Reviewer ID: Tyra Chu, Frances Fan, Carlos L. Cano Herrera, William Miller

Last updated: May 13th, 2024

Research Summary – Moorong Self-Efficacy Scale (MSES) – Other Physiological Measures

Author Year Country Research Design Setting	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Middleton et al. 2016 Cross-sectional survey Australia and US (Miami Project research volunteer registry in US, not specified in AUS)	Total: N=161 (118M, 43F) Age: 48.5±15.1 years Level of injury: 86 paraplegic, 75 tetraplegic Time postinjury: 16.2±12.2 years Australia: N=82 Age: 48.6±13.1 years Level of injury: 44 paraplegic, 38 tetraplegic Time postinjury: 15.8±13.7 years US: N=79 Age: 48.5±13.1 years	Negative correlation found between age and factor 1 (r=-.32, P<.01) No sex differences found in factors 2 and 3, but women scored higher in factor 1 than men (P<.05)	**Internal consistency:** Factor 1 (social function self-efficacy; 5 items): α=.77 Factor 2 (general self-efficacy; 4 items): α=.81 Factor 3 (personal function self-efficacy; 7 items): α=.80	

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	Level of injury: 42 paraplegic, 37 tetraplegic Time postinjury: 16.7±10.5 years			
Munce et al. 2016 Online Survey Rick Hansen Institute and an outpatient spinal clinic	N=99 Age: 50.5 ± 1.0 Time Since Injury (years): 17.5 ± 12.3	Negatively correlated with Depression portion of HADS (Spearman rho=-0.560, P< 0.01) Negatively correlated with Anxiety portion of HADS (Spearman rho=-0.315, P< 0.01)		
Kilic et al. 2013 Cross sectional Survey Hampstead Rehabilitation Centre, South	N=60 (19F, 41M) Age: 50.8 ± 17.0 Time Since Injury (years): 5.7 ± 7.3 Incomplete lesion: 41 Complete: 18 Missing data: 1	Negatively correlated with Depression portion of DASS-21 (Pearson r=-0.63, P< 0.01) Negatively correlated with Anxiety portion of DASS-21 (Pearson r=-0.54, P< 0.01)		

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Australia		Negatively correlated with Stress portion of DASS-21 (Pearson r=-0.58, P< 0.01)		
Miller 2009 Study examining factorial and concurrent validity Florida Brain and Spinal Cord Injury Program and the Florida Spinal Cord Injury Resource Centre	162 SCI participants (68.5% male, 31.5% female) mean age: 45.8±13.4 mean years post-injury: 9.2±8.6 Ethnic background: 73.5% European American 14.2% African American 7.4% Latino/Latina 2.5% Native American 2.5% Asian American. Injury level: 54.3% cervical 40.8% thoracic 3.7% lumbar	MSES scores were found to be significantly positively related to Satisfaction with Life Scale (SWLS) scores (r=0.51, P<.001) and Personal Resources Questionnaire-2000 (PRQ-2000) scores (r=0.56, P<.001). MSES scores were significantly negatively associated with Centre for Epidemiologic Diseases Depression Scale (CESD-10) scores (r=-0.54, P<.001). Employment status was found to be positively related to		

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	1.2% sacral	the total score of the MSES (r=0.23, P<.001). Years since disability, injury level and living situation were found to be unrelated to self-efficacy, as measured by the total score of the MSES. Correlations of Moorong Self-Efficacy Scale Factors with selected variables: MSES Factor 1 (Interpersonal): Years since injury: -.018 Injury Level: -.051 Living situation: .087 Employment: .222 (P<.01) SWLS: .473 (P<.001) CESD-10: -.557 (P<.001) PRQ-2000: .625 (P<.001)		

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		MSES Factor 2 (instrumental): Years since injury: -.079 Injury Level: .027 Living situation: .011 Employment: .305 (P<.001) SWLS: .495 (P<.001) CESD-10: -.494 (P<.001) PRQ-2000: .465 (P<.001)		
Middleton et al. 2003 Descriptive, correlational study, validation study of a new instrument Moorong Spinal	Sample 1: People with SCI living in the community who previously were at in-patient rehabilitation - N=36, 28 male - Mean age 36.33 (SD = 9.52) - Mean time post-trauma 11.23 (SD = 9.67) years	Spearman correlations of MSES with (Sample 1 only, N=36): - Hospital Anxiety and Depression Scale (HADS) anxiety: -0.58 (P<0.001) - Functional Independence Measure (FIM) motor(N=34): 0.04 (P>0.05)	**Internal consistency:** Item-total Spearman correlations (Sample 1 only, N=36): 6 of 8 items: 0.46-0.80 (P<0.01) Item 2 (bowel accidents): 0.17 (P>0.05)	**Responsiveness:** Wilcoxon signed-ranks tests (Sample 2 only, N=31): Test occasion 1 (T1) – 1-month post remobilization following acute treatment Test occasion 2 (T2) – 3-month post remobilization

