

ORIGINAL ARTICLE

Self-efficacy, health locus of control, and psychological distress in elderly Chinese women with chronic illnesses

A. M. S. WU, C. S. K. TANG & T. C. Y. KWOK

The Chinese University of Hong Kong, Hong Kong

Abstract

This study examined the associations among self-efficacy, health locus of control, and psychological distress in 159 elderly Chinese women who had chronic physical illnesses. The present findings did not support the dual health control hypothesis that specifies the balance between internal and external health control beliefs is related to a low level of psychological distress. Correlation results showed that internal health locus of control was linked to general self-efficacy. Results from hierarchical regression analysis indicated that health control beliefs did not interact with general self-efficacy; instead, these two variables each exerted their main effects on participants' negative mental health status. It was found that psychological distress was best predicted by a low level of general self-efficacy as well as a high level of external health locus of control. Internal health control beliefs did not contribute to the prediction of distress. Implications and limitations of this study were also discussed.

Introduction

Similar to other countries, Chinese societies are rapidly aging due to lowered fertility together with improved longevity. It is estimated that the elderly population in Chinese societies will account for approximately a quarter of the world's elderly population by the middle of this century (Lutz, Prinz & Langgasser, 1994). However, the health status of elderly Chinese has not been satisfactory. Studies have shown that a majority of elderly Chinese have at least one chronic illness (Chi & Lee, 1989; Chow & Chi, 1997; Swanson, 1989), and frequently report negative affect such as boredom, depression, and a low level of life satisfaction (Chi & Lee, 1989; DaCanhota & Piterman, 2001; Liu *et al.*, 1997; Zhang & Yu, 1997). Elderly Chinese also have the highest suicide rate as compared to other age groups in Hong Kong, and the leading cause of attempted suicides is often associated with the presence of chronic illnesses (Chow & Chi, 1997; Lo & Leung, 1985). It should also be noted that the social and mental health implications of growing old may be more distressful for elderly women than for elderly men (Forsell, Jorm & Winblad, 1994) since the former is more likely to live longer, is widowed, divorced, or alone, suffers from economic hardship, and has a history of domestic violence (Aitken & Griffin, 1996; Sprock & Yoder, 1997). Elderly

Chinese women are especially vulnerable to these negative experiences, as they are often assigned inferior positions in the family as well as in the society according to traditional Chinese cultural values (Tang *et al.*, 2000). Thus, it is important to explore various factors that may be associated with the mental health status of elderly Chinese women to facilitate the promotion of successful aging and the planning of services and policies.

Factors associated with adjustment to chronic health conditions

Researchers have suggested that elderly people's perceived control over their health and beliefs about their own abilities to perform health behaviours will affect how they adjust to their chronic illnesses (Afflect *et al.*, 1987; Fowers, 1994; Helgeson, 1992; Willis *et al.*, 1997). One of the most widely studied control-constructs is the health locus of control derived from the social learning theory (Wallston, 1992). According to this theory, internal health locus of control refers to people's belief that their own behaviours exert influences on their health status, while external health locus of control refers to people's belief that health outcomes are dependent on other people's action or 'chance' variables such as luck and fate. In general, studies have found a

Correspondence to: Professor Catherine So-kum Tang, Department of Psychology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong. Tel: 852 260 96503. Fax: 852 260 35019. E-mail: ctang@cuhk.edu.hk

Received for publication 8th July 2002. Accepted 25th February 2003.

significant relationship between endorsing external health locus of control and psychological distress, whereas internal health control beliefs are linked to positive psychological adjustment to various health outcomes (Benassi, Sweeney & Dufour, 1988; Marks, 1998; Petrosky & Birkimer, 1991; Reynert *et al.*, 1995; Sun & Stewart, 2000; Takakura & Sakihara, 2001).

The concept of dual health control has also been proposed to suggest that a healthy balance between beliefs in internal and external health control should be the most effective in coping with stressful events (Wong & Sproule, 1984). Wallston and Wallston (1982) also recommend attending to the predictive value of different control orientation patterns on health outcomes. However, only a few studies have tested this dual health control hypothesis. In a study that examined the blood glucose level in Swedish diabetic patients (Stenstrom *et al.*, 1998), patients were classified into different control orientation groups. The results of this study showed that there was a significant group difference in blood glucose level, with the 'pure internals' (those with high internal but low external health control beliefs) and the 'believers in control' (those with high internal and external health control beliefs) reporting the best glucose metabolic control.

