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Leisure and Depression in Midlife: A Taiwanese National Survey of Middle-aged Adults

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Abstract

We aimed to explore middle-aged people's leisure experiences and their associations with depression in a national representative sample of Taiwanese people ($N = 1143$, aged 45–65). We found that: (1) being female and low family income were demographic risk factors of depressive symptoms; (2) poor physical health and disability were positively related to depressive symptoms; (3) social support was negatively related to depressive symptoms; and (4) having controlled for effects of demographics, physical health and social support, positive leisure experiences were negatively related to depressive symptoms. The benefits of leisure pursuits for successful midlife transition and prospective ageing were discussed.

Keywords

- *depression*
- *leisure*
- *middle-aged people*
- *physical health*
- *social support*

MIDDLE age can be defined in many ways, for example, chronologically (as the age period of 40–60 years), biologically (as the latter decades of reproductively mature adulthood), or in relationship terms as the time when children grow up and leave the family home, and when parents age and need care (Noller, Feeney, & Peterson, 2001). Almost universally, midlife is marked by a string of major life events, such as empty nest, menopause, retirement and death of parents. Although Western researchers were generally cautious whether the so-called midlife crisis is a widely recognized experience among middle-aged adults, they did agree that midlife may be accurately portrayed as a period of transition and readjustment (Hunter & Sundel, 1989). Like any major transitions, midlife involves both positive and negative aspects; it has the potential to bring disequilibrium and distress, but also to stimulate new coping skills. Successful midlife transition can be assessed with multiple indicators of well-being, including social, mental/emotional, physical and spiritual (Brim, Ryff, & Kessler, 2004; Noller et al., 2001). Systematic research on midlife transition for Chinese people is lacking, thus the present study aimed to explore potential psychosocial factors facilitating a successful transition in middle life among the cultural Chinese population in Taiwan. Specifically, we focused on the largely overlooked benefits of leisure experiences on well-being, over and beyond those of employment, physical health and social support. As studies on midlife leisure and depression are non-existent in Taiwan, we used a large national representative sample to establish the baseline and ensure generalizability of our research findings.

Research on leisure with Chinese people in general, and middle-aged adults in particular, is in the rarity, partly because hard-working has always been a highly regarded Confucius virtue. Thus, understanding the subjective experiences of leisure in middle-aged Chinese people will not only shed light on some interesting issues in leisure research, but also contribute to better leisure policies and management to promote healthy living in midlife and preparation for successful ageing.

Successful midlife transition: Consolidating the gains in life

Midlife is undoubtedly a phase of heavy responsibilities for men and women in work and family areas. A Taiwanese study (Lee, 1999) found that

middle-aged adults are expected to take care of both their young and old, acting as pillars in family life. They are also expected to be at a peak in their career roles to provide for their families and to earn a sense of achievement for themselves. However, in the eyes of the Taiwanese people, midlife is also a period of transition towards the impending old age (Lee, 1999). Middle-aged adults start to worry about deterioration in health and various manifestations of ageing. They are also mindful of inevitable losses in life, for instance, launching of their young and departing of their old in the family. Midlife can be a time for reassessment and for becoming involved in new and interesting activities. Earlier research did reveal that if a sense of psychological homeostasis can not be achieved during this transition period, crises may set in (Hunter & Sundel, 1989). These so-called midlife crises can take the forms of burnout, premature withdrawal from work, change of careers, feelings of loneliness in family life, perceived conflict between work/career and family life, feeling of low energy and weakening, anxiety over ageing and death, perceived discrepancy between aspiration and achievement, sense of loss and worthlessness. If these issues are not resolved satisfactorily, midlife depression may set in (Goldstein, 2005; Kertzner, 2007).

