

The Relationship between Self-Efficacy and Well-Being in Stroke Survivors

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Abstract

Objective: A key factor that may influence outcome following a stroke is the level of self-efficacy that stroke survivors have in their ability to function in daily life. The aim of this study was to explore the association between self-efficacy and the three components of well-being (life satisfaction, positive affect, and negative affect).

Method: A convenience sample of 80 (40 males, 40 females) stroke survivors were recruited for this study (mean age=62.77, SD=11.24; range=31-83). Self-report measures of cognitive functioning, self-efficacy, life satisfaction, positive and negative affect, physical functioning, and social desirability were administered. Hierarchical multiple regressions and mediation analyses were performed to examine whether self-efficacy made a unique contribution to well-being after taking into account significant demographic factors, physical functioning, and perceptions of actual performance.

Results: Self-efficacy in psychosocial functioning was related to all components of well-being, even when relevant demographic variables and level of physical functioning were controlled. Further analysis revealed that this relationship persisted when a proxy for actual performance in daily tasks was entered as a possible mediator. In contrast, self-efficacy in activities of daily living was only related to positive affect and was not associated with negative affect nor was it related to life satisfaction once physical functioning and relevant demographic variables were controlled.

Conclusions: Self-efficacy, especially in psychosocial functioning, can and does influence the well-being of stroke survivors. It is clear that stroke survivors can continue to have considerable influence over their well-being and quality of life.

Keywords: Stroke; Self-efficacy; Well-being; Daily functioning; Optimism

Introduction

The relationship between self-efficacy and well-being in stroke survivor's stroke is a leading cause of death in the Western world [1], and is the most common disabling disease, having profound and wide-ranging effects on the physical, psychological and social aspects of an individual's life [2-6]. The focus of health care professionals, particularly early in the period following stroke, is on physical functioning in rehabilitation. In contrast, difficulties in daily living, and the psychological and social problems experienced following a stroke are often overlooked [7-9]. When stroke survivors leave hospital and return to live in the community, they are left to face a new reality which often includes coping with physical and/or cognitive impairments, dependency on others, loss of identity, social isolation, diminished self-esteem, and fears about disfigurement and death [10-12]. All these issues may have devastating implications for the individual's perception of competency and efficacy in daily living.

A key factor in determining outcomes once stroke survivors are living in the community may be their belief in their ability to overcome the difficulties they encounter [13]. Perceived self-efficacy concerns people's belief in their ability to perform in ways that give them control over events that affect their lives [14]. It is not a measure of the skills one has but rather the belief about what one can do under different sets of conditions with whatever skills one possesses [14]. Although preliminary research into the relationship between self-efficacy and recovery from stroke indicates that high self-efficacy has a positive influence on an individual's level of physical functioning [3,15,16], there has been little research to date into the relationship between self-efficacy and other important domains of functioning; namely, the psychological, social, and instrumental aspects of daily living. Theoretically, the higher the level of self-efficacy in these domains, the better the functioning in daily living and hence in the overall adjustment and well-being of the affected individual [3,17].

The concepts of well-being and quality of life are used

interchangeably within the psychological literature to refer to people's evaluations of their lives both at an affective and cognitive level. Diener [18] refers to this as subjective well-being which he defines as

- The various types of evaluations, both positive and negative, that people make of their lives. It includes reflective cognitive evaluations, such as life satisfaction and work satisfaction, interest and engagement, and affective reactions to life events, such as joy and sadness (p.399).

Well-being is thus conceptualized as a construct comprising three components; namely, life satisfaction, positive effect, and negative effect. Life satisfaction reflects a cognitive evaluation of one's life, while positive and negative affect provide insight into the emotional experiences of an individual's life. Diener [19] suggests that it is imperative that all these components are examined when evaluating subjective well-being.

