magazines; socialising

with relatives and friends; playing mahjong or cards; doing exercise in the morning or strolling in the park; going out for breakfast; and strolling on the street or shopping.

The socio-demographic profile variables included gender, age, educational level, marital status, whether living alone, and whether currently employed. Three dichotomies were created to represent marital status: whether or not single, widowed or divorced.[1] The respondent's financial situation was measured by total monthly income (US$), whether receiving welfare benefits, and a binary indicator of financial strain assessed by the question, 'Do you consider your monthly income sufficient for your daily expenses?' ('0' sufficient, '1' not sufficient). The health-related variables were cognitive ability, self-rated health status, number of diseases, sight, feeling of pain and functional capacity. Cognitive ability was assessed by a structured measure of cognitive performance, the *Short Portable Mental Status Questionnaire* (SPMSQ) which has high validity and test-retest reliability (Pfeiffer 1975). This widely used test is a 10-item questionnaire that was designed to measure several intellectual areas, including orientation, short- and long-term memory, general knowledge and problem solving. The 10 items were scored on a standard dichotomous scale (0 or 1), and the aggregate was an unweighted sum of the 10 component items (the possible range being from 0 to 10). The Chinese version of the SPMSQ had been validated in earlier studies (Chi and Boey 1993), and Cronbach's alpha for the SPMSQ in the present sample was 0.79. Self-rated health status was rated on a five-point scale ranging from 'not at all good' to 'very good'.[2]

Questions were asked about whether a doctor had ever told the participant that he or she had each of 15 diseases: hypertension, diabetes, heart disease, arthritis, eye diseases, high cholesterol, apoplexy, gastric diseases, cancer, tracheitis, nephralgia, gout, Parkinson's disease, depression and senile dementia. Sight was assessed by asking respondents whether (with or without spectacles) they saw clearly or not: the four-point scale ranged from '1' for 'very unclear' to '4' for 'very clearly'. Pain was obtained by asking respondents to report the frequency of pain or physical discomfort sufficient to affect their daily life in any part of their body. It was categorised on a three-point scale, that ranged from '1' for 'no pain' to '3' for 'always'.

Functional capacity was assessed by the basic Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs) scales. A person's ADL score is the number of basic activities (feeding, transferring, dressing, walking, toileting, bathing, grooming, and climbing stairs) with which a person needs help plus scores for urinary incontinence and faecal incontinence. These items were rated as '0' for 'needs no help' and '1' for 'needs help'. The IADL score accumulates the number of difficulties in

using the phone, using transport, shopping, financial management, cooking, household chores, and taking medication. Each IADL item was scored on a three-point scale, that ranged from '1' for 'independent or needs little help', to '3' for 'not able to carry out the activity unaided'. In both ADL and IADL measures, responses for the items were summed, and higher scores indicate a higher level of functional impairment.

There were missing data for some variables including monthly income (N=13), educational attainment (4) and SPMSQ (20). The missing cases reduced the sample for analysis to 2,144 respondents. After examining the distribution of scores for the seven categories of leisure activity participation, the dependent variables, seven multiple ordinary least squares (OLS) regression models were calibrated, with the independent variables being the socio-demographic variables, indicators of financial situation, and health-related measures.

Results

Characteristics of the sample

Among the 2,144 older adults, 51.5 per cent were women, the mean age was 69.9 years and the standard deviation 7.4 years. Almost six-in-ten (58.1%) of the sample were currently married, 4.3 per cent were single, 34.9 per cent were widowed, and 2.6 per cent were divorced or separated. Just over 41 per cent had had no schooling or only a little elementary school education, 37.4 per cent had received an elementary education, 9.4 per cent had had junior high school education, 8.1 per cent had received senior high school education, and 3.8 per cent had had university education. In this group of 2,144 older adults, about 13.6 per cent were currently employed, slightly over two-thirds (67.2%) were retired, 15 per cent were home-makers, 23 (1.1%) were unemployed, and 63 (2.9%) did not work and had stopped looking for a job because of a chronic illness or for other reasons. About 30.9 per cent of the respondents were free of all 15 diseases. The range of total chronic health conditions was from none to nine, with the median being one condition.

