

TABLE 2. Results of varimax rotation of three factors identified in the Chinese version Dementia Management Strategies Scale*

Item	Factor loading		
	Factor 1 (Criticism towards older relative)	Factor 2 (Showing encourage- ment)	Factor 3 (Active management strategies)
1 I yelled or acted enraged; it was often the only way to get my way with him/her. (26)	0.68		
2 I criticised or scolded my older relative to try to prompt better behaviour from him/her. (15)	0.56		
3 I threatened my relative with undesirable consequences if he/she did not cooperate. (21)	0.60		
4 I withdrew from my older relative. (22)	0.59		
5 I blamed my older relative for having created the difficulties. (1)	0.53		
6 I was firm with my older relative, and insisted that he/ she live up to certain expectations I have for him/her. (13)	0.44		
7 I told my relative to stop doing things that caused worry because of what it did to me (or to other family members). (29)	0.51		
8 I left the situation for a while when relating to my older relative got too difficult. (27)	0.56		
9 I tried to get my relative to agree to do certain things, or to do them in a certain way. (31)	0.55		
10 I asked my relative to explain why he/she was doing something, to draw his/her attention to his/her mistakes. (11)	0.51		
11 I tried to communicate to my older relative how concerned or worried I was about him/her. (32)	0.48		
31 I overlooked or ignored my older relative's feelings when I suspected that paying attention to them might lead to unpleasantness between us. (8)	0.50		
12 I tried to engage my older relative in discussing his/her feelings and emotions. (4)		0.69	
13 I made a point of praising him/her when he/she did what I considered appropriate. (5)		0.64	
14 I tried to help my older relative look on the bright side of things. (20)		0.63	
15 I tried to reason with my older relative. (28)		0.58	
16 I encouraged my relative to adopt a fighting attitude toward his/her disability, and to do as much as possible for him/herself. (16)		0.56	
17 I tried to suggest ideas my older relative might accept and follow through on. (23)		0.52	
18 I showed special amounts of physical affection. (7)		0.49	
19 I encouraged my older relative to keep up with friends, to visit them by him/herself. (9)		0.48	
32 I tended to indulge my older relative. (17)		0.45	
34 I tried to hold my anger and frustration in, to protect my older relative from these feelings. (18)		0.49	
20 I tried to arrange my older relative's environment to safeguard him/her against causing problems, getting into trouble, or endangering him/herself. (10)			0.67
21 I tried to do many things for my relative since he/she is no longer capable of doing them. (6)			0.61
22 I tried to divert my relative's attention when he/she began to feel upset. (12)			0.56
23 I repeated the same things over and over again, to make sure my older relative got them. (19)			0.53
24 I tried to arrange situations I hoped would be stimulating to my older relative (mentally or emotionally). (2)			0.52
25 I kept a close eye on what my older relative was doing so that I could head off any problems before they developed too far. (3)			0.51
26 I tried to have my relative participate in as much of the ordinary family routine as possible. (25)			0.50
27 I tried to teach everyone involved to approach my older relative in the same, planned way. (33)			0.47
28 I tried to make sure my relative got enough physical activity or exercise. (34)			0.48
30 I made sure my older relative got enough medications to keep him/her calm or cooperative. (30)	(0.40)		0.47
Eigen value	6.61	5.52	5.30
Percentage of variance explained	27.57	23.80	20.69

* Item 3 had fairly high factor loading on two factors (1 and 3). It was retained in factor 3 only after consideration of its meaning and level of loading

TABLE 3. Correlations between Dementia Management Strategies Scale (DMSS), Task Management Strategy Index (TMSI), and other variables in 211 respondents

