Section A: NICE to complete	
Name:	Mima Cattan
Job title:	Professor of Public Health
Address:	Northumbria University Newcastle-upon-Tyne
Guidance title:	Mental Wellbeing and Older People
Committee:	PHAC B
Subject of expert testimony:	Theoretical model relating to independence and mental wellbeing of older people
Evidence gaps or uncertainties:	[Please list the research questions or evidence uncertainties that the testimony should address]
- What links are there between the mental wellbeing and independence of older people and their: mental and physical health, capability, quality of life, isolation and participation in community, civil and family activities?	
- What are the most effective and cost effective ways to improve or protect the mental wellbeing and/or independence of older people?	
Section B: Expert to complete	
Summary testimony:	

The development of a multi-dimensional, theoretical model of the foundations of mental wellbeing (FUEL)

The development of 'FUEL', a multi-dimensional, theoretical model, was based on the recognition that there was no coherent, comprehensive and empirically-grounded model, which explained how older people maintain their mental health and wellbeing and how they remain mentally robust and resilient. In addition, there was a lack of agreement on definitions on mental health and mental wellbeing, and older people had not been involved in the development of definitions or models.

[Continued overleaf]

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In 2009 the Medical Research Council (MRC), through its Lifelong Health and Wellbeing programme, awarded a network grant (ID 90570) to a team, led by Professor Mima Cattan, to create and validate a coherent, comprehensive and evidence-based model of mental wellbeing in later life, from which testable hypotheses for policy and practice changes could be derived. The two research questions developed by the team were: (1) What are the interactions between individual characteristics and environmental factors that improve and maintain mental health and wellbeing in later life?; (2) How can an understanding of these be translated into policy and practice?

The Network brought together 16 investigators from seven academic institutions in Newcastle, Leeds, London and Bangor with expertise in public health and health promotion, primary care, social care, social gerontology, transport planning, education, health economics and urban planning. Two lay members were full members of the group and contributed to the Network by attending meetings and acting as contacts with community groups. There was also input from the International Union of Health Promotion and Education (IUHPE) Global Working Group on Salutogenesis. The strength of the Network was its breadth, bringing together a wide range of disciplines, institutions, sectors, geographical areas and older people. Strategic partners included a wide range of stakeholder organisations across England and Wales, including voluntary agencies representing older people. The Network met three times: to agree the division of tasks and membership of the thematic sub-groups to take these tasks forward; to update the group on the evidence collected and develop a first draft of the model; to develop a final theoretical model of the foundations of mental wellbeing in later life.

The development of the model was based on three principles: it should be evidence-based; it had to be theoretically robust; it prioritised older people's involvement.

Three thematic sub-groups were established; these were framed around knowledge of the wider determinants of mental health (Cattan, 2009; Kirkwood, Bond, May, McKeith, & Teh, 2008): 1) the Social Capital Group, 2) the Lifestyle and 3) Behaviour Group and the Environment Group. These groups were tasked with collecting evidence through literature searches, scoping exercises and consultations with experts in the field. An additional literature review on the role of volunteering was conducted to expand on the evidence base. The data sources included published research, peer-reviewed articles, policy statements, evaluation and intervention studies, grey literature published by not for profit and other sectors such as internal reports, and internal evaluations.

Following the literature reviews, older people were contacted in the four cities where members of the Network were located. In London and Bangor a survey questionnaire

consisting of three open-ended questions on the factors that contributed to or diminished their mental wellbeing was distributed to three voluntary organisations. Thirty questionnaires were returned. In Newcastle and Leeds focus groups were held with a total of 16 older people framed around the same questions as in London and Bangor, but with prompts based on a previous study (Bostock & Millar, 2003) to expand further on the themes that had emerged through the literature reviews. Thematic analysis was used to identify key themes from the surveys and interviews.

In summary the literature reviews found 1) substantial evidence on the association between physical activity (including occupational therapy) and mental health, although most studies were limited with regards to the types of exercise/physical activity; 2) reasonable evidence on the inverse relationship between pet ownership and mental well-being and regarding the association between spirituality and mental wellbeing; 3) some evidence regarding the positive association between nutrition and better cognitive health, quality of life and psychological well-being; and 4) little evidence on psycho-social determinants and mental wellbeing or on the association between leisure activities and mental health. Social participation, social support and social networks, and mental wellbeing were explored in a range of studies, some of which highlighted the importance of facilitating factors, such as transport, the built environment and personal resources. In general, social support contributed positively towards older people's perceived mental wellbeing. There was a substantial body of literature on social isolation and loneliness suggesting a range of community based interventions that might be effective, but a 'mixed bag' of literature on technology and older people's mental wellbeing. The reviews also showed that the loss of transport negatively impacted on reported quality of life and that the availability and accessibility of community facilities and shops were important. There was a link between the design of the built environment and improved quality of life and reduced psychological distress. Green spaces were associated with greater social interaction and opportunities for physical activity and some evidence suggested that access to green spaces could be important irrespective of their use.

