

Research Paper

# Multi-morbidity, disability and adaptation strategies among community-dwelling adults aged 75 years and older

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## Abstract

**Background:** The impact of multi-morbidity and disability on the use of adaptation strategies in older adults has not been well researched.

**Objective:** This study investigated categories of adaptation strategies that community-dwelling older adults use to complete their daily activities, identified factors that are associated with the use of behavioral adaptations, and examined the relationship among multi-morbidity, disability and adaptation strategies in this population.

**Methods:** A mixed methods research design was used. 105 community-dwelling older adults with ages ranging from 75 to 94 years completed a questionnaire and semi-structured interview on types of chronic illnesses (multi-morbidity), amount of difficulty in completing daily activities (degree of disability), and types of behavioral efforts made to complete daily activities that are challenging (adaptation strategies). The model of selective optimization with compensation (SOC) was used to categorize these strategies.

**Results:** The findings revealed that older adults use a wide range of adaptations with compensation and selection the most (40.4%) and least (16.5%) frequently reported respectively. Degree of disability was uniquely associated with the frequency of using SOC strategies while controlling for other factors. Furthermore, degree of disability was a mediator for multi-morbidity in predicting frequency of using SOC strategies.

**Conclusions:** The findings support that older adults using behavioral adaptations to cope with functional decline is prevalent. Knowing the types of adaptation that older adults employed and the indirect relationship between multi-morbidity and frequency of using SOC strategies, with degree of disability as the mediator will be helpful in planning interventions and prevention programs for educating older adults. © 2016 Elsevier Inc. All rights reserved.

**Keywords:** Chronic disease; Multi-morbidity; Models; Theoretical; Activities of daily living; Aged

The age of 75 appears to be a turning point after which the rate for chronic illnesses and functional impairments begins to rapidly increase.<sup>1–3</sup> Based on the findings from several national surveys, 90% of Americans age 75 and older have at least one chronic condition, with an average of three; whereas just under half of Americans age 50–64 have a chronic condition.<sup>4–6</sup> Self-reported chronic multi-morbidity is the key risk factor associated with increased

likelihood of disability (i.e., difficulty in carrying out basic and instrumental activities of daily living, ADL) in older adults.<sup>7–9</sup> As the number of chronic morbidities among older adults increases with age, the risk of disability goes up.<sup>7–9</sup> In response to the increased functional decline that occurs with aging, older adults may modify the physical and social environment, and make appropriate adjustments to complete their ADLs. Such adjustments enable them to continue living in their preferred environment without the need for formal community and home care services or institutionalization.<sup>10</sup>

The model of selection, optimization, and compensation (SOC)<sup>11</sup> describes a general process of life-management behavioral adaptation that older adults utilize for coping with disability<sup>10,12–15</sup> and for successful aging.<sup>16–21</sup> The model consists of three interacting strategies and processes: selection, optimization, and compensation. Baltes<sup>11</sup> proposes that, as people age, they will select activities or goals which are important to them or those they can manage,

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optimize related skills, and/or compensate for deficits to maintain performance.<sup>11,18,22</sup>

Selection is a deliberate process whereby older adults restrict their activities or goals within a domain of activity, in the face of personal and environmental challenges, to free or conserve energy for more important activities or goals.<sup>11,18,22</sup> Optimization involves older adults engaging in behaviors to enrich and augment their existing reserves and resources in order to achieve a desired level of function in a particular domain of activity.<sup>11,18,22</sup> Compensation is a process whereby older adults change the way they perform tasks or use alternative means, when methods previously employed do not work anymore, to continue performing their selected activities and reach the original goals.<sup>11,18,22</sup> Supporting the SOC model of successful aging, several cross-sectional and longitudinal studies reported older adults who used SOC strategies more frequently were associated with higher level of successful aging as indicated by better life satisfaction, positive emotions, and absence of social and emotional loneliness.<sup>15,16,18,21</sup>

Gignac et al. examined the pattern of behavioral adaptations used by 286 older Canadians diagnosed with osteoarthritis and/or osteoporosis.<sup>10</sup> They found frequency of using different SOC strategies was associated with difficulty in performing certain domains of activity (a measure of degree of disability).<sup>12</sup> Studies have also explored the use of SOC strategies to maintain personal goals in the face of age-related multi-morbidity<sup>13,14</sup> and serious health events.<sup>15</sup>

However, few studies have addressed the impact of chronic multi-morbidity and disability on the use of SOC strategies in the community-dwelling older adults age 75 and above. Given the high prevalence of chronic illnesses and functional impairments among this population, the aims of this study are to (1) investigate categories of adaptation strategies that community-dwelling older adults age 75 and above use to complete their ADLs, (2) identify factors that are associated with the use of SOC behavioral adaptations, and (3) examine the relationship among multi-morbidity, disability and SOC adaptation strategies in this population.

## Methods

### *Participants*

Students in an occupational therapy research course at the University of Florida were asked to locate older adults of their choice, who met the study's selection criteria. The inclusion criteria for the study were older adults who were (a) community-dwelling, (b) at least 75 years old, (c) cognitively alert (i.e., oriented to time, place, person, and purpose), (d) functionally communicative, and (e) consented to being audio-taped. In order to recruit a more representative sample that reflects the health status of the general community-dwelling older population, presence of chronic

medical condition or disability was not an exclusion criterion.

### *Procedures*

Students received a study package in class, along with detailed instructions on how to administer the survey package to participants. The package contained two parts – the first part was a structured questionnaire, and the second part required the students to conduct a semi-structured interview based on the responses from the questionnaire. The structured questionnaire contained several sets of closed-ended questions which included (1) general socio-demographic information, (2) ability to ambulate independently indoors or outdoors (yes vs. no), (3) a 5-point response format of self-reported current health status, from excellent to poor, with excellent coded as 1 and poor as 5, (4) number of falls in the past 12 months, (5) number of sick days in the past month, (6) implementation of structural or home modification (yes vs. no), (7) chronic conditions, and (8) degree of disability. Students were trained and practiced in administering the interviews.

Each student was responsible for conducting one interview with one older adult who met the study selection criteria. After completing the interview, students were instructed to transcribe verbatim the audio-taped portion of the interview. The Institutional Review Board at the University of Florida Health Science Center approved the study.

Completion of the interview was part of the course requirement for the student interviewers. Before turning in the completed questionnaires, students separated the front instruction sheet, with their name on it for credit, from the structured questionnaire and their transcription. In this way, students maintained complete anonymity in relation to the data they collected. To ensure high quality of the data collected, and prevent incorporation of corrupted data from dishonest conduct, students indicated on the first page of the questionnaire whether they felt the data collection procedure was “valid” or “invalid” for analysis.

Of the 138 questionnaires returned, 105 (76%) were included in the final analytic sample (27 were marked as invalid, four were incomplete interviews with large amounts of missing data, and two were improper participants as one lived in a nursing home and the other one resided outside the United States). Based on the socio-demographic information of the 105 questionnaires, it was concluded that no two students interviewed the same older adult.

### *Principal measures*

#### *Multi-morbidity*

Type of chronic illnesses that participants reported have been partly drawn from the conditions listed in the Charlson Comorbidity Index<sup>23</sup> and the Functional Comorbidity Index.<sup>24</sup> The 20 chronic conditions listed in the questionnaire were heart problem, vision problem, hearing problem,

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