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Author Year Country Research Design Setting	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Unit of the Royal Rehabilitation Centre Sydney, Sydney, New South Wales, Australia.	- 11 paraplegia, 25 tetraplegia - 15 incomplete, 21 complete Sample 2: People who had recently sustained a SCI and were currently enrolled at in-patient rehabilitation - N=31, 23 male - Mean age 31.48 (SD = 10.46) - Mean time post-trauma 2.01 (SD = 2.50) months - 21 paraplegia, 10 tetraplegia - 13 incomplete, 18 complete Sample 3: People with SCI living in the community who previously were at in-patient rehabilitation	- FIM cognitive: 0.39 (P<0.05) - Sickness Impact Profile (SIP-136) physical: -0.11 (P>0.05) - Craig Handicap Assessment and Reporting Technique (CHART) physical (N=29): -0.07 (P>0.05) - CHART mobility: 0.15 (P>0.05) - CHART occupational: 0.47 (P<0.05) - CHART social: -0.24 (P>0.05)	Item 4 (family relationships): 0.25 (P>0.05)	Test occasion 3 (T3) – 6-month post remobilization Significant improvement in between T1 & T2 in: Total score: z = -3.29, P<0.01 Item 1 (personal hygiene): z = -3.34, P<0.001 Item 3 (household participation): z = -3.34, P<0.05 Item 8 (leisure): z = -3.09, P<0.01 Item 12 (accomplishing things): z = -2.18, P<0.05 Item 14 (meeting people): z = -1.99, P<0.05 Item 15 (good health): z = -2.24, P<0.05

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Author Year Country Research Design Setting	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
	- N=108, 30 male - Mean age 45.26 (SD = 15.99) - Mean time post-trauma 7.92 (SD = 9.83) years - 66 paraplegia, 42 tetraplegia - 58 incomplete, 49 complete			Significant improvement in between T2 & T3 in: Total score: z = -0.01, P>0.05 Item 13 (persistence in learning things): z = -2.24, P<0.05 No significant difference found in total score between any test occasions comparing lesion levels or completeness of injury. **Interpretability:** Sample 1: Time 1 (in outpatient clinic) = 92.15 (16.57) Time 2 (6 weeks later) = 94.81 (14.95) Sample 2: 2

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Research Summary – Moorong Self-Efficacy Scale (MSES) – Other Physiological Measures – Cross-cultural Validation Studies

Author Year Country Research Design Setting	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Mangold et al. 2024 Psychometric study to translate and explore the data completeness, targeting, reliability and aspects of validity of the Swedish version of s-MSES Community rehabilitation program	**N = 92 program participants** 58M, 24W Median (IQR) age 47.0 (27.5) years Median (IQR) time since injury 1 (2) years Cause of injury: Traumatic (n = 75), non-traumatic (n = 17) Level of injury: Tetraplegia (n = 48), paraplegia (n = 44) Completeness of injury: Complete (n = 37), incomplete (n = 54) **N = 42 peer mentors** 37M, 11W Median (IQR) age 38.0 (18.2.5) years Median (IQR) time since injury 10 (9.25) years	The s-MSES scores were positively correlated with the LiSat11 (total score r_s = 0.72, $p < 0.001$) and the CD-RISC (total score r_s = 0.76, $p < 0.001$). A statistically significant and negative correlation was found between the s-MSES total score and HADS (r_s = −0.58, $p < 0.001$) and HADS D (r_s = −0.43, $p = 0.14$). Correlations between the Swedish version of the Moorong Self-Efficacy Scale and life satisfaction[a], resilience[a], depression/anxiety[b]	**Internal consistency:** The Cronbach´s alpha coefficient of the total group for the full scale was 0.92, for the social sub-scale 0.81, for the general sub-scale 0.83 and for the personal sub-scale 0.74. **Test-retest reliability (peer mentors):** The ICC for the full scale was 0.91 (n = 34), for the social sub-scale 0.84 (n = 36), for the general sub-scale 0.92 (n = 38) and for the personal sub-scale 0.78 (n = 36). The	**Scoring:** The mean (SD; min-max) total score for program participants was 88 (15; 32–112), for peer mentors 101 (9; 76–112) and for the total group 92 (15; 32–112). **Data completeness:** Of the 92 participants, 84 (91%) had answered all items in the s-MSES and obtained a total score at baseline. Missing data were found in all three subscales with response rates of 97% (social function), 98% (general) and 99% (personal function). Of the 42 peer mentors, 38 (91%)