Although there is a paucity of research on the influence of self-perceived efficacy in daily functioning on the outcome of stroke survivors with respect to their overall adjustment and well-being; there has been a substantial body of research attesting to the beneficial effect of self-efficacy in many other situations, such as the role of self-efficacy in coping with pain [20], the relation between self-efficacy and academic performance and persistence [21], and the role of self-efficacy in the adjustment to various chronic disorders such as arthritis [22], cancer

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[23], and spinal cord injury [24]. Furthermore, several researchers have examined the important question of whether or not self-efficacy actually plays a causal role in influencing human functioning or is simply a reflection of past performance. Evidence converges to indicate that self-efficacy does play a causal role in determining a diverse array of outcomes [20,25,26].

The purpose of the present research was to investigate the proposition that self-efficacy in activities of daily living and self-efficacy in psychosocial functioning would contribute to well-being in stroke survivors above and beyond the effects of level of impairment in physical functioning and of actual performance.

Method

Participants

Eighty participants who had experienced a stroke were recruited for this study (40 males and 40 females), with a mean age of 62.77 years ($SD=11.24$ years; range=31-83 years). There was no significant difference in age between males and females, $t(78)=-.45, p >.05$. Inclusion criteria for participation were that the person, when initially admitted to hospital, was (a) formally diagnosed with a stroke; (b) had since been discharged from hospital to live in the community; (c) showed no signs of marked cognitive

impairment; and (d) was fluent in English. Demographic characteristics of the sample are presented in Table 1.

Measures

Demographics

The demographic information sheet included a range of information such as the date of birth; marital status; family structure; education and work history; time since stroke; type of stroke and lesion location; and personal and family psychological history.

Cognitive functioning

The Telephone Interview for Cognitive Status-Modified (TICS-M) [27] is a 13-item questionnaire developed to assess cognitive function and was specifically developed for delivery over the telephone. This scale includes four domains, (1) orientation; (2) registration, recent memory and delayed recall (memory); (3) attention/calculation; (4) semantic memory, comprehension and repetition (language). The total score ranges from 0 to 39 with a score below 21 as the cut-off point indicating the presence of cognitive impairment [28]. The TICS-M is highly correlated with the MMSE ($r=.86$) [29] and has high test-retest reliability [30].

Demographic Characteristics	All participants <i>n</i> = 80	Males <i>n</i> = 40	Females <i>n</i> = 40
Mean age of participants (in years)	62.77 (11.24) ^a	65.35 (10.61)	62.20 (11.95)
Mean age of participants at stroke onset (in years)	53.85 (13.04)	55.25 (12.09)	52.45 (13.94)
Mean time since stroke onset (in years)	9.06 (5.53)	8.41 (4.83)	9.71 (6.14)
Brain lesion			
Right hemisphere	50%	55%	45%
Left hemisphere	35%	30%	40%
Both hemispheres	7.5%	7.5%	7.5%
Marital status			
Married/cohabiting	66.3%	75%	57.5%
Single/divorced/widowed	33.8%	25%	42.5%
Living arrangement			
Alone	25%	20%	70%
With others	75%	80%	30%
Socio-economic status (mean index score)	1016 (71.63)	N/A ^b	N/A
Education			
Less than 13 years	60%	52.5%	67.5%
13 or more years	38.8%	45%	32.5%
Employment pre-stroke	65%	75%	55%
Currently employed or doing voluntary work	17.5%	15%	20%
Member of a stroke group	72.5%	72.5%	72.5%
Attendance at stroke support group	57.5%	55%	60%
Mean period of hospitalisation at stroke onset (in weeks)	11.78 (10.50)	13.46 (10.26)	10.15 (10.61)
Suffered more than one stroke	33.8%	37.5%	30%
Health index (More than 3 doctor's consultations) ^c	23.8%	25%	22.5%
Mental health cared	8.8%	10%	7.5%
Major physical health problem prior to stroke (e.g., diabetes, heart attack)	26.3%	27.5%	25%
Psychological/emotional problems prior to stroke	21.3%	20%	22.5%
Family psychiatric history	8.8%	7.5%	10%
Anti-depressant / anti-anxiety drugs	31.3%	35%	27.5%

Note. The index of Economic Resources from the latest Australian Census Data conducted in 2006 was used to identify the socio-economic status of the participants who took part in this study.