Researchers have also argued that cultural and societal factors often influence people's health control beliefs (Helman, 1990; Marks, 1998; Schulz & Heckhausen, 1999; Sun & Stewart, 2000). It is suggested that in cultures that assume significant others like family members as responsible in making health care decisions and interventions, people's belief of significant others' control becomes the predominant locus of control, which then becomes the main determinant of health behaviours and outcomes. In other cultures, people's main control belief may orient to 'spiritual or supernatural phenomenon'. Indeed, studies have found that people from collective cultures such as the Chinese and Japanese tend to have a strong family orientation and are more likely to endorse external control beliefs than people from individualistic cultures such as the Americans (Padilla, Wagatsuma & Lindholm, 1985; Wong & Piran, 1995). In particular, the Chinese are found to exhibit a great tendency to believe that outcomes will eventually happen because of luck, fate, or special favour from people, ancestors, or supernatural spirits (Hamid, 1994; Hoeman & Ku, 1996; Leung, 1996; Wong & Piran, 1995; Yang & Bond, 1990).

Recently, the view that the Chinese possess more external control orientations than other cultures has been challenged. Chia, Cheng and Chuang (1998) argue that the Chinese have multiple choices of internal control. The direct source is the traditional one that comes from the self, and the indirect source can come from extensions of the self, such as close in-group members. With this new conceptualisation

of internal control, the Chinese may not be as external as previously suggested because their tendency to rely on significant others' actions on various outcomes can be classified as internal rather than external control orientations. Furthermore, some external control beliefs also have very strong internal control components for the Chinese. For example, reincarnation beliefs specify that things people do in their 'present' life determines their afterlife, and blessings from ancestors also depend on people's diligence in their ancestor worship. This multiple-source theory of internal control for the Chinese may explain why some previous studies find external control beliefs, which should have been classified as internal control beliefs, have positive impacts on health adjustments in Chinese samples (McMordie & Kumur, 1984; Wu, Tang & Kwok, 2002).

Another related control-construct, self-efficacy as in the social cognitive theory (Bandura, 1977), has also been linked to chronic illness adjustment. Self-efficacy refers to people's belief in their own abilities to perform the desired behaviours in various situations (Schwarzer & Fuchs, 1996). Studies have shown that a low level of self-efficacy is related to psychological distress, negative affect, and behavioural dysfunction in patients with chronic medical conditions (Beckham & Burker, 1997; Edwards, Cecil & Lenoci, 2001; Meldling, 1995; Stuijbergen, Seraphine & Roberts, 2000) as well as psychological maladjustment in elderly people (Holahan & Holahan, 1987; Johnson *et al.*, 1998; Melding, 1995; Stenstrom *et al.*, 1998; Wu *et al.*, 2002). Moreover, some researchers argue that people's health locus of control also moderates the association between self-efficacy and health adjustment (Wallston, 1992). For example, studies have shown that the positive association between self-efficacy and exercises behaviours in elderly patients with chronic obstructive pulmonary disease is only found for those with internal but not for those with external health control beliefs (Kaplan, Atkins & Reinsch, 1984). Medication and dietary adherence of patients who underwent renal dialysis is best predicted by their faith in powerful others (external control) and their sense of self-efficacy in performing behaviours as prescribed by powerful others (Christensen *et al.*, 1996).

Purposes of the present study

The present study aims to determine the associations among health locus of control, self-efficacy, and psychological distress in elderly Chinese women who have chronic physical illnesses. Information gleaned from this study will have pertinent implications for social and mental health services and policies for the elderly population in Chinese societies. Based on past literature, it is hypothesized that a low level of

self-efficacy will be related to a high level of psychological distress in elderly Chinese women. The dual health control hypothesis will also be examined to determine whether or not it is applicable to the elderly Chinese. Based on the study by Stenstrom *et al.*, (1998), it is hypothesized that pure internals and dual control believers will report lower psychological distress than pure externals and no control believers. Finally, whether or not health control beliefs interact with self-efficacy in influencing elderly Chinese women's psychological functioning will also be explored.

Methods

Recruitment of participants

This study adopted a convenience sampling design in recruiting elderly Chinese women. Using the Directory of Social Services in Hong Kong, of the listed community centres for elderly people every tenth centre was selected and contacted. Eleven of the 15 selected elderly community centres consented to refer their female members to participate in the study. A majority of these elderly members belonged to the middle or lower social classes with junior high educational attainment. The inclusion criteria for this study were that participants had to be ethnic Chinese women, aged at or above 60 years old, which is the official retirement age in Hong Kong, and had at least one chronic physical illness at the time of the study. Participants were interviewed individually by a trained interviewer in rooms provided by the community centres. Participants were assured of the anonymity of their responses, and no personal identifiable information was asked. They were also informed that they could withdraw from the interview at any time if they wanted to, and a consent form for their participation in the study was also obtained. The trained interviewer then administered the structured questionnaire verbally to the participants and recorded their verbal responses. Each interview took an average of 30 minutes to complete, and no monetary reward was given to participants. A total of 166 elderly Chinese women were contacted and seven of them refused to participate in the study with the main reason being not having time. In other words, the rejection rate of this study was about 4%.

