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ORIGINAL RESEARCH

Reexamining the Validity and Dimensionality of the Moorong Self-Efficacy Scale: Improving Its Clinical Utility

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Abstract

Objective: To improve the clinical utility of the Moorong Self-Efficacy Scale (MSES) by reexamining its factor structure and comparing its performance against a measure of general self-efficacy in persons with spinal cord injury (SCI).

Design: Cross-sectional survey design.

Setting: Community.

Participants: Adults with SCI (N=161; 118 men and 43 women) recruited from Australia (n=82) and the United States (n=79), including 86 with paraplegia and 75 with tetraplegia.

Interventions: None.

Main Outcome Measures: Confirmatory factor analysis deriving fit indices on reported 1-, 2-, and 3-factor structures for the MSES. Exploratory factor analysis of MSES using principal component analysis with promax oblique rotation and structure validation, with correlations and multiple regression using cross-sectional data from the Sherer General Self-Efficacy Scale and Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36).

Results: The MSES was confirmed to have a 3-factor structure, explaining 61% of variance. Two of the factors, labeled social function self-efficacy and personal function self-efficacy, were SCI condition–specific, whereas the other factor (accounting for 9.7% of variance) represented general self-efficacy, correlating most strongly with the Sherer General Self-Efficacy Scale. Correlations and multiple regression analyses between MSES factors, Sherer General Self-Efficacy Scale total score, SF-36 Physical and Mental Component Summary scores, and SF-36 domain scores support validity of this MSES factor structure. No significant cross-cultural differences existed between Australia and the United States in total MSES or factor scores.

Conclusions: The findings support a 3-factor structure encompassing general and SCI domain–specific self-efficacy beliefs and better position the MSES to assist SCI rehabilitation assessment, planning, and research.

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Spinal cord injury (SCI) may adversely affect an individual's quality of life (QOL), with limitations in function and mobility, dependence on caregivers, and barriers to social and work participation, challenging personal expectations of control.[1-7] Mood and anxiety disorders, chronic pain, and fatigue occur commonly after SCI and may also affect QOL.[4,8-11] Increasingly, psychological variables are recognized to exert a strong influence on outcomes after SCI rehabilitation.[4,12-14]

Self-efficacy refers to a person's expectations, beliefs, or sense of confidence in his or her own ability to use cognitive, behavioral, and motivational resources to perform a particular task in a specific situation successfully.[15,16] Self-efficacy expectations not only determine the choice and initiation of goal-directed behavior, but also persistence of effort when experiencing difficulty or taking adaptive action.[15] Although self-efficacy was developed as a context-specific construct, generalized self-efficacy (GSE) has been conceptualized as a stable global belief in which an individual believes they can use resources needed to deal with challenges and manage a wide range of demands or novel situations.[17]

Disclosures: none.

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Self-efficacy is a key factor mediating outcomes in many chronic health conditions, including arthritis, chronic pain, diabetes, heart disease, multiple sclerosis, and stroke.[17-23] The association between self-efficacy and SCI outcomes has also been investigated[2,8,9,13,14,24-27] using scales modified from other conditions, validated tools developed specifically for SCI, such as the Moorong Self-Efficacy Scale (MSES),[28-30] or generic instruments, such as the Generalized Self-Efficacy Scale[31] used by Kennedy,[32] Peter,[33] and colleagues and the Sherer General Self-Efficacy Scale[34] used by Hampton.[24,25]

Research has shown the MSES to be valuable clinically. For example, self-efficacy assessed by the MSES during inpatient rehabilitation was 1 of 6 factors discriminating between individuals with depressive mood and those with normative mood, 6 months postdischarge.[35] A robust self-efficacy (MSES) was associated with superior health-related QOL in emotional, mental, vitality, and social domains compared with individuals with SCI and poor self-efficacy.[2] Self-efficacy (MSES) also predicted superior social participation and resilience 6 months after rehabilitation discharge.[8,36]