The influential MIDUS (Midlife in the United States) survey is an unprecedented effort from a multidisciplinary perspective to map well-being of a wide age range of Americans, with the purpose of comparing those in the middle years (40–60) with those younger and older (Brim et al., 2004). The MIDUS adopted multiple indicators for assessing midlife development, including social networks and support, social participation, mental/emotional health, physical health, religion and spirituality. Taken together, MIDUS findings revealed a positive portrayal of midlife transition and aging. The survey revealed that affective profiles of midlife adults were more influenced by context than was evident for young or older adults. As stated earlier, most midlife adults are heavily engaged in work and family relationships, and this involvement may contribute to their levels of positive affect and fulfilment as well as their levels of distress. The MIDUS data also converged with the prior pattern of a negative relationship between age and major depression among both men and women, although women had a significantly higher prevalence than men. Little evidence was found that to support the view that increased age translates to increased stress. Although MIDUS

provided a groundbreaking assessment of numerous psychological constructs (e.g. personality traits, sense of control, affect, health beliefs, well-being) in a national sample of Americans, leisure was overlooked (Brim et al., 2004).

Examining midlife issues from a clinical perspective, Goldstein (2005) noted that the lifetime risk for major depression among middle-aged Americans is increasing. In accordance with the cultural emphasis on the independent self in the West, Goldstein is primarily interested in a question posed by self psychology: how individuals maintain a homeostasis of the self in the face of challenging life circumstances, specifically the vicissitudes of middle age.

As for Chinese, the notion of self is very different from that in the individualistic West (Markus & Kitayama, 1991). Instead of focusing on the independence and striving of the self, the Chinese self is defined in its interdependence with important others such as the family, and completed through dutifully accomplishing its social obligations (Lu, 2007, 2008). Thus, midlife is more likely viewed by the Chinese people as a period of consolidating life's gains through taking pivotal roles both in family life and at work (Lee, 1999). Middle-aged Taiwanese adults chose to focus more on fulfilling duties of parents, children, workers and society members, not on individual losses. A successful midlife transition may actually enhance some relationships. This is reminiscent of Erikson's concept of generativity which he views as striving to contribute creatively to the nurturance and well-being of future generations in a manner that will endure even after the end of the mature adult's finite lifespan (Erikson, 1982). An understanding in pathways to such a successful transition is now imperative.

Leisure: The incremental value beyond other resources for a successful midlife transition

Various leisure theories have provided us with frameworks to understand the benefits of leisure in midlife transition. For instance, Beard and Ragheb (1980) purported that leisure could gratify basic human needs and generate satisfaction pertaining to six aspects: psychological (e.g. interesting activities), social (e.g. getting to know people), physical (e.g. getting exercise, keeping fit), educational (e.g. learning new things), relaxation (e.g. relaxed, unwind), and aesthetic (e.g. beautiful surrounding).

Existing leisure research has confirmed that various leisure activities could indeed generate short-term benefits including positive mood, physical fitness and immediate satisfaction, as well as long-term effects of enhancing happiness, mental health, physical health and social integration (e.g. Argyle, 1996; Lu & Hu, 2005). One in-depth interview study with Taiwanese college students further revealed that leisure also served an important function of structuring time (Lu & Hu, 2002), which may be important for middle-aged adults who are preparing for a withdrawal from work and developing new directions and activities.

A recent study (Pressman et al., 2009) has shown that among a large sample of American adults ($N = 1399$, 19–89 years), leisure participation in aggregate was associated with lower blood pressure, total cortisol, waist circumference, body mass index and perceptions of better physical function. These associations withstood controlling for demographic measures. Leisure participation also correlated with higher levels of positive psycho-social states and lower levels of depression and negative affect. It seems that leisure activities are associated with both psychological and physical outcomes. However, it is not clear whether some social aspects of leisure confound with social support, which is a known protector against distress and illness. Our purpose of the present study was thus to tease out the incremental value of leisure participation over and beyond known protectors such as social support.