The present sample included 159 elderly Chinese women aged between 60 and 89 years old. Their mean age was 74 ($SD = 6.80$), with 68% of them aged between 70–85 years old. More than half of them (66.7%) were widowed, 25.8% were still married, 4.4% were never married, and 3.1% were divorced. Only 1.3% of the participants were working at the time of the study and the remainder had retired. About 86.3% of the participants earned about US\$500 per month before their retirement,

and 58% of them lived with their family members. The five most commonly reported chronic physical illnesses were: chronic joint pain or arthritis (74.2%), chronic obstructive pulmonary illnesses (53.5%), hypertension (39.6%), diabetes mellitus (18.2%), and heart disease (13.2%).

Instruments

Demographics. Participants were asked about their age, gender, marital and working status, monthly income before their retirement, and the type of chronic physical illnesses that they had.

General self-efficacy. Participants' perceived self-efficacy was measured using the 10-item Generalized Self-Efficacy Scale (Schwarzer, 1993). This scale assesses the strength of people's belief in their own abilities to respond to novel or difficult situations. Typical items are 'Thanks to my resourcefulness, I know how to handle unforeseen situations' and 'When I am confronted with a problem, I usually find several solutions'. This scale demonstrates satisfactory internal consistency ($\beta = 0.86$) and test-retest reliability ($r = 0.75$ after one year). It also correlates positively with self-esteem and optimism, but negatively with anxiety and depression (Jerusalem & Schwarzer, 1995). The Chinese version of the scale is available, and also shows a satisfactory internal consistency alpha of 0.86 (Zhang & Schwarzer, 1995). A high summary score indicates a high level of general self-efficacy.

Health locus of control. Participants' perception about 'who' controls their health outcomes was assessed by the Multidimensional Health Locus of Control Scale (Wallston, Wallston & DeVellis, 1978). This scale has been tested among different patient samples and is found to have satisfactory internal consistency, with the alpha values ranging from 0.70 to 0.85 (Wallston, Stein & Smith, 1994). It is found to be predictive of doctor visits and health clinic visits of elderly people (Lachman, 1986) and adjustment to chronic illness (Helgeson, 1992). A Chinese version of the scale with satisfactory internal consistency is available, with the alpha value being 0.68 (Mak, 1999). For this study, two health control dimensions were assessed, i.e., internal and external health locus of control. The four-item internal health control dimension assesses the degree to which one believes his/her health is influenced by their behaviour, whereas the eight-item external health control dimension measures the belief that health-care professionals or fate/luck control one's health status. High scores represent high levels of control beliefs in their corresponding dimensions.

Psychological distress. The 28-item General Health Questionnaire (Goldberg, 1978) was used to measure

participants' non-psychotic psychiatric symptoms. Typical items are 'Been feeling unhappy and depressed' and 'Been feeling constantly under stress'. The Chinese translation of the GHQ is available and yields satisfactory internal reliability, with alpha values ranging from 0.87 to 0.93 (Chan, 1985). It also correlates significantly with the Chinese State-Trait Inventory Scale, the Chinese Beck Depression Inventory, and the Chinese Somatic Scale, and the Leeds Scale for Self-Assessment (Shek, 1989). A high summary score represents a high level of psychological distress. The measurement scales on general self-efficacy, health locus of control, and psychological distress were modified into a true-false format to facilitate responses by the elderly participants.

Results

The measurement scales showed satisfactory internal consistency reliabilities (K-R 20), with alpha values ranging from 0.60 to 0.85. Pearson correlation analyses were first computed to determine the associations among major variables. Results were summarized in Table 1 and showed that the internal and external health locus of control dimensions did not correlate with each other ($p > 0.05$). Internal health locus of control was positively related to general self-efficacy ($r = 0.37$, $p < 0.01$), whereas external health locus of control was unrelated to general self-efficacy ($p > 0.05$). Psychological distress was linked to a high level of external health locus of control ($r = 0.23$, $p < 0.01$), but a low level of general self-efficacy ($r = -0.32$, $p < 0.01$). Internal health locus of control, age, and number of chronic illnesses were unrelated to participants' psychological distress ($p > 0.05$).