Although the literature searches produced few results regarding the relationship between social capital and mental wellbeing, the value of neighbourhood social capital was raised. Adequate material resources (income, wealth and housing) were identified as mediators and as requirements for older people's mental wellbeing. However, all sources indicated a shortage of robust evidence for the cost-effectiveness of interventions to: 1) improve the mental wellbeing of older people, 2) address mental health problems, and 3) strengthen desirable characteristics or provide supportive environments. The reviews found a wide range of potential measures of mental wellbeing, but not all of these necessarily lent themselves to economic analysis.

The analysis of the data from the surveys and interviews with older people identified two main areas: how older people define mental wellbeing, and what they think promotes mental wellbeing (tables 1, 2):

Table 1: *How older people defined mental wellbeing in the surveys and focus groups*

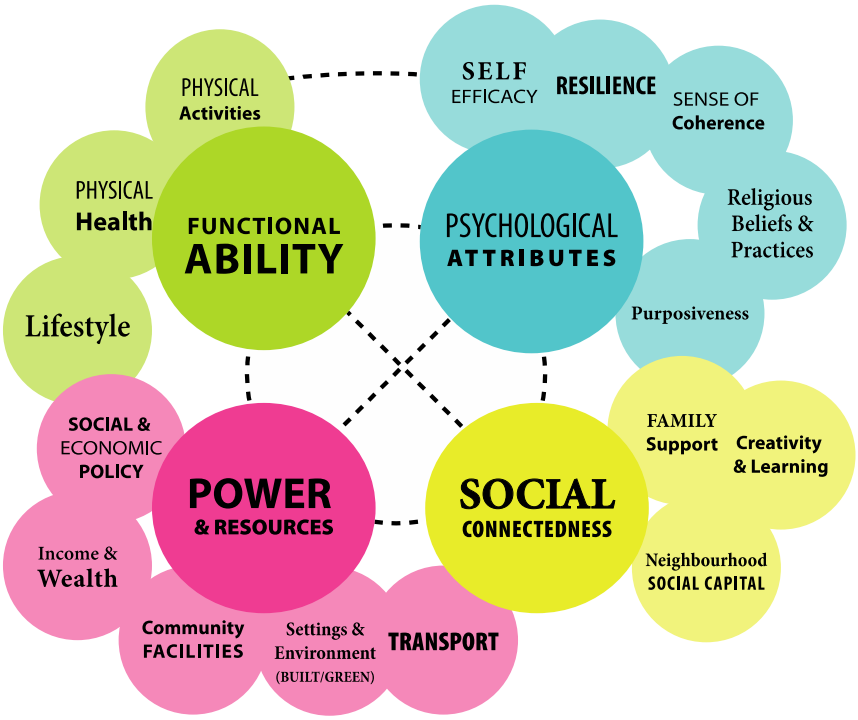
Personal resources	**Individual characteristics**	**Environmental resources**	**Attitudes**
Good health	Self esteem	Availability of support from social networks, e.g. neighbours, close friends, close family and appropriate services	To keep oneself involved with change
Ability to adjust to change / resilience	Self-efficacy	Safe environment	To keep oneself busy
Freedom from stress and worries	Contentment		
Freedom from financial constraints	Independence and control		
Availability of instrumental, emotional and informational support			

Table 2: *Promoting mental wellbeing: what older people said promotes this in the surveys and focus groups*

Environmental resources	**Attitudes**	**Individual characteristics**
Community support	Keep oneself busy/involved in change	Good health
Family support	Positive outlook	Education
Companions	Independence	Gender
Happy family relationships	Control over one's life	Cultural background
Financial stability	Keep going despite difficulties	Resilience
Freedom from stress	Use of humour	Self-esteem
Safe living environment	Lifestyle choices	Self-efficacy
Access to enjoyable activities		
The weather		

The findings from the literature searches, surveys and focus group interviews were brought together and a synthesis of this combined information was conducted to develop a draft model of the foundations of mental wellbeing, illustrated below (figure 1).