Recent research has investigated the factor structure of the MSES, showing slightly different factor structures and item loadings. In the original validation study, Middleton et al[28] described a 2-factor structure; however, 6 items were noted as complex, loading on both factors (>.45). Miller[29] subsequently reported a 2-factor structure based on the Cattell scree test, but found a 3-factor solution using Kaiser-Guttman criterion, ultimately choosing the simpler solution for easier interpretation. More recently, Brooks et al[30] demonstrated a 3-factor MSES structure involving 14 items, which was considered more conceptually meaningful than 2-factor solutions,[28,29] disentangling embedded participation items. The major objective of the present study was to reexamine the MSES factor structure, using a cross-cultural sample from Australia and the United States, and compare scale performance with a general self-efficacy measure, the Sherer General Self-Efficacy Scale, leading to improved psychometric data for the MSES.

Methods

Participants

Participants included 161 adult persons (118 men and 43 women) with SCI (mean age, 48.5±15.1y), of whom 86 had paraplegia and 75 had tetraplegia. Participants were recruited in Australia (n=82) by advertising in consumer organisation newsletters/websites and through word-of-mouth in the SCI community and in the United States (n=79) by e-mailing information via the Miami Project research volunteer registry (table 1). The study received institutional human research ethics committee approval, with participants only enrolled after giving consent (either written or implicit informed consent through the online process, with completion after reading the subject information sheet).

List of abbreviations:

GSE	**generalized self-efficacy**
MSES	**Moorong Self-Efficacy Scale**
QOL	**quality of life**
RMSEA	**root mean square error of approximation**
SCI	**spinal cord injury**
SF-36	**Medical Outcomes Study 36-Item Short-Form Health Survey**

Measures

The MSES is a 16-item scale measuring an individual's belief (sense of confidence) in his or her ability to control their behavior and outcomes on a 7-point Likert scale, ranging from 1 (very uncertain) to 7 (very certain). Examples of items include the following: I can avoid having bowel accidents, I can enjoy spending time with friends, and I can deal with unexpected problems. MSES total scores therefore range from 16 to 112, with a higher score suggesting better self-efficacy or stronger beliefs in personal ability to control behavior and outcomes. It is internally consistent, stable, and demonstrates strong concurrent, convergent, and discriminant construct validity.[28] Miller[29] and recently Brooks[30] also validated the MSES against other psychosocial constructs and have demonstrated good subscale reliability with Cronbach α coefficients ranging from .87 to .91 for 2-factor and .73 to .86 for 3-factor solutions, respectively.

The Sherer General Self-Efficacy Scale[34] assesses generalized expectations of self-efficacy in people. It consists of 17 items using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree),[37] where higher scores indicate that the individual exhibits better self-efficacy. The Sherer General Self-Efficacy Scale has been shown to be a reliable measure with a Cronbach α=.86.[17,37]

The Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) is a 36-item, self-reported measure designed to assess health status by evaluating the person's health-related QOL in 8 domains, with 2 component scores, Physical Component

Table 1 Demographic characteristics of the study participants

Characteristic	Australia (n=82)	United States (n=79)	Total
Age (y)			
Mean ± SD	48.6±16.8	48.5±13.1	48.5±15.1
Range	18–79	18–78	18–79
Median	51	51	51
Sex, n (%)			
Male	65 (79)	53 (67)	118 (73)
Female	17 (21)	26 (33)	43 (27)
Education, n (%)			
High school	64 (78)	60 (76)	124 (77)
Bachelor degree or higher	18 (22)	19 (24)	37 (23)
Level of injury, n (%)			
Paraplegia	44 (54)	42 (53)	86 (53)
Tetraplegia	38 (46)	37 (47)	75 (47)
Time postinjury (y)			
Mean ± SD	15.8±13.7	16.7±10.5	16.2±12.2
Range	1–50	2–41	1–50
Employment, n (%)			
Student	8 (10)	2 (2)	10 (6)
Not working	11 (13)	19 (24)	30 (19)
Employed	36 (44)	33 (42)	69 (43)
Retired	27 (33)	25 (32)	52 (32)