The second analysis was conducted to determine whether or not the dual health control hypothesis was applicable to the present sample. Participants were first classified according to their scores on the internal and external health locus of control subscales. Those scoring at or below the median score of 3.32 on the internal health locus control subscale were classified as low internals, whereas those

scoring above this median score were classified as high internals. Similarly, those scoring at or below the median score of 4.64 on the external health locus of control subscale were classified as low externals, and those scoring above the median score were classified as high externals. According to Stenstrom *et al.*, (1998), participants were further grouped into: (1) pure internals ($n = 25$), i.e., those with high internal but low external health control beliefs; (2) pure externals ($n = 36$), i.e., those with high external but low internal health control beliefs; (3) dual control believers ($n = 37$), i.e., those with high internal and external health control beliefs; and (4) no control believers ($n = 61$), i.e., those with low internal and external health control beliefs. A one-way analysis of variance was then conducted to determine whether or not psychological distress varied among these four health control orientation groups. Results showed that there was no significant group difference on psychological distress ($F_{(3, 155)} = 1.58$, $p > 0.05$). In other words, the dual health control hypothesis was not supported.

As a number of variables were related to participants' psychological distress, a hierarchical regression analysis was also performed to determine the respective predictive power of these variables. Criteria variables were entered in the following sequence: age, number of chronic illnesses, general self-efficacy, and internal and external health locus of control. All the variables accounted for a total of 15.5% of the variance of psychological distress, and detail results were summarized in Table 2. In particular, age and number of chronic illnesses did not emerge as significant predictors of participants' psychological distress ($p > 0.05$). General self-efficacy was entered as the third block and was found to be a significant predictor, accounting for an additional 9.6% variance ($R^2 = 0.12$, $\beta = -0.323$, $F = 7.01$, $p < 0.05$). Internal health locus of control did not contribute to the prediction of psychological distress after considering the effect of general self-efficacy ($p > 0.05$). External health locus of control was entered as the last block, and was found to be a significant predictor, accounting for an additional 1.2% of the variance of psychological distress ($R^2 = 0.155$, $\beta = 0.209$, $F = 5.63$, $p < 0.05$). These

TABLE 1. Descriptive statistics and correlation matrix of major variables

	1	2	3	4	5	6
1. Psychological distress	—					
2. General self-efficacy	-0.32**	—				
3. Internal health locus of control	-0.12	0.37**	—			
4. External health locus of control	0.23**	-0.09	0.12	—		
5. Age	0.07	-0.28**	-0.06	0.03	—	
6. Number of chronic illnesses	0.15	-0.09	-0.19*	0.09	0.16	—
Mean	7.77	5.42	3.08	4.72	74.00	2.04
Standard deviation	4.91	3.17	0.26	0.19	6.80	0.94
Range	0-22	0-10	0-4	0-8	60-89	1-5
Internal consistency alpha value	0.82	0.85	0.71	0.60	—	—

Note: * $p < 0.05$, ** $p < 0.01$.

TABLE 2. Results of hierarchical regression analyses on psychological distress

Variable entered into the model	R^2	R^2 change	F change	Standardized coefficient (β)
1. Age	0.005	0.005	0.712	0.067
2. Number of chronic illnesses	0.024	0.019	3.064	0.140
3. General self-efficacy	0.119	0.096	16.847**	-0.323
4. Internal health locus of control	0.120	0.000	0.053	0.019
5. External health locus of control	0.155	0.036	6.461*	0.209

Note: * $p < 0.05$, ** $p < 0.01$.

results indicated that participants' psychological distress was best predicted by a low level of self-efficacy and a high level of external health locus of control.

In order to determine whether or not health control beliefs interacted with general self-efficacy in influencing participants' psychological functioning, a similar regression analysis was conducted with the addition of two interaction terms, i.e., internal health control beliefs \times general self-efficacy and external health control beliefs \times general self-efficacy. Results showed that both interaction terms were non-significant ($p > 0.05$). In other words, health control beliefs and general self-efficacy did not interact with each other, but each exerted their main effects on participants' level of psychological distress.

Discussion

The present study examines the associations among general self-efficacy, health locus of control, and psychological distress in elderly Chinese women who have chronic physical illnesses. As hypothesized, health control and general self-efficacy beliefs are related to participants' mental health status (Fowers, 1994; Helgeson, 1992; Wallston, 1992; Willis *et al.*, 1997). Furthermore, unlike some studies that suggest health control beliefs interact with general self-efficacy in influencing people's health adjustment (Christensen *et al.*, 1996; Kaplan *et al.*, 1984; Wallston, 1992), this study shows that these two variables contribute independently to the prediction of psychological functioning. In particular, general self-efficacy is the most salient predictor in determining participants' psychological distress. This result is in line with previous studies that indicate elderly people's perceptions of their personal competence in performing behaviours are predictive of their adjustment to nursing home placement (Johnson *et al.*, 1998), chronic pain (Melding, 1995), and other stressful life events (Holahan & Holahan, 1987; Stenstrom *et al.*, 1998; Wu *et al.*, 2002).