^aStandard deviations in parentheses;

^bNA – not applicable;

^cRefers to number of visits to the doctor in the past 3 months;

^dCurrently seeing a mental health professional (e.g., psychologist, psychiatrist)

Table 1: Demographic Characteristics of Participants.

Self-efficacy in daily functioning

The Daily-Living Self-Efficacy Scale (DLSES) [31] is a 12-item questionnaire designed to assess the level of individuals' beliefs in their functional ability in daily living. Participants are instructed to rate their level of confidence in performing each of the daily living activities/behaviours listed on the scale. The DLSES consists of two subscales, the *psychosocial functioning* subscale comprises eight items (e.g., *take part in new hobbies and activities, contact a friend when I feel lonely*) and the *activities of daily living* subscale consists of four items (e.g., *either do or arrange to have the shopping done, looking after my finances*). Items are rated on a 100-point Likert scale from 0 (cannot do at all) to 100 (highly certain can do). A total score is obtained by summing the scores for each of the 12 items which is then divided by the number of items to give an overall score between 0 and 100, with higher scores indicative of higher self-efficacy. The DLSES has been shown to have high internal consistency (Cronbach's $\alpha=.93$) and high temporal stability ($r=.96$), and good convergent validity [31].

Life satisfaction

The Satisfaction with Life Scale (SWLS) is a 5-item self-report measure designed to assess global life satisfaction [32]. Participants are required to indicate their level of agreement with each of the five statements. Items are rated on a seven-point scale from 1 (strongly disagree) to 7 (strongly agree). Total scores range from 5 to 35, with high scores representing high levels of global life satisfaction. The Satisfaction with Life Scale has good internal consistency (Cronbach's $\alpha=.87$) and temporal stability ($r=.82$) as well as good convergent validity [32].

Positive and negative affect

The Positive Affect Scale and the Negative Affect Scale were derived from the Center for Epidemiologic Studies of Depression Scale (CES-D) [33], a self-report measure of depression symptomatology for use in the general population. The Positive Affect component consists of 4 items and the Negative Affect component comprises 5 items [33,34]. For the Positive Affect Scale, total scores range from 0 to 12, with higher scores indicating decreased positive affect. For the Negative Affect Scale, total scores range from 0 to 15, with higher scores indicating increased negative effect. For each item, participants are asked to indicate how often they felt or behaved this way during the past week. Both scales have good internal consistency (in the present study, Cronbach's α was .76 for Positive Affect and .84 for Negative Affect) and good convergent validity [31].

Physical functioning

The Barthel Index [35] is a 10-item measure used to assess individual's physical functioning and independence in daily activities [36]. Eight of the 10 items represent activities related to personal care (i.e., bowel and bladder control, toileting, feeding, dressing, bathing, grooming, and transfer from chair to bed and back) and the remaining two items are related to mobility activities (i.e., walking, ascending and descending stairs). The index yields a total score out of 100, with higher scores representing greater degree of physical functioning and functional independence. The Barthel Index has been shown to have good internal consistency, with Cronbach's α ranging from .90 to .93 [37], test-retest reliability of .93 [38], and convergent validity [39].

Social desirability

The Marlowe-Crowne Scale (MCS) [40] was included as a measure of participants' tendency to respond in a socially favourable manner.

This scale consists of 33 true/false items and total scores range from 0 to 33, with high scores indicating an increased tendency for social desirability response bias. The MCS has been shown to have high internal consistency ($r=.88$) and good test-retest reliability ($r=.89$) [40]. A positive correlation has been found between this scale and the Edwards Social Desirability Scale, thus demonstrating the scale's convergent validity [40].