Research on social support has already accumulated a large body of empirical evidence supporting various theoretical formulations such as stress-resources models (Hobfoll, 1989; Holahan & Moos, 1986), the convoy model (Kahn & Antonucci, 1980) and the support-efficacy model (Antonucci & Jackson, 1987) for a wide age range of adults. Although there has been no research focusing on social support and midlife transition, results from a series of studies on young Taiwanese adults do underline the pivotal role of social support during another life transition: parenthood (Lu, 2006a, b). Thus, social support as social resources may also facilitate a successful midlife transition, including reduced likelihood of depression (Lu & Hsieh, 1997).

While friends and families are the most prevalent source of social support for adults facing a life transition (Lu, 2006a, b), leisure may be one additional way of obtaining support. This is because many popular leisure activities among adults involve sociability that may serve to enhance one's social

embeddedness. For instance, a recent nationwide survey revealed that watching TV (usually with family) and getting together with friends are among the top six most frequently engaged leisure activities for Taiwanese adults of all ages (Fu, Lu, & Chen, 2009). Joining in activities with others reflects the social organization of leisure, strengthens interpersonal relationships and enhances a sense of belonging among the participants (Cheek & Burch, 1976). Leisure-related social support has indeed been found to buffer the stress-illness relationship for Americans (Iso-Ahola & Park, 1996).

Furthermore, the recent availability of longitudinal data on the possible association of different lifestyles with dementia and Alzheimer's disease (AD) allowed for exploration of the effects of social network, physical leisure and non-physical activity on cognition and dementia. For all three lifestyle components (social, mental and physical), a beneficial effect on cognition and a protective effect against dementia are suggested (Fratiglioni, Paillard-Borg, & Winblad, 2004). It would be interesting to see if leisure activities not connected with social engagement had the same relationship with depression as those connected with social engagement. So far, research in Western societies has shown that leisure activities *per se* may enhance reported physical and subjective well-being among older adults, but the sociability aspect of such activities makes a more substantial difference (Duay & Bryan, 2006; Harahousou, 2006; Litwin, 2000). Thus, it seems that participation in leisure activities may facilitate successful life transition partly via its instrumental gains in enabling people to join and maintain social networks, and partly via enjoyment of leisure *per se* (Lu & Hu, 2005).

Similarly, a distinction between leisure activities that are 'cognitive' and those that are 'passive' may be important too, as evidence showed leisure activities that do not involve social engagement but are cognitively stimulating are protective against cognitive decline in older people (Rundek & Bennett, 2006). However, such a salutogenic effect does not apply to watching TV, which is in fact a risk factor for cognitive decline (Rundek & Bennett, 2006). One thrust of the present study is the examination of participation in different leisure activities rather than focusing on a single activity and its link to psychological well-being. In so doing we may be able to distinguish between activities that are social, cognitive or passive in nature as a predictor of depressive symptomatology.

Finally, limited research on the leisure life of middle-aged adults has suggested that leisure-related physical activity in midlife may be beneficial for people against the risk of dementia in older age, even when they were physically active at work (Rovio et al., 2007). Another prospective study revealed that greater participation in midlife cognitive activities was associated with a 26 per cent risk reduction for dementia onset, and the protective effects were most robust for activities that were often cognitive and social in nature (Carlson, Helms, Steffens, Burke, Potter, & Plassman, 2008).

To sum, the social, cognitive and physical aspects of leisure may all contribute to enhanced well-being for middle-aged adults undergoing the midlife transition. We thus hypothesize:

Leisure participation in aggregate and the overall positive leisure experiences would be associated with less depressive symptoms for middle-aged people in Taiwan, and this association would remain even after controlling for effects of social support and physical health.

The MIDUS survey found that physical health had a significant effect on both positive and negative affect across the adult years (Brim et al., 2004). We thus tried to partial out effects of physical health on depression. In addition, we would examine whether activities that are social, cognitive or passive would have differential predictive powers for depressive symptoms.