Regressions of participation in leisure activity

Table 1 reports the participation rates in seven leisure activities. The three with the highest participation were: watching the television or listening to the radio; reading newspapers, books or magazines; and doing physical exercise or strolling in the park. The most uncommon activity was playing mahjong or cards. The strength of the associations among the independent

T A B L E 1. *Frequency of participation in seven leisure activities among 2,144 Hong Kong older people*

Leisure activity	None (%)	<1 a week (%)	1–2 days a week (%)	3–6 days a week (%)	Everyday (%)
Watching TV/ listening to radio	1.8	0.0	0.6	4.2	93.3
Reading newspapers/ books/magazines	36.4	1.3	3.5	5.9	52.9
Socialising with relatives and friends	30.9	14.6	18.9	16.5	19.1
Playing mahjong or cards	74.9	10.9	8.6	3.5	2.1
Exercising in the morning/strolling in the park	30.6	3.9	7.9	10.8	46.8
Going out for breakfast	22.3	11.9	19.8	13.0	33.0
Strolling on the street/ shopping	38.6	18.0	18.6	10.5	14.4

The column group header "Frequency of participation" spans all five percentage columns.

variables was examined using Pearson linear correlation when both independent variables were interval scales, and using chi-squared tests when both variables were dichotomous, categorical or ordinal variables. A relatively high correlation was found between IADL and SPMSQ ($r = 0.51$, $p < 0.01$) as well as between IADL and ADL ($r = -0.61$, $p < 0.01$). The tolerance values of the independent variables in all the regression models were examined. All were about 0.8 or higher, greater than the common threshold of 0.1 (Hair *et al.* 1995). Therefore, multi-colinearity among the independent variables was at acceptable levels.

Table 2 shows the seven regression models and the significant socio-economic and health-related correlates of leisure-activity participation. It should be noted that the dependent variables used in the regression models are ordinal measures, so the regression coefficients and the explained variances should be interpreted as approximate and comparative indicators, not as absolute estimates of the level of explanation. Although all the regression models were significant, the explained variance varied greatly by the type of leisure activity. The greatest contrast was between the model for reading newspapers ($R^2 = 0.38$), and that for watching television and listening to the radio ($R^2 = 0.03$).

As can be seen in Table 2, being employed was significantly related to participation in all types of leisure activity except reading newspapers. Not surprisingly, older adults who were working were least likely to engage in most leisure activities. Gender was also significantly associated with four types of leisure activity. Compared with older women, older men were

TABLE 2. *Coefficients for the independent socio-economic and health related variables when regressed on engagement in seven categories of leisure activity*

Independent variables	Dependent variables and regression coefficients						
	Watching TV/ listening to radio	Reading newspapers, books and magazines	Chatting with relatives and friends	Playing mahjong or cards	Exercising in morning/strolling in the park	Going out for breakfast	Strolling on the street/shopping
Socio-demographic							
Gender	−0.05*	−0.22**	−0.01	−0.02	−0.06*	−0.20**	−0.05
Age	−0.01	−0.03	0.01	−0.07**	0.04	−0.01	−0.05*
Education	−0.06*	0.26**	0.00	−0.02	−0.08**	−0.10**	0.04
Single	−0.03	−0.02	0.02	−0.01	−0.03	−0.02	−0.01
Widowed	0.01	−0.02	0.07**	0.01	0.01	0.01	0.04
Divorced	0.01	0.05**	0.01	−0.03	0.01	−0.03	−0.01
Living alone	−0.06*	−0.04*	0.08**	0.02	0.01	−0.02	0.02
Employed	−0.10*	−0.01*	−0.15**	−0.08**	−0.26**	−0.08**	−0.12**
Financial situation							
Receiving welfare	0.01	−0.06**	−0.03	−0.05*	0.05*	−0.08**	−0.05*
Monthly income	0.02	−0.01	0.01	−0.00	−0.01	−0.02	0.03
Financial strain	−0.01	−0.02	−0.04	−0.03	−0.001	−0.04*	0.01
Health-related							
SPMSQ	0.03	0.26**	0.02	0.05	−0.00	0.03	0.05
Self-rated health	0.02	0.04*	0.09**	0.07**	0.03	0.05	0.08**
Number of diseases	0.03	0.03	0.06*	0.07**	0.02	0.03	−0.01
Sight	0.06**	0.08**	0.07**	0.04	0.00	0.03	0.01
Pain	0.00	−0.04*	−0.00	−0.04	−0.03	−0.07**	−0.04
ADL	−0.06*	−0.00	0.01	0.02	0.00	0.00	0.01
IADL	−0.01	−0.03	−0.02**	−0.07*	−0.20**	−0.18**	−0.12**
R^2	0.03	0.38	0.12	0.08	0.04	0.12	0.11

Notes: SPMSQ: Short Portable Mental Status Questionnaire. ADL: Activities of Daily Living. IADL: Instrumental Activities of Daily Living.
Significance levels: * $p < 0.05$, ** $p < 0.01$.

more likely to watch television or listen to radio, read newspapers, books or magazines, exercise in the morning or stroll in the park, and go out for breakfast. Lastly, education and living alone were significantly related to several types of leisure activity although the relationships were more complicated. Older adults with a high level of education were most likely to read newspapers, books or magazines, but least likely to watch television or listen to radio, exercise or stroll in the park, or go out for breakfast. Those who were living alone were most likely to chat with relatives and friends, but least likely to read newspapers, books or magazines, watch television or listen to radio.