The dual health control hypothesis has been put forward to suggest that both internal and external control beliefs are necessary to facilitate people's adjustment to various health outcomes (Wallston & Wallston, 1982; Wong & Sproule, 1984). Contrary

to the study by Stenstrom *et al.*, (1998), the present results do not support the dual health control hypothesis and fail to find group differences on psychological distress among 'pure internals', 'pure externals', 'dual control believers', and 'no control believers'. Instead, the present findings suggest that internal and external health control beliefs are two independent dimensions, each exerting their own effects in influencing mental health outcomes. However, it should be noted that the present classification of the participants were according to the median split of their scores on internal and external health control beliefs. As the present sample scored highly on the internal control dimension (median = 3.34, range = 0-4), some of those who were classified as 'pure externals' and 'no control believers' may still possess high internal control orientation. Thus, results in relation to the dual control hypothesis should be interpreted with great caution.

This study finds that external health locus of control emerges as a significant negative predictor of participants' mental health status, and its predictive power remains evident even after controlling the effects of general self-efficacy. These findings are similar to previous research on Western samples (Benassi *et al.*, 1988; Petrosky & Birkimer, 1991; Reynert *et al.*, 1995). Among the Chinese patient samples, external control beliefs such as fate and chance are also found to be associated with more psychological symptoms than internal control beliefs (Lee *et al.*, 1985; Leung, 1996; Sun & Stewart, 2000). Researchers have argued that the negative mental health implications of external health control beliefs may be related to people's feelings of hopelessness and helplessness when they perceive events as beyond their personal control (Seligman, 1992).

Studies on Asian samples have found associations between internal control beliefs and positive psychological adjustment in Japanese high school students (Takakura & Sakihara, 2001) and adult Chinese patients (Sun & Stewart, 2000). However, this study finds that elderly Chinese women's internal health control beliefs are not predictive of their psychological discomfort. One plausible explanation is that external health control beliefs are more deeply implanted in the mind of elderly people than in the younger generation (Lachman, 1986; Lachma & Weaver, 1998; Schulz & Heckhausen, 1999), and

hence exert greater effect on these people's mental health status. Moreover, the effect of internal health control beliefs may be mediated by general self-efficacy, as these two constructs are related to each other ($r=0.37$, $p<0.01$). In other words, results from this study suggest that elderly people's psychological well-being relates more to beliefs that they have the ability to perform the desired health behaviours than the belief that they have control over the health outcomes.

This study has several limitations that may restrict the generalizability of its findings. First, this study is based on a non-random sample and it may not be representative of the elderly population who suffer from chronic ill health, especially those who are bedridden or housebound. On the other hand, it is also unclear as how the present findings can be generalized to healthy elderly people who do not have any chronic illnesses. Moreover, this study includes only elderly Chinese women, and its results may not be extended to elderly Chinese men. Secondly, this study is based on elderly participants' self-reports, which may be subject to recall bias. The number of chronic physical illnesses are based on participants' reports which may not be accurate, as they may not know the extent of their health problems or deny their health problems as a way to cope with their aging. Thirdly, findings of this cross-sectional study are at best correlational, and no conclusive statements on causal effects can be made. Finally, this study adopts a negative approach by examining the associations between control-constructs and negative psychological functioning. Future studies should also investigate how control beliefs and self-efficacy relate to elderly people's positive adjustment to chronic illnesses.

Despite the above limitations, results from the present study do have important services implications for elderly Chinese women who have chronic illnesses. This study shows that general self-efficacy and health control beliefs are salient predictors of psychological functioning. Thus, health promotion programs that aim to enhance competence in performing various desirable health behaviours or to modify health control beliefs may mitigate elderly Chinese women's negative adjustment to chronic health conditions. For example, 'resource communication' programs that emphasize not only the risks, but also the management of symptoms and ways to cope with the complications of chronic illnesses are found to improve people's perceived self-efficacy (Howorka *et al.*, 2000; Schwarzer & Renner, 2000). Functional Insulin Treatment programs (FIT), which allow patients to selectively use insulin for eating, fasting, or correcting hyperglycaemia, can also enhance the sense of self-efficacy of adult patients with diabetes (Rubin, Peyrot & Saudek, 1989). Other studies also show that programs directing toward the identification and modification of maladaptive, inflexible, and distorted control