Method

Samples and Procedures

Data for this present study were drawn from the 'Needs, services and value preferences for older life among different generations' manual (Lin & Wang, 2008). This first-time nationwide survey in Taiwan followed rigorous procedures in sampling design, survey fieldwork, data cleaning and data archiving. The survey adopted three-stage stratified Probability Proportional to Size (PPS) sampling with household registration data. The survey fieldwork relied on well-trained interviewers who made home visits for face-to-face interviews using structured questionnaires to collect data from community-residing adults in Taiwan, aged between 45–64 (Middle-aged Group) or above 65 years old (Older Group). Only one participant who was randomly selected from household registration data was interviewed in each household surveyed. The survey was conducted in January 2007. The two survey samples were confirmed

representative of the national population in terms of age, sex, education attainment and residence regions (Lin & Wang, 2008). The present study used data from the 'Middle-aged Group'.

Our sample ($N = 1143$) was 46.8 per cent men, with a mean age of 56.19 years ($SD = 5.42$). Most had elementary school education (34.47%), followed by senior high school education (23.62%), with an average formal education of 9.64 years ($SD = 3.65$). The majority of them (84.86%) were married with living spouses. Almost all (91.78%) had religious affiliations, the majority (86.18%) being that of Taoism/Buddhism.

Instruments

Demographic information

Participants' demographic information was recorded, including sex ($I = M, 0 = F$), age, marital status ($I = married, 0 = single$), education attainment (converted to years of formal education), religion ($I = yes, 0 = no$), family income and paid work ($I = yes, 0 = no$). These characteristics were chosen because of their relationship with depressive symptoms (e.g. Brim et al., 2004) and/or leisure participation (e.g. Fu et al., 2009).

Social support

Five items were adopted from Functional Social Support Scale (Hanson et al., 1989). The scale has been used in Taiwan showing good reliability, construct validity and criterion validity in predicting health and well-being of community people (Lu & Chang, 1997; Lu & Hsieh, 1997). Material and tangible support (three items: 'Is there anyone who gives you money/allowance?', '... who can help you in emergencies?', '... who helps with daily life activities'), and emotional support (two items: '...who you can consult for personal problems?', '...whom you can trust and confide?') were rated ($I = Never, 4 = Always$). Following the scoring procedure suggested by the scale developers, a higher aggregated score indicated more social support. In the present study, internal consistency alpha was .62 for this scale.

Physical health

Three indicators of health were used in the survey. *Self-perceived health* was rated ($I = Very bad, 4 = Very good$). *Independence in daily functioning* (ability in dressing, eating, etc. $I = yes, 0 = no$) was enquired. Finally, *disability* or difficulty in performing activities of daily living was assessed

(Nagi, 1976). Each item was rated ($0 = Very difficult, 3 = Not at all difficult$). In the present study, internal consistency alpha was .86 for this scale. We aligned the direction of scoring for higher scores to represent *better* physical health.

Leisure participation

A checklist of 10 types of leisure activities was provided, including TV/radio, newspaper/magazine, chess/board games/cards, visiting relatives/friends/neighbours, computer/internet, gardening/plants, interests/hobbies (e.g. instruments, painting, handcraft, collection), concerts/plays, movies/shopping and walking/exercising. Participants checked *yes/no* ($I = yes, 0 = no$) for participation in each category of activities. Participants were then asked to rate their overall *leisure satisfaction* pertaining to the above 10 categories of activities *in aggregate*. The item is 'Are you satisfied with all the above leisure activities?' ($I = Very dissatisfied, 4 = Very satisfied$).

In addition, eight items were adopted from Beard and Ragheb's (1980) Leisure Satisfaction Scale, tapping aspects of psychological (e.g. interesting activities), social (e.g. interacting with people), physical (e.g. keeping fit), educational (e.g. learning new things) and relaxation (e.g. relaxed) experiences. The frequency of each specific experience was rated ($I = Almost never, 4 = Often$). Scores were then aggregated to indicate *leisure meaningfulness*. Again, participants reported their leisure meaningfulness pertaining to all the 10 categories of activities *in aggregate*. In the present study, internal consistency alpha was .87 for this scale.