Turning to the respondents' financial situation, being 'on welfare' was significantly associated with five types of leisure activity. It lowered participation in four types (reading printed material, playing mahjong or cards, going out for breakfast, and strolling on the street or shopping). It should be noted, however, that there was a significant positive relationship between 'being on welfare' and taking morning exercise or strolling in the park. Financial strain was also negatively related to going out for breakfast. Three health indicators (IADL score, self-related health status and eyesight) consistently correlated with several of the leisure activities. The IADL score negatively associated with five categories of leisure activity, whereas self-rated health status was positively associated with four types. Furthermore, older adults with better sight were more likely than those with poor sight to watch television, listen to radio, read printed materials, and chat with relatives and friends.

Discussion

The principal findings of this study are that the most frequently pursued leisure activity was 'watching television or listening to radio', whereas the least common (of those specified) was 'playing mahjong or cards'. Over 90 per cent of the sample of older adults watched television or listened to radio everyday, but only one quarter played mahjong or cards in an average week. These findings are similar to those from western countries, where watching television or listening to radio are the most common and time consuming leisure activities (Strain *et al.* 2002).

Leisure activity and socio-demographic variables

Several findings deserve emphasis. First, although several independent variables were consistently related to all types of leisure activity participation, it was also the case that different sets most strongly correlated with

different leisure activities. These findings strongly suggest that leisure activities are heterogeneous. Bosse and Ekerdt (1981) identified four general categories: physical, social, solitary and attendance at cultural and sport events. An equivalent classification of leisure activities in Chinese society must be developed in future studies, and the different sets of predictors for specific types of leisure activity must be more fully identified.

Secondly, an unexpected result is that older men were more likely to participate in four categories of leisure activity than older women. This differential contrasts with the evidence from most western studies, which find that older women are more often engaged. The inverse finding from Hong Kong may be because older men have more free time, being less involved with family and domestic obligations such as household chores or babysitting for their grandchildren. Another possible explanation, especially for going out for breakfast, is that older men have more disposable income than older women. Moreover, older men may feel more dignified when involved in activities outside their home.

Thirdly, older people who are in work are less likely than those not in work to engage in all types of leisure activity except reading newspapers, books or magazines. Lack of time and tiredness after work may be the reasons why older workers are less likely to participate in leisure activity. It seems that the dichotomy between work and leisure still structures the lives of Hong Kong's older adults (Cutler and Hendricks 1990). Education also plays a role in leisure participation, especially for reading printed materials. A previous study has shown that education affects life-style choices in later life (Pohjolainen 1991).

Leisure activity and a person's financial situation

Amongst the three indicators of the respondents' financial situation, receiving welfare was the most important correlate of leisure activity (Table 2). Welfare recipients were less likely to read newspapers, books or magazines, play mahjong or cards, have breakfast at restaurants, and do shopping than other older adults. The most obvious explanation is that all these leisure activities involve financial expenditure that may constrain participation among those dependent on welfare. Because the cash value of the welfare benefit is minimal and adequate only to meet the basic needs of the recipients, older adults on welfare are among the poorest groups of the Hong Kong population. Welfare recipients were more likely to report depressive symptoms than others (Chou and Chi in press). A hypothesis for future research is that low participation in leisure activity not only associates with receiving welfare but is a reason for the high prevalence of depression in the group.

Leisure activity and health indicators

It is not surprising to find that the IADL score consistently correlated with most categories of leisure activity because it represents the capability of older adults to participate in out-of-home and social activities. Consistent with previous studies (Strain *et al.* 2002), the respondents with better self-rated health were the most likely to take part in leisure activity. The importance of self-rated health status has been demonstrated in Chinese older adults, and has been found to be significantly related to health service utilisation and life satisfaction (Chou and Chi 1999, 2004).

