

ISCoS 2017

Systematic review of associations between self-efficacy and physical and mental health in SCI

Marcel Post and Tijn van Diemen



“I’ve never done it, so I think I can.”

(Astrid Lindgren, Pippi Longstocking)

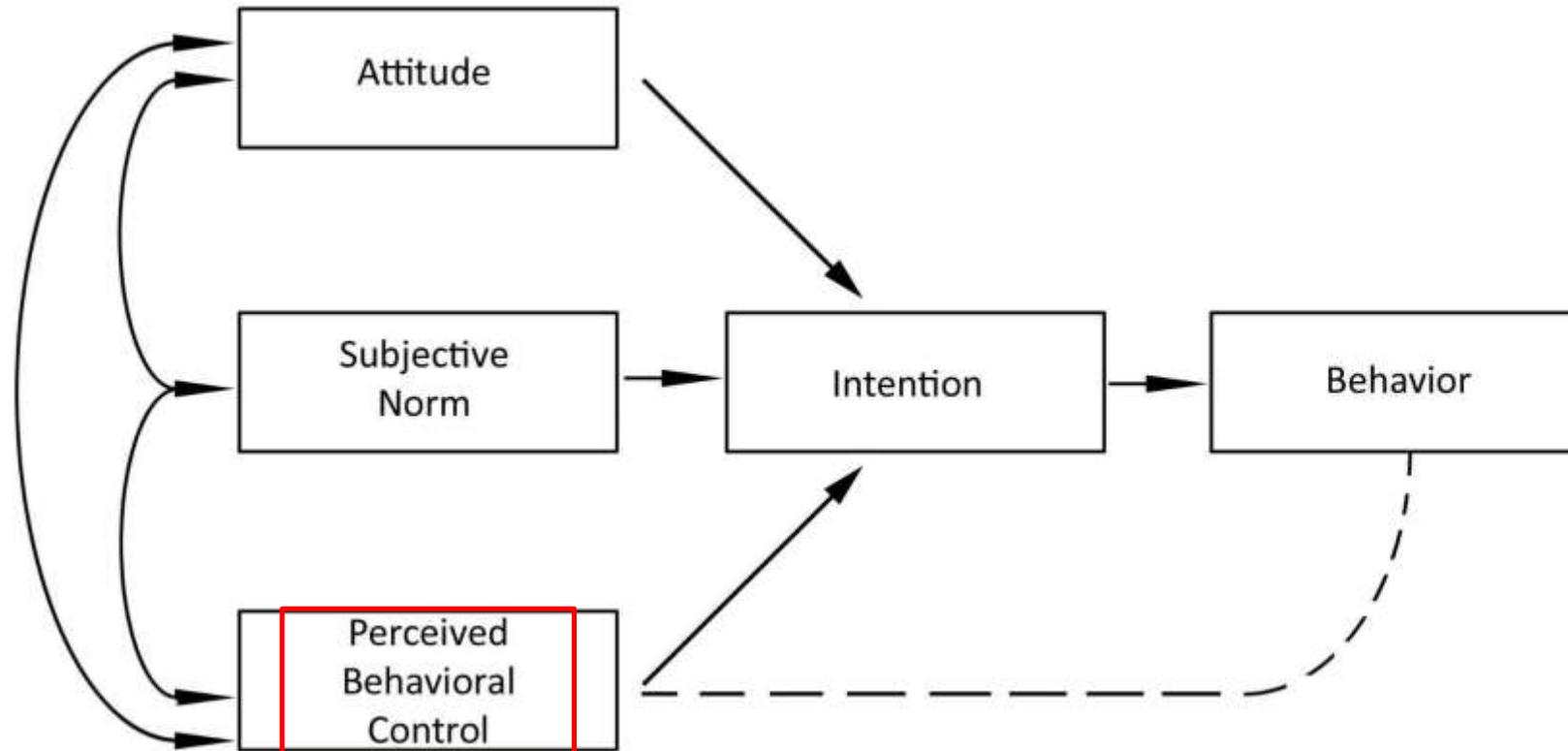




Self-efficacy

- One's belief in one's ability to succeed in specific situations or accomplish a task (Bandura, 1977).
- One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges.

Theory of Planned Behavior



Is there a problem?