beliefs are related to positive adjustment to various health outcomes (Christensen, Moran & Wiebe, 1999). Furthermore, health-promoting or intervention programs should also attend to people's specific control beliefs. For example, people with external control beliefs tend to rely on the health opinions provided by health-care professionals. For these people, explicit guidelines of active self-care, strong guidance, and supervision with very structured activities by health professionals can facilitate better health outcomes, greater satisfaction, and better adherence to a medical regimen (Edestein & Linn, 1987; Strickland, 1978). In summary, knowledge about elderly people's perceived personal competence and control beliefs is important in promoting healthy aging.

References

- AFFLECT, G., TENNEN, H., PFEIFFER, C. & FIFIELD, J. (1987). Appraisals of control and predictability in adapting to a chronic illness. *Journal of Personality and Social Psychology*, *53*, 273–279.
- AITKEN, L. & GRIFFIN, G. (1996). Thinking in numbers: the feminisation of old age and its conditions. In L. AITKEN & G. GRIFFIN (Eds.), *Gender issues in elder abuse* (pp.12–28). London: Sage.
- BANDURA, A. (1977). Self-efficacy: toward a unifying theory of behavioural change. *Psychological Review*, *84*, 191–215.
- BECKHAM, J. & BURKER, E. (1997). Self-efficacy and adjustment in cancer patients: a preliminary report. *Behavioral Medicine*, *23*, 138–142.
- BENASSI, V.A, SWEENEY, P.D. & DUFOUR, C.L. (1988). Is there a relation between locus of control orientation and depression? *Journal of Abnormal Psychology*, *97*, 357–367.
- CHAN, D.W. (1985). The Chinese version of the General Health Questionnaires: does language make a difference? *Psychological Medicine*, *15*, 147–155.
- CHI, I. & LEE, J. (1989). *A health survey of the elderly in Hong Kong*. Hong Kong: University of Hong Kong.
- CHIA, R.C., CHENG, B.S. & CHUANG, C.J. (1998). Differentiation in the source of internal control for Chinese. *Journal of Social Behavior & Personality*, *13*, 565–577.
- CHOW, W. & CHI, I. (1997). Ageing in Hong Kong. In S.K. LAM (Ed.), *The health of the elderly in Hong Kong* (pp.173–193). Hong Kong: Hong Kong University Press.
- CHRISTENSEN, A., MORAN, P. & WIEBE, J. (1999). Assessment of irrational health beliefs: relation to health practices and medical regime adherence. *Health Psychology*, *18*, 169–176.
- CHRISTENSEN, A., WIEBE, J., BENOTSCH, E. & LAWTON, W. (1996). Perceived health competence, health locus of control, and patient adherence in renal dialysis. *Cognitive Therapy & Research*, *20*, 411–421.
- DACANHOTA, C. & PITERMAN, L. (2001). Depressive disorders in elderly Chinese patients in Macau: a comparison of general practitioners consultations with a depressive screening scale. *Australian and New Zealand Journal of Psychiatry*, *35*, 336–344.
- EDWARDS, R., CECIL, H. & LENOCI, J. (2001). Self-efficacy as a predictor of adult adjustment to sickle cell disease: one-year outcomes. *Psychosomatic Medicine*, *63*, 850–858.