Depression

Common symptoms of depression were measured by 11 items from the CES-D adopted for the Chinese people (Cheng & Chien, 1984). Sample items are 'Don't feel like eating, bad appetite', and 'Feeling sad and miserable'. Respondents rated each item (symptom) on a 4-point scale ($0 = never or very seldom, 3 = almost always$). A higher total score indicated a higher level of depressive symptoms. In the present study, internal consistency alpha was .82 for this scale.

Results

Before testing our hypothesis, we computed Pearson correlations among all research variables (Table 1). Sex (female), marital status (single), (fewer) education years, (lower) family income,

Table 1. Intercorrelations among research variables

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. |
|----------------------------|--------|---------|---------|---------|-------|---------|---------|---------|--------|---------|---------|---------|---------|---------|------|
| 1. Sex | 1.00 | | | | | | | | | | | | | | |
| 2. Age | .00 | 1.00 | | | | | | | | | | | | | |
| 3. Marital status | .11*** | -.05 | 1.00 | | | | | | | | | | | | |
| 4. Education yrs | .18*** | -.27*** | .07* | 1.00 | | | | | | | | | | | |
| 5. Religion | -.04 | .04 | .02 | -.24*** | 1.00 | | | | | | | | | | |
| 6. Family income | .00 | .00 | .09** | .24*** | -.06* | 1.00 | | | | | | | | | |
| 7. Paid work | .23*** | -.37*** | .03 | .20*** | -.02 | .11*** | 1.00 | | | | | | | | |
| 8. Physical health | .06* | -.15*** | .08** | .22*** | -.05 | .26*** | .16*** | 1.00 | | | | | | | |
| 9. Independent functioning | .02 | -.06 | .01 | .06* | .00 | .06* | .10** | .14*** | 1.00 | | | | | | |
| 10. NAGI | .10*** | -.14*** | .11*** | .18*** | -.02 | .22*** | .27*** | .36*** | .58*** | 1.00 | | | | | |
| 11. Social support | -.08** | .05 | .19*** | .03 | .04 | .20*** | -.10*** | .07* | -.03 | .00 | 1.00 | | | | |
| 12. Leisure participation | -.01 | -.13*** | .04 | .41*** | -.07* | .28*** | .11*** | .14*** | .10*** | .20*** | .14*** | 1.00 | | | |
| 13. Leisure satisfaction | .06* | .03 | .04 | .07* | -.06 | .12*** | .04 | .21*** | .04 | .10*** | .11*** | .09*** | 1.00 | | |
| 14. Leisure meaningfulness | .01 | -.03 | .10** | .28*** | -.06 | .25*** | .05 | .27*** | .10** | .25*** | .23*** | .41*** | .31*** | 1.00 | |
| 15. Depression | -.09** | .01 | -.13*** | -.13*** | .03 | -.36*** | -.12*** | -.40*** | -.09** | -.34*** | -.26*** | -.13*** | -.23*** | -.35*** | 1.00 |

Notes: Sex: 1 = M, 0 = F; Marital status: 1 = married, 0 = single; Religion: 1 = yes, 0 = no; Paid work: 1 = yes, 0 = no; Independent functioning: 1 = yes, 0 = no. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. Hierarchical regression predicting depressive symptoms