Perceived performance in daily tasks

The Patient Competency Rating Scale [41] is a 30-item self-report measure that provides self- and informant-ratings to evaluate perceived competency in performing various behavioural, cognitive, and emotional tasks as well as to assess insight into the level of awareness following head injury [42]. Respondents are asked to judge how easy or difficult it is for them to perform a variety of tasks. Rating is on a 5-point Likert scale from 1 'can't do' to 5 'can do with ease'. Total scores range from 30 to 150, with higher scores indicating greater competency. The scale has been shown to have strong internal consistency for patient rating (Cronbach's $\alpha=.91$) and relatives' ratings of patients (Cronbach's $\alpha=.93$) [43]. Test-retest reliability has been reported as high, $r=.97$ for patients and .92 for relatives [44].

Procedure

Ethical approval for the study was obtained from the Griffith University Research Ethics Committee (PSY/18/06/HREC). All participants were initially contacted by phone. They were provided with detailed information about the study's requirements and were administered the TICS-M over the telephone to screen for cognitive impairment. A questionnaire package was then mailed to each of the stroke participants. The questionnaire package contained the six measures, a consent form and an information sheet.

Design

Bivariate correlations were performed to identify demographic variables that were associated with each of the dependent variables life satisfaction, positive affect, negative affect, and a composite of the three components of well-being (i.e., overall well-being). Because the high number of bivariate correlations performed in the analyses is likely to inflate Type 1 error, an alpha level of .01 was used for all analyses involving bivariate correlations performed with the variables which may be associated with the dependent variables. Hierarchical multiple regressions were performed to examine whether self-efficacy in daily functioning made a unique contribution to each of the dependent variables, after taking into account physical functioning and the significant demographic factors (control variables) associated with each dependent variables. The demographic control variables were entered at Step 1 and to control for the effects of physical functioning, physical functioning was entered at Step 2 for all the hierarchical multiple regressions performed.

To address the question of whether actual performance mediates the relationship between self-efficacy in daily functioning and well-being (i.e., overall well-being, positive affect, negative affect, and life satisfaction), a series of mediation analyses were performed using the procedure suggested by Baron and Kenny [45]. Three conditions need to be established in order for a variable to function effectively as a mediator [45]. As shown in Figure 1, the independent variable (self-efficacy in daily functioning) must be related to the presumed mediator (actual performance in daily tasks) (Path *a*); in the second equation, the presumed mediator (actual performance in daily tasks) must be related to the dependent variable (well-being) (Path *b*); and in the third

equation, the independent variable (self-efficacy in daily functioning) must be associated with the dependent variable (well-being) (Path c). A variable is considered to function as a mediator if a significant relationship between the independent and dependent variables (i.e., Path c) either disappears or is significantly decreased when Paths a and b are controlled. Full mediation is said to occur if controlling for Paths a and b eliminates the relation between the dependent and independent variables, whereas a significant reduction in Path c indicates partial mediation.

Results

Self-efficacy in daily functioning as a predictor of change in overall well-being

To test whether self-efficacy in daily functioning remains associated with overall well-being after controlling for the significant control variables (i.e., socio-economic status, participants' age, their age at stroke onset, and mental health care) and the variable of physical functioning, three hierarchical multiple regressions were conducted (Table 2). In the first regression, the overall variance in overall well-being accounted for by all variables entered in the equation was 76.9%, $F(6, 71)=39.490, p < .001$. After Step 1, with socio-economic status, participants' age, their age at stroke onset, and mental health care entered in the equation, $R^2=.585, F(4, 73)=25.682, p < .001$. After Step 2, physical