- EDELSTEIN, J. & LINN, M.W. (1987). Locus of control and the control of diabetes. *Diabetes Educator*, 13, 51–54.
- FORSELL, Y., JORM, A. & WINBLAD, B. (1994). Association of age, sex, cognitive dysfunction, and disability with major depressive symptoms in an elderly sample. *American Journal of Psychiatry*, 151, 1600–1604.
- FOWERS, B.J. (1994). Perceived control, illness status, stress, and adjustment to cardiac illness. *Journal of Psychology*, 128, 567–573.
- GOLDBERG, D.P. (1978). *Manual of the General Health Questionnaire*. London: NFER.
- HAMID, P.N. (1994). Self-monitoring locus of control and social encounters of Chinese and New Zealand students. *Journal of Cross-Cultural Psychology*, 25, 353–368.
- HELGESON, V.S. (1992). Moderators of the relationships between perceived control and adjustment to chronic illness. *Journal of Social Psychology*, 63, 650–666.
- HELMAN, C.G. (1990). *Culture in health and illness* (2nd edition). London: Wright.
- HOEMAN, S.P. & KU, Y.L. (1996). Health beliefs and early detection among Chinese women. *Western Journal of Nursing Research*, 18, 518–533.
- HOLAHAAN, C.K. & HOLAHAAN, C.J. (1987). Life stress, hassles, and self-efficacy in aging: a replication and extension. *Journal of Applied Social Psychology*, 17, 574–592.
- HOWORKA, K., PUMPLA, J., WAGNER-NOSISKA, D., GRILLMARYR, H., SCHULSCHE, C. & SCHABMANN, A. (2000). Empowering diabetes out-patients with structured education: short-term and long-term effects of functional insulin treatment on perceived control over diabetes. *Journal of Psychosomatic Research*, 48, 37–44.
- JERUSALEM, M. & SCHWARZER, R. (1995). Generalized self-efficacy scale. In J. WEINMANN, S. WRIGHT & M. JOHNSTON (Eds.), *Measures in health psychology: a user's portfolio* (pp.35–38). Windsor, UK: NFER-Nelson.
- JOHNSON, B.D., STONE, G.L., ALTMAIER, E.M. & BERDAHL, L.D. (1998). The relationship of demographic factors, locus of control and self-efficacy to successful nursing home adjustment. *Gerontologist*, 38, 209–216.
- KAPLAN, R., ATKINS, C. & REINSCH, S. (1984). Specific efficacy expectations mediate exercise compliance in patients with COPD. *Health Psychology*, 3, 223–242.
- LACHMAN, M.E. (1986). Locus of control in aging research: a case for multidimensional and domain-specific assessment. *Journal of Psychology and Aging*, 1, 34–40.
- LACHMAN, M.E. & WEAVER, S.L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology*, 74, 321–332.
- LEE, P., HO, E., TSANG, A., CHEUNG, J., LEUNG, P., CHEUNG, Y., et al. (1985). Psychosocial adjustment of victims of occupational hand injuries. *Social Science and Medicine*, 20, 493–497.
- LEUNG, K. (1996). The role of beliefs in Chinese culture. In M.H. Bond (Ed.), *The handbook of Chinese psychology* (pp. 247–262). Hong Kong: Oxford University Press.
- LIU, C., WANG, S., TENG, E., FUH, J., LIN, C., LIN, K., et al. (1997). Depressive disorders among older residents in a Chinese rural community. *Psychological Medicine*, 27, 943–949.
- LO, W.H. & LEUNG, T.M. (1985). Suicide in Hong Kong. *Australian and New Zealand Journal of Psychiatry*, 19, 287–292.
- LUTZ, W., PRINZ, C. & LANGGASSER, J. (1994). The IIASA world population scenarios to 2030. In W. LUTZ (Ed.), *The future population of the world: what can we assume today?* (pp. 391–473). London: Earthscan.
- MAK, W.F. (1999). *Psychosocial correlates of drug adherence among patients with affective disorders in Hong Kong*. Hong Kong: Chinese University of Hong Kong.
- MARKS, L. (1998). Deconstructing locus of control: implications for practitioners. *Journal of Counseling and Development*, 76, 251–260.
- McMORDIE, W.R. & KUMUR, D.L. (1984). Cross-cultural research on the Templer/McMordie Death Anxiety Scale. *Psychological Reports*, 54, 959–963.
- MELDING, P.S. (1995). How do older people respond to chronic pain? A review of coping with pain and illness in elders. *Pain Reviews*, 2, 65–75.
- PADILLA, A.M., WAGATSUMA, Y. & LINDHOLM, K.J. (1985). Acculturation and personality as predictors of stress in Japanese and Japanese-Americans. *Journal of Social Psychology*, 125, 295–305.
- PETROSKY, M.J. & BIRKIMER, J.C. (1991). The relationship among locus of control, coping styles, and psychological symptom reporting. *Journal of Clinical Psychology*, 47, 336–345.
- REYNERT, C., JANE, P., VAUSE, M., ZDANOWICZ, N. & LEJEUNE, D. (1995). Clinical trials of antidepressants: the hidden face. Where locus of control papers to play a key role in depression outcome. *Psychopharmacology*, 119, 449–454.
- RUBIN, R.R., PEYROT, M. & SAUDEK, C.D. (1989). Effect of diabetes education on self-care, metabolic control and emotional well-being. *Diabetes Care*, 12, 673–679.
- SCHULZ, R. & HECKHAUSEN, J. (1999). Aging, culture, and control: setting a new research agenda. *Journal of Gerontology: Psychological Sciences*, 54B, 139–145.
- SCHWARZER, R. (1993). *Measurement of perceived self-efficacy: psychometric scales for cross-cultural research*. Berlin: Der Präsident der Freien Universität.
- SCHWARZER, R. & FUCHS, R. (1996). Self-efficacy and health behaviors. In M. CONNER & P. NORMAN (Eds.), *Predicting health behavior* (pp.163–196). Buckingham: Open University.
- SCHWARZER, R. & RENNER, B. (2000). Social-cognition of health behavior: action self-efficacy and coping self-efficacy. *Health Psychology*, 19, 487–495.
- SELIGMAN, M. (1992). *Helplessness: on depression, development, and death*. San Francisco, CA: WH Freeman.
- SHEK, D. (1989). Validity of the Chinese version of the General Health Questionnaire. *Journal of Clinical Psychology*, 45, 890–897.
- SPROCK, J. & YODER, C. (1997). Women and depression: an update on report of the APA task force. *Sex Roles*, 36, 269–303.
- STENSTROM, U., WIKBY, A., ANDERSSON, P. & RYDEN, O. (1998). Relationship between locus of control beliefs and metabolic control in insulin-dependent diabetes mellitus. *British Journal of Health Psychology*, 3, 15–25.
- STRICKLAND, B.R. (1978). Internal-external expectancies and health-related behaviors. *Journal of Consulting and Clinical Psychology*, 45, 647–653.
- STUIFFBERGEN, A.K., SERAPHINE, A. & ROBERTS, G. (2000). An explanatory model of health promotion and quality of life in chronic disabling conditions. *Nursing Research*, 49, 122–129.
- SUN, L. & STEWART, S.M. (2000). Psychological adjustment to cancer in a collective culture. *International Journal of Psychology*, 35, 177–185.
- SWANSON, J. (1989). *Physical and mental issues in aging sourcebook*. Detroit: Omnigraphics.
- TAKAKURA, M. & SAKIHARA, S. (2001). Psychosocial correlates of depressive symptoms among Japanese high school students. *Journal of Adolescent Health*, 28, 82–89.
- TANG, C., AU, W., CHUNG, Y. & NGO, H. (2000). Breaking the patriarchal paradigm: Chinese women in Hong Kong. In L. EDWARDS & M. ROCES (Eds.), *Women in Asia: Tradition, modernity and globalization* (pp. 188–207). Australia: Allen & Unwin.