Measures	DMSS	DMSS			TMSI	Non-adaptive strategies used
		Criticism towards older relative	Showing encouragement	Active management strategies		
DMSS	1.00					
Criticism towards older relative	0.518†	1.00				
Showing encouragement	0.608‡	0.503†	1.00			
Active management strategies	0.540†	0.498†	0.583†	1.00		
TMSI	0.496†	0.458†	0.506†	0.562†	1.00	
Non-adaptive strategies used	-0.469†	-0.502†	-0.398*	-0.283	-0.383*	1.00
Neuropsychiatric Inventory (distress)	-0.468†	-0.382*	-0.564†	-0.431†	-0.451†	0.288
Neuropsychiatric Inventory (symptoms)	-0.312*	-0.346*	-0.265	-0.350*	-0.360*	0.344*
Self-Efficacy Questionnaire for Chinese Family Caregivers	0.502†	0.346*	0.489†	0.547†	0.679‡	0.551†
Time of caregiving (hrs/week)	0.358*	0.261	0.301*	0.398*	0.391*	0.238
Perceived current health	0.402†	0.310*	0.420†	0.400†	0.368*	0.386*
Caregiver age	0.298	0.246	0.287	0.324*	0.288	0.188
Dementia relative's age	-0.212	-0.234	-0.198	-0.224	-0.246	0.308*
Duration of dementia	0.298	0.283	0.278	0.238	0.216	0.198
Physical symptoms (partial correlation coefficients after adjusting for covariates)						
Sleeping difficulty	-0.189	-0.298*	-0.198	-0.102	-0.258	0.342*
Headache	-0.306*	-0.348*	-0.278	-0.236	-0.284	0.298
Dizziness	-0.252	-0.212	-0.276	-0.104	-0.302	0.380*
Heart palpation	-0.248	-0.234	-0.212	-0.131	-0.288	0.214
Memory worsening	-0.189	-0.220	-0.288	-0.182	-0.311	0.312*
Unstable emotion	-0.322*	-0.398*	-0.198	-0.202	-0.338*	0.364*
Anxiety	-0.316*	-0.348*	-0.274	-0.298	-0.364*	0.392*
Constipation	-0.168	-0.122	-0.188	-0.148	-0.156	0.245
Stomach ache	-0.214	-0.136	-0.202	-0.241	-0.234	0.261

* P<0.05

† P<0.01

‡ P<0.001

that the translated version has a high potential to be applied to families caring for a dementia relative in Chinese populations.^{1,4} The overall scale and two subscales ('showing encouragement' and 'active management strategies') demonstrated good convergent validity with the TMSI, and the remaining one subscale ('criticism towards older relative') demonstrated good divergent validity with the TMSI indicating strong association with family caregivers' adaptive strategies used for dementia care. Therefore, the Chinese version DMSS with the three factors can measure both positive and negative coping/management strategies used by caregivers, and relationships with their families' distress and negative attitudes (criticism) towards the older relatives, as suggested by the original authors and other study.^{4,6}

In addition, the Chinese version DMSS showed a good responsiveness to changes in these mental and behavioural symptoms of dementia with moderate effect sizes for detecting symptom deterioration over 6 months. The DMSS is useful, particularly the more active management strategies (effect size=0.60) and positive encouragement (effect size=0.56), to detect the changes in dementia symptoms and important predictors of caregivers' management of dementia relatives' problematic behaviours.^{5,6}

With the association between the DMSS score and psychosocial variables, more efforts and time contributed to dementia management strategies, particularly the adaptive ones, is likely to reduce distress (ie, negatively correlated) and improve self-efficacy and perceived health status in caregiving by the caregivers.^{3,5} The DMSS might be useful to reflect

the amount of non-adaptive strategies adopted by these caregivers, in turns detecting their perceived current health status and a variety of somatic symptoms such as sleeping difficulty, unstable emotions and anxiety state (which were correlated with both the DMSS and amount of non-adaptive strategies used in this study).

There are limitations to this study: (1) family caregivers' self-reports might be subjective or inaccurate to see the actual degree of their management strategies use in actual dementia care setting; (2) the participants were selective, recruiting from two community care centres only where similar socio-economic backgrounds and mental healthcare services; (3) the relationships between dementia management strategies and their socio-demographic, clinical and psychosocial characteristics were studied using cross-sectional descriptive but not a longitudinal and predictive design; and (4) there was not sufficient sample for either exploratory or confirmatory factor analysis, thus the model fitness might have been inflated. In addition, the use of confirmatory factor analysis was weak for testing model-fit of the data due to upward bias or overestimation with a large number of measured variables (items).

Conclusion

This study supports the reliability and validity of the Chinese version DMSS in measuring family caregivers' level of dementia management strategies. It can be applied to mental health practice for better understanding and measuring the levels of caregiving strategies among dementia populations. This self-report Chinese version DMSS is easy

to administer and requires minimal training and simple interpretations from the caregivers' own perceptions. It can be further tested in and applied to various types and duration of dementia, as well as different Chinese communities.

Acknowledgements

This study was supported by the Health and Medical Research Fund, Food and Health Bureau, Hong Kong SAR Government (#11122411). We thank all staff in the elderly service centres under study for assisting our sample recruitment, as well as to all older clients and their family caregivers who participated in the study.

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