- DMSE in people with long-standing SCI (N=261; TSI 24.1 years) (Cijsouw et al 2017)

	<i>Not at all</i>	<i>A little</i>	<i>Quite a bit</i>	<i>A lot</i>	<i>Completely</i>
<i>How confident are you that</i>					
1. You can keep the physical discomfort of your SCI from interfering with the things you want to do	13.4 ^a	22.2	29.1	29.5	5.7
2. You can keep your SCI from interfering with your ability to deal with unexpected events	7.3	19.5	23.8	36.8	12.6
3. You can keep your SCI from interfering with your ability to interact socially	7.3	20.7	22.2	35.2	14.6
4. You can keep your SCI from being the center of your life	8.0	20.7	16.9	35.2	19.2
5. You can bounce back from frustration, discouragement or disappointment that SCI may cause you	3.4	13.4	21.5	41.4	20.3
6. You can figure out effective solutions to SCI-related issues that come up	2.3	15.7	25.3	40.2	16.5

Abbreviation: SCI, spinal cord injury.

^aValues are percentages.

Levels of measurement of self-efficacy

- General Self-efficacy
 - Relates to mastery, locus of control, resilience ...
- Disease (SCI) management Self-efficacy
- Specific Self-efficacy, e.g.,
 - Self-care Self-efficacy
 - Wheelchair driving Self-efficacy
 - Pressure ulcer prevention Self-efficacy

(Van Diemen et al, in press)



Self-efficacy scales used in SCI

- General Self-Efficacy Scale (Schwartz)
- Moorong Self-Efficacy Scale
- University of Washington Self-Efficacy Scale
- General Self-Efficacy Scale (Sherer)
- Self-Efficacy for Managing Chronic Disease
- Behaviour Risk Factor Surveillance System
- Chronic Disease Self-Efficacy Scale
- Leisure Time Physical Activity Self-Efficacy
- Beliefs Scale



General Self-Efficacy Scale

(Schwartz et al., 1995)

- SCI studies: Kennedy (2006), Geyh (2012), Peter (2014)
- Measure of general beliefs about one's ability to respond to, and control demands and challenges
- 10 items with 1-4 point scales (not at all true – exactly true)
- Item: *"I can usually handle whatever comes my way."*
- Total score 10-40
- Unidimensional, reliable, valid, predictive of adjustment
- Weakness: it does not tap specific behavior change.
In most applications it is necessary to add a few items to cover the particular content of the survey or intervention (such as physical exercise self-efficacy).
- <https://userpage.fu-berlin.de/health/engscal.htm>

Moorong Self-Efficacy Scale

(Middleton et al, 2003)

- SCI studies: Middleton (2003), Middleton (2007), Miller (2009), Nicholson-Perry (2009), Craig (2013), Kilic (2013), Brooks (2014), Munce (2016), Middleton (2016)
- To measure specific issues encountered by people with SCI in their adjustment to disability after SCI
- 16 items with 7-point scales (very uncertain – very certain)
- Items: *"I can maintain good health and well-being"*, *"I can avoid having bowel accidents"*
- Uni-dimensional, valid, responsive
- Weakness: unclear factor structure
 - Middleton (2003): 2 factors (daily activities, social functioning)
 - Miller (2019): 2 factors (instrumental, interpersonal)
 - Brooks (2014): 3 fact. (instrumental, participation, interpersonal)
 - Middleton (2016): 3 factors (general, personal function, social function)