- WALLSTON, K.A. (1992). Hocus-pocus, the focus isn't strictly on locus: Rotter's social learning theory modified for health. *Cognitive Therapy and Research*, 16, 183-199.
- WALLSTON, K., STEIN, M. & SMITH, C. (1994). Form C of the MHLC Scale: a condition-specific measure of locus of control. *Journal of Personality Assessment*, 63, 534-553.
- WALLSTON, K.A. & WALLSTON, B.S. (1982). Who is responsible for your health. The construct of health locus of control. In G.S. SANDERS & J. SULLS (Eds.), *Social psychology of health and illness* (pp. 65-95). Hillsdale, NJ: Erlbaum.
- WALLSTON, K.A., WALLSTON, B.S. & DEVELLIS, R.F. (1978). Development of the Multidimensional Health Locus of Control (MHLC) Scale. *Health Education Monographs*, 6, 160-170.
- WILLIS, L., GOODWIN, J., LEE, K., MOSQUEDA, L., GARRY, P., LIU, P., et al. (1997). Impact of psychosocial factors on health outcomes in the elderly: a prospective study. *Journal of Aging and Health*, 9, 396-414.
- WONG, P. & PIRAN, N. (1995). Western biases and assumptions as impediments in counseling traditional Chinese clients. *Canadian Journal of Counseling*, 29, 107-119.
- WONG, P. & SPROULE, C. (1984). An attributional analysis of the locus of control construct and the Trent attribution profile. In H. LEFOUCOURT (Ed.), *Research with the locus of control construct* (pp. 309-360). New York: Academic Press.
- WU, A., TANG, C. & KWOK, T. (2002). Death anxiety among Chinese elderly people in Hong Kong. *Journal of Aging and Health*, 14, 42-56.
- YANG, Y.S. & BOND, M.H. (1990). Exploring implicit personality theories with indigenous or imported constructs: the Chinese case. *Journal of Personality and Social Psychology*, 58, 1087-1095.
- ZHANG, A. & YU, L. (1997). Family and cultural correlates of depression among Chinese elderly. *International Journal of Social Psychiatry*, 42, 199-213.
- ZHANG, J. & SCHWARZER, R. (1995). Measuring optimistic self-beliefs: a Chinese adaptation of the General Self-Efficacy Scale. *Psychologia*, 38, 174-181.

Copyright of Aging & Mental Health is the property of Carfax Publishing Company and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.