| Step | Predictors | Depression (Model 1) | | Depression (Model 2) | | Depression (Model 3) | | Depression (Model 4) | |
|------|-------------------------|----------------------|---------|----------------------|---------|----------------------|---------|----------------------|---------|
| | | ΔR^2 | β |
| 1 | Sex | | -.06* | -.05 | | -.06* | | -.06* | |
| | Age | | -.02 | -.06 | | -.05 | | -.04 | |
| | Marital status | | -.09** | -.06 | | -.02 | | -.02 | |
| | Education yrs. | | -.02 | .03 | | .03 | | .06 | |
| | Religion | | .00 | .00 | | .01 | | .01 | |
| | Family income | | -.34*** | -.25*** | | -.21*** | | -.20*** | |
| | Paid work | .15*** | -.07* | .15*** | -.01 | .15*** | -.03 | .15*** | -.03 |
| 2 | Physical health | | | | -.26*** | | -.25*** | | -.21*** |
| | Independent functioning | | | | -.10** | | -.10** | | -.09** |
| 3 | NAGI | | | .12*** | -.25*** | .12*** | -.25*** | .12*** | -.23*** |
| | Social support | | | | | .04*** | -.20*** | .04*** | -.16*** |
| 4 | Leisure participation | | | | | | | | .04 |
| | Leisure satisfaction | | | | | | | | -.08** |
| | Leisure meaningfulness | | | | | | | .03*** | -.15*** |
| | Total R ² | .15 | | .27 | | .31 | | .34 | |
| | Final F (df) | 20.74*** (7, 807) | | 27.83*** (10, 803) | | 30.16*** (11, 802) | | 27.60*** (14, 795) | |

Notes: Sex: 1 = M, 0 = F; Marital status: 1 = married, 0 = single; Religion: 1 = yes, 0 = no; Paid work: 1 = yes, 0 = no; Independent functioning: 1 = yes, 0 = no.

Standardized coefficients β and F are taken from the final equation.

* $p < .05$, ** $p < .01$, *** $p < .001$

and (no) paid work were demographic correlates of depressive symptoms. All three indicators of physical health and social support negatively correlated with depressive symptoms. Finally, leisure participation (in aggregate), leisure satisfaction and leisure meaningfulness all negatively correlated with depressive symptoms. All relations were in the expected direction.

We conducted a finer grained analysis correlating participation in each of the 10 categories of leisure activities with depression. Results revealed that reading newspaper/magazine ($r = -.11, p < .001$) and visiting relatives/friends/neighbours ($r = -.07, p < .01$) were the only two types of activities that correlated with depressive symptoms.

We then conducted hierarchical regression analysis to test our hypothesis (Table 2). At the first step of regression, we entered demographic characteristics of sex, age, marital status, education years, religion, family income and paid work as control variables. Second, we entered three physical health indicators. Third, we entered social support. Finally, at step 4 we entered aggregate leisure participation,

overall leisure satisfaction and perceived leisure meaningfulness.

The results reported in Table 2 shows that sex and family income were consistently related to depressive symptoms (Model 1 and 4): females and those with lower family income were more likely to be depressed. Those with better self-reported health, ADL independence, and less disability on the Nagi index were less likely to be depressed (Model 2 and 4). Social support had a consistent negative relation with depressive symptoms (Model 3 and 4). Having controlled for effects of demographic variables, physical health and social support, perceived leisure meaningfulness and avowed leisure satisfaction still had negative relations with depressive symptoms (Model 4). However, aggregate leisure participation was not associated with depressive symptoms. Thus our hypothesis was partially supported. The combination of demographics, physical health, social support and leisure explained a total of 34 per cent of variance on depressive symptoms, among which leisure had an independent contribution of 3 per cent, comparable to that of social support (4%).

Again, for a finer grained analysis, we entered each of the 10 categories of leisure activities individually and as a block at Step 4, replacing aggregate leisure participation. Whichever way we tested, none of the activities were significantly associated with depressive symptoms (β ranged from $-.01$ to $.03$). Thus, participation *per se* in leisure activities (whether individually or in aggregate) was not associated with reduced depressive symptoms, but positive experiences generated through leisure were.

Finally, though we had no formal hypothesis about the preferences of leisure activities, we nonetheless looked at the frequency of middle-aged adults' participation in various types of leisure. Results revealed that TV/radio (89.9%), visiting relatives/friends/neighbours (53.3%), newspaper/magazine (46.5%) and gardening/plants (28.9%) were the four most popular leisure activities. Other activities all had participation rates below 20 per cent: interests/hobbies (19.6%), walking/exercise (19.0%), computer/internet (18.9%), movies/shopping (16.5%), chess/board games/cards (10.1%) and concerts/plays (9.7%).