Implications for practitioners

Previous studies have demonstrated the beneficial effect of leisure education intervention on psychological wellbeing (Searle and Iso-Ahola 1988). The findings of this study may provide useful assessment and counselling guidelines for care practitioners in Hong Kong. The benefits of leisure activities that create opportunities for social contacts, such as chatting with relatives and friends, and of those that involve physical exertion, must be understood and explained, and older adults should generally be encouraged to participate in them. Nurses, social workers and physicians have exceptional influence on older adults' decisions about the use of leisure time. The findings also suggest, however, that care practitioners should recognise and respect the great variation in older adults' leisure preferences and understand the constraints of socio-economic and health-related characteristics. Consequently, care practitioners must be sensitive to these factors and offer or recommend alternative but feasible activities to older adults who cannot pursue their first preferences because of physical, economic or social limitations. At the same time, care practitioners should stress the benefits of participation in a diverse repertoire of leisure activities that are consonant with a person's socio-economic and health status.

More specifically, practitioners must be aware that older people who are still working, those with impairments in the Instrumental Activities of Daily Living, and those who are 'on welfare' are unlikely to participate in the leisure activities that are currently available. The challenge is to devise leisure activity programmes that overcome the barriers preventing older adults' participation. One simple measure would be to expand or alter the times at which leisure activities are provided, so that they are available outside working hours and during the evenings and holidays. Moreover, service practitioners and the government should provide more leisure activity opportunities for older welfare recipients, and these activities must be provided free-of-charge or with minimal fees to encourage participation.

A minimum standard of functional capacity might be a precondition for older adults' participation in some active leisure activities, so health promotion programmes must be designed to improve the capacities of older people with impaired abilities so that they can participate more in active leisure.

Limitations of the study

It is recognised that the analysis reported in this paper is cross-sectional and that a longitudinal study is needed to deepen our understanding of the causal and predictor variables for leisure participation among elderly Chinese people in Hong Kong. The preliminary results reported here nevertheless point to some likely predictors. Another limitation is that the seven categories of leisure activity nominated in the official survey omit several activities that many Hong Kong older people engage in, from 'worthy' pursuits such as volunteer work to 'shunned upon' recreations such as gambling. The incomplete list may have produced misleading or inconsistent results. Some of the individual categories used by the census were not based on any theoretical support or empirical data and involve questionable aggregations, *e.g.* the combination of doing exercise in the morning and strolling in the park. It is of course common for secondary analyses of official data to identify limitations in the data collected for another purpose. Constructive feedback to the data collection agency normally results in improved data collection in future surveys.

A third limitation is that older adults living in residential facilities for older people, hospitals, prisons or on vessels were not included in the sampling frame. Therefore, the results of this study cannot be generalised to the institutional population. The survey had no information about other important factors, such as life events, people's attitudes and values relevant to leisure, and the barriers to participation that they face (Caldwell and Andereck 1994; Chiriboga and Pierce 1993). Nor have we used other methods to record leisure participation, such as time budgets or diaries. Future studies that examine a wider range of variables using more diverse methods may lead to improved understanding.

Conclusions

In conclusion, it has been found that among Chinese older people in Hong Kong, the leisure activity with the highest rate of participation is watching television or listening to radio, and that among seven nominated activities the least engaged with was playing cards or mahjong. Gender, employment status, educational level, receiving welfare benefits, self-rated health

and functional capacity were significantly related to the participation rate in most leisure activities. These findings call for a culturally sensitive model for the prediction of leisure activity participation to inform interventions and services that promote healthy ageing through active leisure participation. Moreover, further studies in this area should be conducted with a longitudinal design, an improved categorisation of leisure activity that includes the institutional population and measures additional variables, and use more diverse methods of data collection.

Acknowledgements

NOTES

1 Educational level was categorised as '0' no schooling; '1' elementary school; '2' junior high school; '3' senior high school; and '4' tertiary education or above. Marital status was scored as currently married, single, windowed, and divorced or separated.
2 '1' not good at all, '2' not very good, '3' fair, '4' good, and '5' very good.

References

Abrams, M. 1978. *Beyond Three Score and Ten : A First Report on a Survey of the Elderly*. Age Concern England, Mitcham, Surrey.

Bevil, C. A., O'Connor, P. C. and Mattoon, P. M. 1993. Leisure activity, life satisfaction and perceived health status in older adults. *Gerontology and Geriatrics Education*, **14**, 2, 3–19.

Bijnen, F. C. H., Feskens, E. J. M., Caspersen, C. J., Mosterd, W. L. and Kromhout, D. 1998. Age, period, and cohort effects on physical activity among elderly men during 10 years of follow-up : the Zutphen elderly study. *Journal of Gerontology : Medical Sciences*, **53A**, 3, M235–41.

Bosse, R. and Ekerdt, D. J. 1981. Change in self-perception of leisure activities with retirement. *The Gerontologist*, **21**, 6, 650–4.