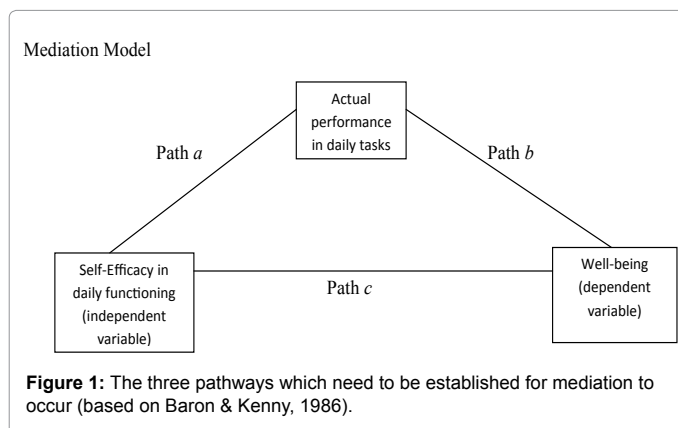


Figure 1: The three pathways which need to be established for mediation to occur (based on Baron & Kenny, 1986).

functioning added to the prediction of overall well-being, $R^2_{change}=.065, F_{change}(1, 72)=13.248, p < .01$. The addition of physical functioning at Step 2 resulted in a significant increment in R^2 , indicating that the association between the predictor variable of physical functioning and the criterion of overall well-being was significant after the control variables of socio-economic status, participants' age, their age at stroke onset, and mental health care were taken into account. Entry of self-efficacy in daily living (i.e., the Daily Living Self-Efficacy Scale) at Step 3 further added to the prediction of overall well-being, $R^2_{change}=.120, F_{change}(1, 71)=37.043, p < .001$.

In the second analysis, when the self-efficacy in psychosocial functioning was entered at Step 3, it added to the prediction of overall well-being, $R^2_{change}=.089, F_{change}(1,71)= 24.172, p < .001$. In the third regression, when self-efficacy in activities of daily living was added to the equation at Step 3, it also contributed to the prediction of overall well-being, $R^2_{change}=.069, F_{change}(1,70)=17.005, p < .001$.

Self-efficacy in daily functioning as a predictor of change in life satisfaction

As shown in Table 3, overall, 43.9% of variance, $F(6,70)=9.121, p < .001$, in life satisfaction was accounted for by the variables of socio-economic status, social desirability, physical functioning, positive affect, negative affect, and self-efficacy in daily living. The entry of the socio-economic status and social desirability at Step 1 did contribute significantly to the prediction of life satisfaction, $R^2=.187, F(2, 74)= 8.520, p < .001$. Similarly, when physical functioning was entered at Step 2, it contributed significantly to the prediction of life satisfaction, $R^2_{change}=.175, F_{change}(1, 73)=20.038, p < .001$. Entry of positive affect and negative affect at Step 3 did not significantly add to the prediction of life satisfaction, $R^2_{change}=.027, F_{change}(2, 71)= 1.547, p > .05$. However, entry of self-efficacy in daily living entered at Step 4 did significantly contribute to the prediction of life satisfaction, $R^2_{change}=.050, F_{change}(1,70)=6.224, p < .05$.

In the second regression, when self-efficacy in psychosocial functioning was entered at Step 4, it also contributed to the prediction of life satisfaction, $R^2_{change}=.056, F_{change}(1,70)= 7.099, p < .05$. However, in the third analysis, when self-efficacy in activities of daily living was entered at Step 4, it did not contribute significantly to the prediction of life satisfaction, $R^2_{change}=.022, F_{change}(1,70)= 2.565, p > .05$.