Discussion

The purpose of the present study was to explore whether middle-aged people's leisure pursuits were associated with their well-being, over and above the effects of some known correlates in a Chinese society—Taiwan. We used depressive symptoms measured with a standardized instrument as the indicator for well-being in the present study. With the advantage of a large representative national sample, our results could compliment those large scale surveys conducted in the West (e.g. MIDUS).

We found that the block of seven demographic characteristics (sex, age, marital status, education, religion, family income and paid work) accounted for a quite substantial amount of variance (15%) in depressive symptoms, mainly attributable to sex and income. In the present study, demographic characteristics explained the largest portion of variance in depressive symptoms. Female sex as a risk factor for depression has been well-documented in the Western literature (Nolen-Hoeksema & Rusting, 1999) and confirmed among the Taiwanese people (Lu & Hsieh, 1997). For instance, the MIDUS survey revealed that women had a significantly higher prevalence of major depression than men across the entire adulthood years (Brim et al., 2004). In addition, women going through midlife may

also be experiencing menopausal symptoms thus increasing rates of reporting depression (Bromberger et al., 2007).

We can compile a demographic profile of middle-aged persons who may run the risk of depression—female and lower income. The added value of our present study is that we were the first to simultaneously consider effects of physical health/disability, social support and leisure, to confirm the above demographic risk profile for midlife depression. In other words, as we have identified middle-aged people who are more likely to report depressive symptoms, when other important factors are taken into account, we can then better target our care resources to prevent risk of depressed emotional well-being.

More importantly perhaps, we have found that leisure pursuits in middle-age were related to depressive symptoms, even after controlling for effects of demographics, physical health/disability and social support. Although leisure pursuits were not the strongest predictor of depression, its contributions were largely independent from those of physical health/disability and social support (comparing Model 3 and 4 in Table 2). Previous research has firmly established the protective effects of social resources in the form of social support and social integration (e.g. Antonucci & Jackson, 1987; Hanson et al., 1989; Holahan & Moos, 1986; Kahn & Antonucci, 1980), as well as physical health (Brim, et al., 2004; Lu & Hsieh, 1997). We have extended the list of protectors to include leisure pursuits, which is so far largely overlooked in Chinese studies of midlife transition. Our results compliment Western findings of leisure benefits on enhancing quality of life in middle age and reducing risks of dementia in older age (Carlson et al., 2008; Fratiglioni et al., 2004; Pressman et al., 2009; Rovio et al., 2007). More importantly, while existing studies focused on benefits of leisure or life style *per se* on dementia, AD, physical and mental health, our results were obtained after controlling for effects of social support, thus taking out any potential confound between leisure as a means of sociability (Fu et al., 2009) and social support as a function of social embeddedness (Hanson et al., 1989). Thus, our results revealed a more 'clean' effect of leisure experiences on depressive symptomatology, and therefore serve to underline the importance of including leisure as a means of engagement with life, along with personal resources (e.g. self-care health behaviors) and social resources (e.g. social support) in the promotion of successful transition in midlife.

Although our national survey did not include enough psychological constructs for us to tease out potential mechanisms linking leisure to well-being, Beard and Ragheb's (1980) theory of leisure needs may provide us with some inspirations for future research. As noted earlier, they purported that leisure is beneficial because it could gratify basic human needs pertaining to six aspects: psychological (e.g. interesting activities), social (e.g. getting to know people), physical (e.g. getting exercise, keeping fit), educational (e.g. learning new things), relaxation (e.g. relaxed, unwind) and aesthetic (e.g. beautiful surrounding). These six aspects constituted our measure of leisure meaningfulness, which turned out to be a significant predictor of depression. As Western findings have shown, salutogenic effects of an active and socially engaged life style prevent against dementia and AD (Fratiglioni et al., 2004; Rundek & Bennett, 2006), and an inspection of the rank order of leisure pursuits may still help us to understand why positive leisure experiences in the form of overall leisure satisfaction and meaningfulness could protect against depressive symptoms.