Caldwell, L. L. and Andereck, K. L. 1994. Motives for initiating and continuing membership in a recreation-related voluntary association. *Leisure Sciences*, **16**, 1, 33–44.

Chi, I. and Boey, K. W. 1993. Hong Kong validation of measuring instruments of mental health status of the elderly. *Clinical Gerontologist*, **13**, 4, 35–51.

Chiriboga, D. A. and Pierce, R. C. 1993. Changing context of activity. In Kelly, J. R. (ed.), *Activity and Aging*. Sage, Newbury Park, California, pp. 42–59.

Chou, K. L. and Chi, I. 1999. Determinants of life satisfaction in Hong Kong Chinese elderly : a longitudinal study. *Aging and Mental Health*, **3**, 4, 328–35.

Chou, K. L. and Chi, I. 2004. Factors associated with the use of publicly funded services by Hong Kong Chinese older adults. *Social Science and Medicine*, **58**, 6, 1025–35.

Cutler, S. J. and Hendricks, J. 1990. Leisure and time use across the life course. In Binstock, R. H. and George, L. K. (eds), *Handbook of Aging and the Social Sciences* (5th edition). Academic, San Diego, California, 169–86.

Freysinger, V. J. 1993. The community, programs and opportunities: population diversity. In Kelly, J. R. (ed.), *Activity and Aging*. Sage, Newbury Park, California, 211–30.

Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C. (eds) 1995. *Multivariate Data Analysis*. Prentice-Hall, Englewood Cliffs, New Jersey.

Havighurst, R. 1961. The nature and values of meaningful free-time activity. In Kleemeier, R. (ed.), *Aging and Leisure*. Oxford University Press, New York, 309–44.

Hendricks, J. and Cutler, S. J. 2003. Leisure in life-course perspective. In Settersten, R. A. Jr (ed.), *Invitation to the Life Course: Toward New Understandings of Later Life*. Baywood, New York, 107–34.

Hong Kong Special Administrative Region Government Department of Census and Statistics (HKDCS) 2001. *General Household Survey 2001*. Special Topics Report 27, Hong Kong Government Printer, Hong Kong.

HKDCS 2002 a. *Hong Kong Population Projections 2001–31*. Hong Kong Government Printer, Hong Kong.

HKDCS 2002 b. *Population Census 2001: Thematic Report on Older Persons*. Department of Census and Statistics, Hong Kong.

Iwasaki, Y. and Smale, B. J. A. 1998. Longitudinal analyses of the relationships among life transitions, chronic health problems, leisure and psychological well-being. *Leisure Sciences*, **20**, 1, 25–52.

Kwan, A. Y. H. 1990. A review of the recreation and leisure activities patterns of older people in Hong Kong. *Hong Kong Journal of Gerontology*, **4**, 2, 28–33.

Lefrancois, R., Leclerc, G. and Poulin, N. 1998. Predictors of activity involvement among older adults. *Activities, Adaptation and Aging*, **22**, 4, 15–29.

Pfeiffer, E. 1975. A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. *Journal of the American Geriatrics Society*, **23**, 10, 433–41.

Pohjolainen, P. 1991. Social participation and life-style: a longitudinal and cohort study. *Journal of Cross-Cultural Gerontology*, **6**, 1, 109–17.

Satariano, W. A., Haight, T. J. and Tager, I. B. 2002. Living arrangements and participation in leisure-time physical activities in an older population. *Journal of Aging and Health*, **14**, 4, 427–51.

Searle, M. S. and Iso-Ahola, S. E. 1988. Determinants of leisure behavior among retired adults. *Therapeutic Recreation Journal*, **22**, 2, 38–46.

Strain, L. A., Grabusic, C. C., Searle, M. S. and Dunn, N. J. 2002. Continuing and ceasing leisure activities in later life: a longitudinal study. *The Gerontologist*, **42**, 2, 217–23.

Verbrugge, L. M., Gruber-Baldini, A. L. and Fozard, J. L. 1996. Age differences and age changes in activities: the Baltimore Longitudinal Study of Aging. *Journal of Gerontology: Social Sciences*, **51B**, 1, S30–41.

Zimmer, Z., Hickey, T. and Searle, M. S. 1997. The pattern of change in leisure activity behavior among older adults with arthritis. *The Gerontologist*, **37**, 3, 384–92.

Address for correspondence:
Kee-Lee Chou, Sau Po Centre on Ageing,
University of Hong Kong, Pokfulam Road, Hong Kong.

e-mail: klchou@hku.hk