Variable	B	β	R	R^2_{Adj}	R^2_{change}	Overall R^2
Step 1						
Control	.007	.579				
Socio-economic status	.032	.451	.765	.562	.585***	.585
Participants' age	-.010	-.170				
Participants' age at stroke onset	-.311	-.110				
Mental health care						
Step 2						
Physical functioning	.016	.256	.806	.625	.065**	.649
Barthel Index						
Step 3						
Regression 1						
Self-efficacy in daily living	.001	.395	.877	.750	.120***	.769
Daily Living Self-Efficacy Scale (DLSES)						
Variable	B	β	R	R^2_{Adj}	R^2_{change}	Overall R^2
Regression 2						
Self-efficacy in psychosocial functioning	.001	.340	.859	.716	.089***	.738
Psychosocial subscale of the DLSES						
Regression 3						
Self-efficacy in activities of daily living	.002	.286	.847	.694	.069***	.718
Activities of Daily Living subscale of the DLSES						

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 2: Hierarchical Multiple Regression of a Composite Measure of Overall Well-Being on Self-Efficacy in Daily Functioning, Physical Functioning, and Control Variables for Stroke Survivors.

Self-efficacy in daily functioning as a predictor of change in positive affect

In the first hierarchical multiple regression performed, a total of 29.8% of variance, $F(4,73) = 7.755, p < .001$ in positive affect was accounted for by the variables of physical functioning, life satisfaction, negative affect, and self-efficacy in daily living (Table 4). The entry of physical functioning on the first step did not predict positive affect, $R^2=.015, F(1,76) = 1.161, p > .05$. When the variables of life satisfaction and negative affect were entered in the equation, these two variables contributed significantly to the prediction of positive affect, $R^2 \text{ change} = .157, F_{\text{change}}(2,74)=7.002, p < .01$. Entry of self-efficacy in daily living at Step 3 further contributed significantly to the prediction of positive affect, $R^2_{\text{change}}=.126, F_{\text{change}}(1,73)=13.150, p < .001$.

In the second regression, when self-efficacy in psychosocial functioning was entered at Step 3, it added to the prediction of positive affect, $R^2_{\text{change}} = .076, F_{\text{change}}(1,73) = 7.395, p < .01$. Similarly in the third analysis, entry of self-efficacy in activities of daily living at Step 3, also added to the prediction of positive affect, $R^2_{\text{change}} = .168, F_{\text{change}}(1,72) = 18.343, p < .001$.

Self-efficacy in daily functioning as a predictor of change in negative affect

To assess whether self-efficacy in daily functioning remains associated with negative affect after controlling for the significant demographic variables (i.e., socio-economic status, participants' age, their age at stroke onset, marital status) and the variables of physical functioning, life satisfaction, and positive affect, three hierarchical multiple regressions were again conducted (Table 5). In the first analysis, the overall variance in negative affect accounted for by the variables of participants' age, participants' age at stroke onset, marital status, socio-economic status, physical functioning, and self-efficacy in daily living was 73%, $F(8, 69) = 23.325, p < .001$. At Step 1, with participants' age, their age at stroke onset, marital status, and socio-economic status entered in the equation, $R^2 = .671, F(4, 73) = 37.183, p < .001$. Entry of physical functioning at Step 2 did not contribute significantly to the prediction of negative affect, $R^2_{\text{change}} = .004, F_{\text{change}}(1, 72) = .806, p > .05$. Similarly, entry of life satisfaction and positive affect at Step 3 did not contribute to the prediction of negative affect, $R^2_{\text{change}} = .019, F_{\text{change}}(2, 70) = 2.166, p > .05$. However, when self-efficacy in daily living was entered in the final

Variable	B	β	R	R ² _{Adj}	R ² change	Overall R ²
Step 1 Control						
Socio-economic index (socio-economic status)	.039	.320				
Marlowe-Crowne Scale (social desirability)	.328	.219	.433	.165	.187***	.187
Step 2 Physical functioning						
Barthel Index	.288	.420	.602	.336	.175***	.362
Step 3 Well-being components						
Positive Affect Scale	.269	.109				
Negative Affect Scale	-.396	-.150	.624	.346	.027	.389
Step 4						
Regression 1						
Self-efficacy in daily living						
Daily Living Self-Efficacy Scale (DLSES)	.009	.283	.662	.391	.050*	.439
Regression 2						
Self-efficacy in psychosocial functioning						
Psychosocial subscale of the DLSES	.013	.289	.667	.398	.056*	.445
Regression 3						
Self-efficacy in activities of daily living						
Activities of Daily Living subscale of the DLSES	.015	.177	.641	.360	.022	.410

* p < .05. ** p < .01. *** p < .001

Table 3: Hierarchical Multiple Regression of Life Satisfaction on Self-Efficacy in Daily Functioning, Physical Functioning, Positive and Negative Affect, and Control Variables for Stroke Survivors.