In the present study, we noted that the most popular leisure engagement was TV/radio, a solitary leisure that tops the list of leisure pursuits for Taiwanese in a recent national survey (Fu et al., 2009). Watching TV has been found to be a low arousal and sometimes boring activity (Lu & Argyle, 1993), and may even be harmful for brain functioning in older age (Rundek & Bennett, 2006). Reading newspaper/magazines, which ranked the third popular leisure in the present study, is more cognitively engaging and challenging. Its role within the active life style and potential function as a brain stimulus against depression deserves further exploration.

The second most popular leisure pursuit for middle-aged people in the present study was social in nature: visiting relatives/friends/neighbours. In a close-knit Chinese society, people tend to have relatives and friends living nearby. In Taiwanese rural areas, older people habitually get together in front of the village temple to chat and drink tea. Such causal social gatherings help to strengthen community bonds and satisfy social needs. Indeed we found that this social activity correlated with lower levels of depressive symptoms.

Taken together, it is understandable that middle-aged adults who engaged in leisure pursuits may harvest diverse benefits gratifying psychological, educational, social, physical, relaxation and aesthetic needs. Such gratified needs are thus expressed

in reported meaningfulness of, and satisfaction with, one's leisure life as a whole. Leisure pursuits may therefore play an integral part in promoting active engagement with life and successful midlife transition.

One thrust of the present study is the examination of participation in different leisure activities rather than focusing primarily on a single activity and its link to psychological well-being. It is important to study participation in several different activities as a predictor of depressive symptomatology to clarify any differential effects of activities (e.g. cognitive, social, passive) on depression, as discussed earlier. In addition, by studying several leisure activities, we are better able to capture a wider array of activities that speak to different groups of people that can be beneficial for health, instead of concentrating on single activities that may be restricted to specific groups. From a health policy perspective, this broad look can inform decision making about supporting different types of activities as ways to improve public health.

However, readers should still keep in mind that the present study has certain limitations. First, the study design was cross-sectional, thus no causal conclusions are legitimate. Depression is characterized by either depressed mood or loss of interest in or pleasure from usual activities or both. Thus the direction of association may be that depression is a cause of a decline in participation in leisure activities, rather than the consequence. Longitudinal data have unequivocally supported that social, mental and physical activities all have a beneficial effect on cognition and a protective effect against dementia in older life (Fratiglioni et al., 2004; Rundek & Bennett, 2006), whether such an effect extends to depression is yet unknown. Clearly, longitudinal research is needed to clarify this relationship.

Second, this study was essentially a secondary data analysis. Contrary to our hope, some variables were measured with single or fewer than desirable number of items; some were not included. For instance, it would be helpful if we had a complete index of time use to link time spent on various leisure pursuits with their benefits on well-being. This information would then help us better plan and educate middle-aged people in their leisure engagement. In addition, CES-D includes loneliness as one of the items, with some controversy, as loneliness and depression are distinct though related constructs. In the present study, the correlation between the 'loneliness' item and the total CES-D score excluding 'loneliness' was highly significant ($r = .61, p < .001$).

However, as a precaution, statistical analyses were repeated using a recalculated depression score with loneliness omitted. All results reported herein remained the same. We have thus eliminated the suspicion that the association between leisure and depression is because those without leisure activities are lonely rather than depressed.

Third, our interviews were conducted using structured questionnaires. Future studies may consider employing qualitative methods to explore middle-aged people's conceptions and lived experiences of successful midlife transition in greater depth, including leisure and other life domains, so that a fuller and richer understanding of midlife issues can be achieved from middle-aged people's own perspective.

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