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	Cause of injury: Traumatic (n = 37), non-traumatic (n = 5) Level of injury: Tetraplegia (n = 10), paraplegia (n = 32) Completeness of injury: Complete (n = 21), incomplete (n = 20)	and depression[b] Please see Table 1 below.	lowest value for weighted kappa was found in item 15 (good health and well-being): 0.42, and the highest in item 6 (sexual relation): 0.86. In total, 10 items had a kappa ≥ 0.60, indicating substantial agreement, out of which one had a kappa >0.80, representing excellent agreement. When performing the Wilcoxon signed rank test for the items with a kappa of ≤ 0.61 no statistical significance was found, indicating no systematic error in ratings.	answered all items at the first evaluation point. Missing data were found in the social function and personal function subscales, both with response rates of 95%. **Targeting:** For the program participants, the total score ranged from 32–112 (full range: 16–112), the social sub-scale from 11 to 35 (full range: 5–35), the general sub-scale from 8–28 (full range: 4–28), the personal sub-scale from 8–28 (full range: 4–28). No program participant scored the lowest possible score in any subscale. Ceiling effects were noted in the social sub-scale

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				where 17.6% scored the highest possible score. In total, 4.3% of the participants scored the highest possible score on the full scale. For the peer mentors, the total score ranged from 76 to 112, the social sub-scale from 21 to 35, the general sub-scale from 15–28 and the personal sub-scale from 19–28. No peer mentor scored the lowest possible score on any subscale. Ceiling effects were noted in all subscales; 47.6% for the social sub-scale, 26.2% for the general sub-scale and 23.8% for the personal sub-scale. In total, 9.5% of peer mentors scored the

<table>
<tr><th>Author Year Country Research Design Setting</th><th>Demographics and Injury Characteristics of Sample</th><th>Validity</th><th>Reliability</th><th>Responsiveness Interpretability</th></tr>
<tr><td></td><td></td><td></td><td></td><td>highest possible score on the full scale.

Variability and systematic changes of the mean: The SEM and the SDD for the full scale were 2.60 and 7.21, respectively. The ds for the full scale and all sub-scales were close to 0 and the confidence interval included 0, indicating no systematic differences between evaluation points. The LOA ranged between −9.68 and 11.32 for the full scale.</td></tr>
<tr><td></td><td colspan="4">Table 1. Correlations between the Swedish version of the Moorong Self-Efficacy Scale and life satisfaction[a], resilience[a], depression/anxiety[b] and depression[b]

<table>
<tr><th>Scale</th><th>Mean (SD)</th><th>Social Function</th><th>General Subscale, r_s</th><th>Personal Function Subscale, r_s</th><th>Total Score, r_s</th></tr>
</table>
</td></tr>
</table>

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<table>
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<tr><td></td><td colspan="4">
<table>
<tr><td></td><td></td><td>Subscale, r_s</td><td></td><td></td><td></td></tr>
<tr><td>LiSat</td><td>45.51 (10.05) (n = 122)</td><td>0.652*** (n = 119)</td><td>0.528*** (n = 121)</td><td>0.596*** (n = 121)</td><td>0.720*** (n = 113)</td></tr>
<tr><td>CD-RISC</td><td>75.53 (16.52) (n = 94)</td><td>0.675 *** (n = 91)</td><td>0.741*** (n = 94)</td><td>0.525*** (n = 93)</td><td>0.763*** (n = 87)</td></tr>
<tr><td>HADS</td><td>9.76 (3.09) (n = 36)</td><td>−0.356* (n = 32)</td><td>−0.533** (n = 33)</td><td>−0.407* (n = 33)</td><td>−0.575 *** (n = 30)</td></tr>
<tr><td>HADS D</td><td>4.03 (3.09) (n = 36)</td><td>−0.310 (n = 34)</td><td>−0.378* (n = 35)</td><td>−0.388* (n = 35)</td><td>−0.430* (n = 32)</td></tr>
</table>
*p < 0.05 **p < 0.01 ***p < 0.001.
CD-RISC Connor Davidson Resilience Scale, HADS the Hospital Anxiety and Depression Scale, HADS D the depression domain of HADS, LiSat11 the Life
Satisfaction Questionnaire, rs Spearman's rho.
[a]Participants in Active Rehabilitation programs and peer mentors.
[b]Participants in Active Rehabilitation programs
</td></tr>
<tr><td>Jia et al. 2022</td><td>N = 176
129M, 47F
Mean (SD) age 39.51</td><td>Content validity:
The content validity</td><td>Internal consistency:
Cronbach's a coefficients were</td><td></td></tr>
</table>