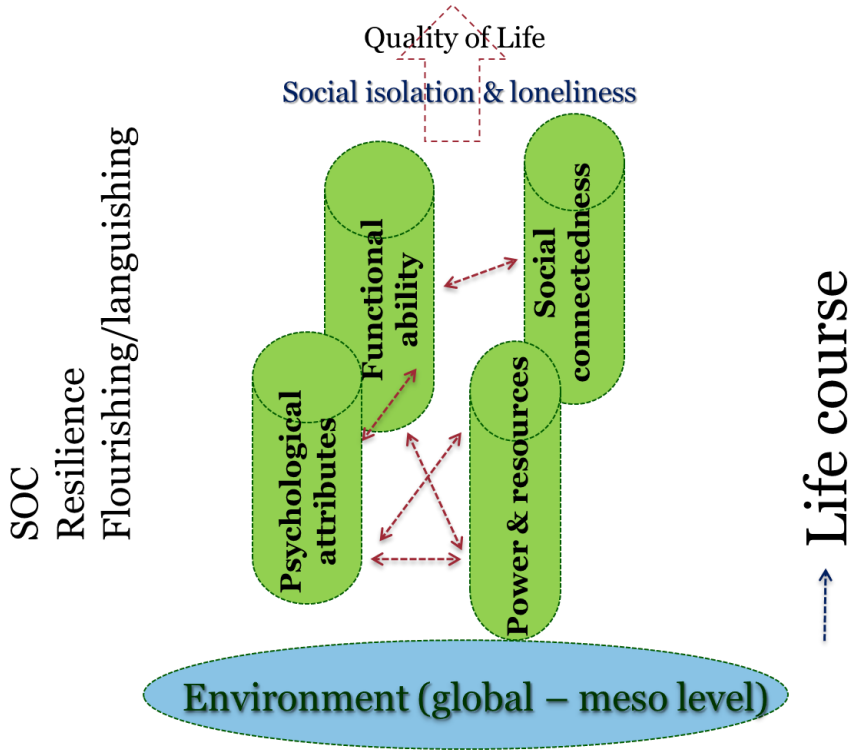
Figure 1: *Foundations of mental wellbeing in later life, first draft*



This evidence-based model suggests that there are four main fields that provide the foundations of mental wellbeing in later life: functional ability, psychological attributes, social connectedness and power and resources. These fields are underpinned by a number of factors and are closely inter-connected through these factors. Although we were confident that the model accurately reflected our findings, we were also conscious of its shortcomings. The first issue was that our starting point had been a positivist definition of mental health/mental wellbeing (see for example, Kirkwood et al., 2008; Lehtinen, 2008; NICE, 2008), which meant that some factors, such as culture, might not be recognised by the model. The second point was that the model was uni-dimensional and did not clearly differentiate between the micro, meso and macro levels of factors that affect mental wellbeing or that such factors might change/vary over time. Finally, it was not clear how theoretically robust the model was.

At the third and final meeting, the model was debated further and refined; following which additional theoretical concepts were incorporated. The revised model took into account the differing levels of the factors (now referred to as ‘pillars’) that affect mental wellbeing over time (figure 2).

Figure 2: *Revised multi-dimensional, theoretical model of the foundations of mental wellbeing in later life (FUEL)*



The FUEL model recognises mental wellbeing as a dynamic state affected by our living environment (global (macro) and local (meso) levels) and our life experiences mediated through cultural factors. It illustrates the interaction between the four pillars that provide the foundations of mental wellbeing through the life course. These pillars may change in relevance and impact over the life course and are therefore dynamic and never static. Theoretical grounding is provided through sense of coherence (SOC), resilience and flourishing/languishing (Keyes, 2007; Lindström & Eriksson, 2005; Windle, 2009), three closely related theory groups, which focus on resources for health and quality of life (also referred to as the 'assets approach'). However, we recognised that future research could add to the theoretical base. Finally, the model acknowledges the association between older people's mental wellbeing and their quality of life.

The draft model was presented at three conferences for discussion. A number of observations were made. The strength of the model is its dynamic structure framed within our lived environment and culture against the life course. It is also theoretically robust, which was one of the aims of the model development. Some questions remain and require further investigation. Despite being dynamic, it is not clear from the model what role each factor within the pillars has in the development of mental wellbeing, i.e. whether there is a direct causal link between the factors and mental wellbeing or the factors have a mediating role in the development and maintenance of mental wellbeing. It was also suggested that the model

could be improved by defining the causal mechanisms of the lived environment and physical activity that affect mental wellbeing. These questions could be addressed in a study to validate the model.

In conclusion, despite some questions remaining, the multi-dimensional, theoretical model of the foundations of mental wellbeing in later life (FUEL) provides a dynamic and comprehensive model on mental wellbeing in later life. The model can be used to validate components of existing mental health and related policy, reinforcing those components. However, it also generates further research and development questions for primary and secondary research which could in the long-term have implications for the ways policy and practice for older people's mental health and wellbeing are developed.

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Figure 1: Jamie Steane, Northumbria University