University of Washington Self-Efficacy Scale

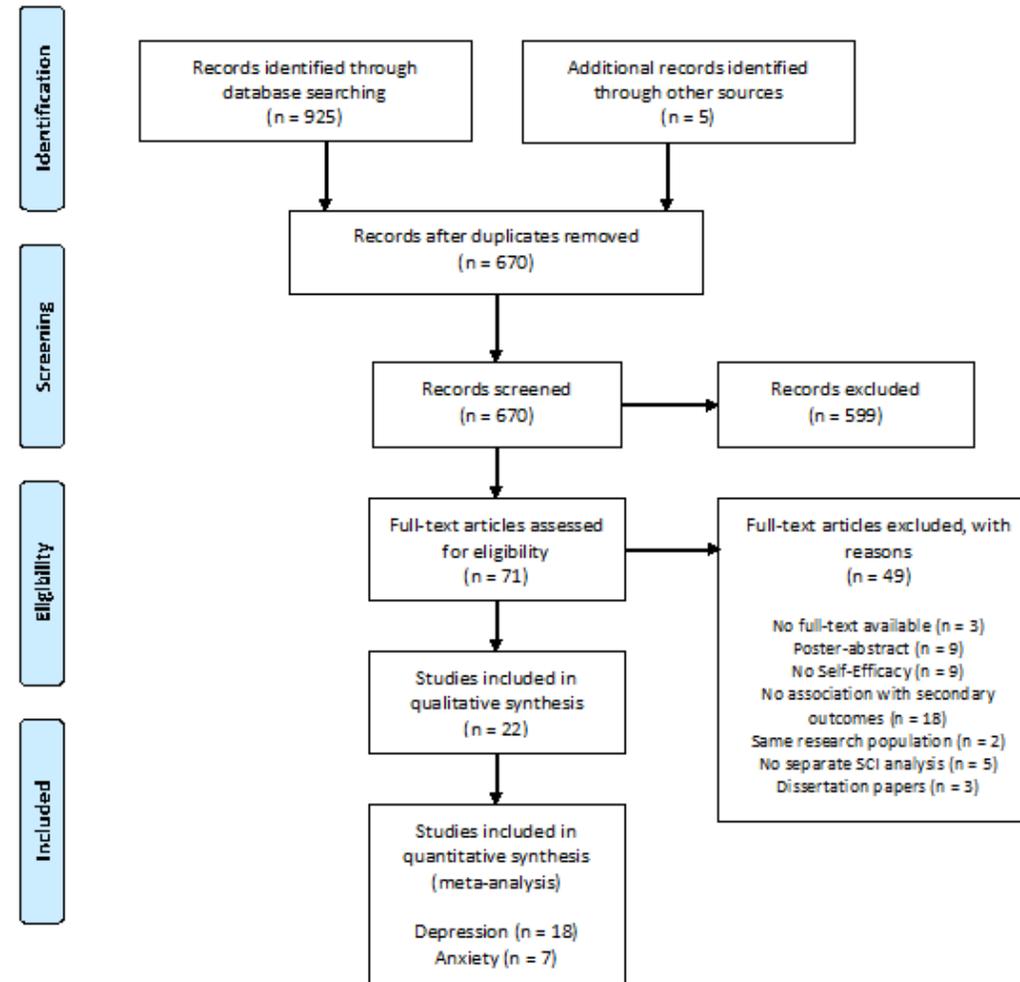
(Amtmann 2012)

- SCI studies: Amtmann (2012), Chung (2016), Cijssouw (2017), Post (submitted)
- To measure self-perceived confidence in managing challenges related to MS and SCI, and other conditions.
- 17 or 6 items with 5-point scale (not at all – completely)
- Total score converted to T-score (M=50; SD=10)
- Item: *"(How confident are you) That you can keep your SCI from interfering with your ability to interact socially"*
- Short, accurate, uni-dimensional
- Weakness: responsiveness unknown

Systematic review SE and Secondary Health Conditions (SHCs)

- Associations between SE and SHCs
 - Somatic SHCs
 - Psychological SHCs
- Start electronic database till september 2016
- PubMed, Embase, the Cochrane library and CINAHL

Systematic review SE and SHCs





SE and somatic SHCs

- 7 studies

Type of SHC	Article	N=	SE-scale	Outcome scale	Value
Pain	Kilic (2013) ²⁷	60	MSES	NRS (0-10)	-0.27
	Craig (2013) ²³	70	MSES	SFMPQ	-0.54*
	Nicholson-Perry (2009/I) ³²	47	MSES	PRSS	-0.28
	Nicholson-Perry (2009/II) ³³	45	MSES	PRSS	-0.46*
Pain intensity	Craig (2013) ²³	70	MSES	PPI	-0.45*
	Geyh (2012) ²⁵	102	GSES	BPI	NS
	Nicholson-Perry (2009/I) ³²	47	MSES	NRS (0-10)	-0.47*
	Nicholson-Perry (2009/II) ³³	45	MSES	NRS (0-10)	-0.36
Pain interference	Geyh (2012) ²⁵	102	GSES	BPI	-0.24*
	Pang (2009) ³⁴	49	SEMCD	PIS	-0.59*
Fatigue	Craig (2013) ²³	70	MSES	CFS	-0.54*
General SHCs	Geyh (2012) ²⁵	102	GSES	SHCS-L	-0.25*
				SHCS-N	NS
	Suzuki (2007) ⁵³	270	BRFSS	18 selected SHCs	-0.13*