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Cross-sectional study to translate the MSES into Chinese and to examine its reliability and validity Four rehabilitation centers in China	(14.07) years Cause of disease: Trauma (n = 152), non-trauma (n = 20) Injury severity: Missing data (n = 10), complete (n = 76), incomplete (n = 90) Injury level: Cervical (n = 46), thoracic (n = 93), lumbosacral (n = 32) Mean (SD) time since injury 10.32 (14.84) months	index of the scale was 0.99. **Criterion-related validity:** Pearson's correlation coefficient between the total scores of the MSES and the General Self-Efficacy Scale was 0.660 ($p < 0.001$). **Construct validity:** Principal components analysis with varimax orthogonal rotation was used. Three factors were extracted accounting for 39.083%, 11.149%, and 8.391% of the total variance and labeled as general self-efficacy (eight items), social self-efficacy (five items), and self-management self-	0.892, 0.862, 0.817, and 0.739 for the total items and three factors, respectively, and decreased when any item was eliminated. Test–retest reliability representing MSES stability was confirmed to be good among 40 patients with SCI. The ICC of the total scores for pretest and retest was 0.859 ($F = 7.082$, $p < 0.001$), and all items' p values were <0.05.	

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		efficacy (three items). Confirmatory factor analysis showed acceptable fit compared with previous studies.		
Marquez et al. 2022 Psychometric and transverse study to evaluate the psychometric properties of the Italian version of the MSES Two Italian Spinal Units	N = 65 41M, 24W Mean (SD) age 55.4 (14.3) years Injury level: Not answered (n = 11), C3-C7 (n = 1), C6-C7 (n = 5), C7-T11 (n = 1), T2-T4 (n = 7), T4-T6 (n = 7), T7-T10 (n = 18), T12 (n = 9), T12-L1 (n = 1), L1-S1 (n = 5) AIS A (n = 17), AIS B (n = 41), AIS C (n = 3), AIS D (n = 4) Mean (SD) time since injury 26 (20.3) years	**Concurrent validity:** There are correlations between the MSES-IT and the SF-36. Particularly, MSES-IT total score and subscales showed a moderate correlation ($0.30 < \rho < 0.44$) with the following components of SF-36: Role limitations physical health; Role limitations emotional problems; Emotional well-being; General health. No correlations emerged between MSES-IT and SCIM-SR.	**Internal consistency:** Cronbach's alpha for the MSES-IT was 0.87. **Test-retest reliability:** All items showed an ICC value >0.7 and total MSES-IT showed ICC value of 0.99 (0.98-0.99).	

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Gounelle et al. 2022 Cross-sectional study to adapt MSES in the French language and determine its psychometric proprieties Six Physical Medicine and Rehabilitation centers in France	**Validity study:** N = 201 participants with SCI 157M, 44F Mean (SD) age 48 (14) years. Level of injury: Quadriplegia (n = 83), paraplegia (n = 118). Time since injury: < 1 year (n = 52), 1-10 years (n = 58), > 10 years (n = 88). AIS: AIS A (n = 114), AIS B (n = 17), AIS C (n = 29), AIS D (n = 38), AIS E (n = 1). Etiology: Medical (n = 53), traumatic (n = 148). **Reliability study:** N = 56 participants with SCI 47M, 9F Mean (SD) age 44 (14) years. Level of injury:	**Construct validity:** Results evidenced significant correlations with the MSES-Fr and other related psychological constructs (self-esteem, mood, quality of life=¡).	**Internal consistency:** Cronbach a = 0.87. **Test-retest reliability:** The ICC was 0.74 (CI 95%: 0.60-0.84) for the total score of the MSES-Fr. The ICC was good for the 3 dimensions of the scale: - Interpersonal self-efficacy: 0.72 (CI 95%: 0.56-0.82). - Instrumental self-efficacy: 0.73 (CI 95%: 0.58-0.84. - Participation self-efficacy: 0.64 (CI 95%: 0.45-0.77).	**Reproducibility analysis by item:** According to Kappa scores, the results are substantial for 3 items, moderate for 6 items and fair for 6 items. Only one item “I can accomplish most things I set out to do” exhibited an insignificant degree of concordance between the test and re-test situation.

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	Quadriplegia (n = 22), paraplegia (n = 34). Time since injury: < 1 year (n = 47), 1-10 years (n = 9), > 10 years (n = 0). AIS: AIS A (n = 20), AIS B (n = 10), AIS C (n = 14), AIS D (n = 12). Etiology: Medical (n = 18), traumatic (n = 36).			