SE and somatic SHCs

- 7 studies
- Meta-analysis not possible
- Trend negative relation SE and pain

SE and psychological SHCs

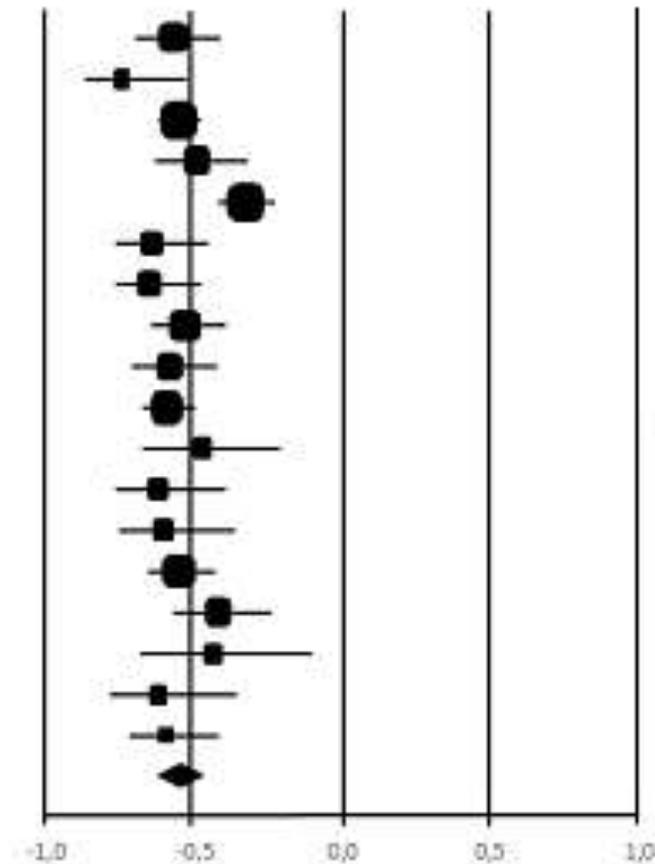
- 21 studies
- Mainly
 - Depression (18)
 - Anxiety (7)
 - (Quality of life (2))

Type of SHC	Article	N=	SE-scale	Outcome scale	Value
Depression	Munce (2016) ³¹	99	MSES	HADS-D	-0.56*
	Driver (2016) ²⁴	44	CDSSES	PHQ-9	-0.74*
	Peter (2015) ³⁵	516	GSES	HADS-D	-0.54*
	Craig (2014) ²²	107	MSES	SF-36 ^a	0.48*
	Sweet (2013) ³⁷	395	LTPA-SE	PHQ-9	-0.32*
	Kilic (2013) ²⁷	60	MSES	DASS-21	-0.63*
	Craig (2013) ²³	70	MSES	POMS	-0.64*
	van Leeuwen (2012) ³⁸	143	GSES	SF-36 ^a	0.52*
	Geyh (2012) ²⁵	102	GSES	HADS-D	-0.57*
	Bombardier (2012) ²¹	244	CDSSES	PHQ-9	-0.58*
	Pang (2009) ³⁴	49	SEMCD	CESD-10	-0.46*
	Nicholson-Perry (2009/I) ³²	47	MSES	HADS-D	-0.61*
	Nicholson-Perry (2009/II) ³³	45	MSES	HADS-D	-0.59*
	Miller (2009) ³⁰	162	MSES	CESD-10	-0.54*
	Middleton (2007) ²⁹	106	MSES	SF-36 ^a	0.41*
Kennedy (2006) ²⁶	35	GSES	HADS-D	-0.43*	
Middleton (2003) ²⁸	36	MSES	HADS-D	-0.61*	
Shnek (1997) ³⁶	80	BS	CESD-10	-0.58*	

SE and Depression

Self-efficacy and Depression: forest plot

Study	Correlation	LCL	UCL
Munce (2016)	-0,560	-0,682	-0,408
Driver (2016)	-0,740	-0,867	-0,523
Peter (2015)	-0,540	-0,600	-0,474
Craig (2014)	-0,480	-0,614	-0,319
Sweet (2013)	-0,320	-0,406	-0,229
Kilic (2013)	-0,630	-0,762	-0,448
Craig (2013)	-0,640	-0,761	-0,477
van Leeuwen (2012)	-0,520	-0,630	-0,389
Geyh (2012)	-0,570	-0,691	-0,417
Bombardier (2012)	-0,582	-0,659	-0,492
Pang (2009)	-0,463	-0,658	-0,209
Nicholson Perry (2009/I)	-0,611	-0,766	-0,390
Nicholson Perry (2009/II)	-0,592	-0,754	-0,361
Miller (2009)	-0,540	-0,641	-0,421
Middleton (2007)	-0,410	-0,557	-0,238
Kennedy (2006)	-0,430	-0,668	-0,113
Middleton (2003)	-0,610	-0,782	-0,352
Shnek (1997)	-0,580	-0,709	-0,413
Total	-0,536	-0,584	-0,484





SE and Depression

- 18 studies
- Strong pooled correlation $r = -0.536$

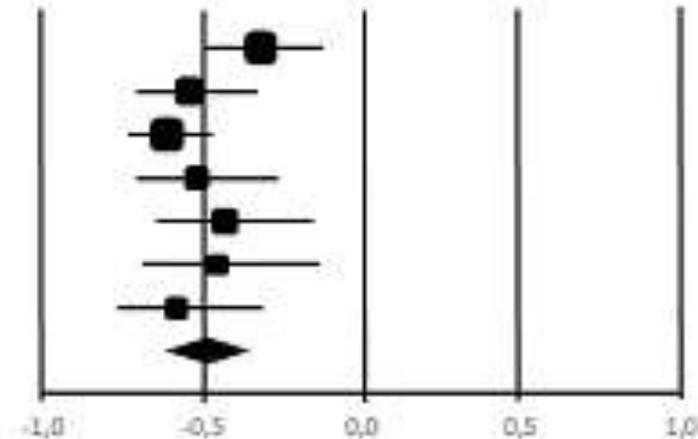


Type of SHC	Article	N=	SE-scale	Outcome scale	Value
Anxiety	Munce (2016) ³¹	99	MSES	HADS-A	-0.32*
	Kilic (2013) ²⁷	60	MSES	DASS-21	-0.54*
	Geyh (2012) ²⁵	102	GSES	HADS-A	-0.61*
	Nicholson-Perry (2009/I) ³²	47	MSES	HADS-A	-0.52*
	Nicholson-Perry (2009/II) ³³	45	MSES	HADS-A	-0.43*
	Kennedy (2006) ²⁶	35	GSES	HADS-A	-0.45*
	Middleton (2003) ²⁸	36	MSES	HADS-A	-0.58*
Quality of Life	van Leeuwen (2012) ³⁸	143	GSES	2LS	0.33*
	Mortenson (2010) ⁵⁵	93	GSES	QLI (3 months)	0.62*
				QLI (15 months)	0.47*
Affective / subjective disorder	Hampton (2008) ⁵⁶	119	GSES	IPWB	-0.09 ^b
Psychological disorders	Craig (2015) ⁵⁴	88	MSES	MINI-plus	1.05 ^c

SE and Anxiety

Self-efficacy and Anxiety: forest plot

Study	Correlation	LCL	UCL
Munce (2016)	-0,315	-0,482	-0,125
Kilic (2013)	-0,540	-0,698	-0,332
Geyh (2012)	-0,610	-0,722	-0,467
Nicholson Perry (2009/I)	-0,515	-0,701	-0,264
Nicholson Perry (2009/II)	-0,428	-0,641	-0,154
Kennedy (2006)	-0,450	-0,681	-0,137
Middleton (2003)	-0,580	-0,763	-0,311
Total	-0,493	-0,577	-0,399





SE and Anxiety

- 7 studies
- Strong pooled correlation $r = -0.493$

Summary

- Self-efficacy is a core concept in psychological theory
- Insufficient evidence of association with physical SHCs
- Strong evidence of strong associations with psychological SHCs
- Almost exclusively cross-sectional research