Variable	B	β	R	R ² _{Adj}	R ² change	Overall R ²
Step 1 Physical functioning						
Barthel Index	.034	.123	.123	.002	.015	.015
Step 2 Well-being components						
Satisfaction with Life Scale	.058	.144				
Negative Affect Scale	-.345	-.323	.414	.138	.157**	.172
Step 3						
Regression 1						
Self-efficacy in daily living						
Daily Living Self-Efficacy Scale (DLSES)	.005	.417	.546	.260	.126**	.298
Regression 2						
Self-efficacy in psychosocial functioning						
Psychosocial subscale of the DLSES	.006	.332	.498	.207	.076**	.248
Regression 3						
Self-efficacy in activities of daily living						
Activities of Daily Living subscale of the DLSES	.015	.443	.583	.303	.168***	.340

* p < .05. ** p < .01. *** p < .001

Table 4: Hierarchical Multiple Regression of Positive Affect on Self-Efficacy in Daily Functioning, Physical Functioning, Life Satisfaction, and Negative Affect Variables for Stroke Survivors.

step, it contributed significantly to the prediction of negative affect, $R^2_{change} = .037, F_{change}(1, 69) = 9.370, p < .01$.

In the second regression, when self-efficacy in psychosocial functioning was entered at Step 4, it added to the prediction of negative affect, $R^2_{change} = .032, F_{change}(1, 69) = 7.984, p < .01$. However, in the final regression, when self-efficacy in activities of daily living was added to the equation at Step 4, it did not contribute significantly to the prediction of negative affect, $R^2_{change} = .009, F_{change}(1, 68) = 2.068, p > .05$.

In summary, when other relevant variables were controlled, the composite measure of self-efficacy (i.e., the overall scale of the DLSES) and the more specific measure of self-efficacy in psychosocial functioning contributed significantly to all three components of well-being and the overall composite measure of well-being. However, the relationship between self-efficacy in activities of daily living was only significant for positive affect and overall well-being when other relevant variables were controlled.

Mediation Effects of Actual Performance in Daily Tasks on the Relationship of Self-efficacy in Daily Functioning and Well-being

Prior to performing the mediation analyses, bivariate correlations

were conducted to ensure that the relationships between self-efficacy in daily functioning, well-being, and actual performance in daily tasks were significant. As shown in Table 6, all variables were significantly correlated except for negative affect and self-efficacy in activities of daily living. Consequently three mediation analyses were performed for each of the dependent variables of self-efficacy in daily functioning (self-efficacy in daily living, self-efficacy in psychosocial functioning, and self-efficacy in activities of daily living). Because there was a non-significant relationship between negative affect and self-efficacy in activities of daily living, only two mediation analyses were performed for the dependent variable of negative affect.

The mediation analyses revealed that in many instances, self-efficacy contributed to the well-being of stroke survivors above and beyond actual performance. Positive affect was associated with overall self-efficacy in daily living ($\beta = .411, p = .009, 95\% \text{ CI} = .001, .009$) and self-efficacy specifically related to activities of daily living ($\beta = .407, p = .005, 95\% \text{ CI} = .004, .024$) (Table 7), and low levels of negative affect were associated with self-efficacy in psychosocial functioning irrespective of actual performance ($\beta = -.417, p = .008, 95\% \text{ CI} = -.013, -.002$). However, overall self-efficacy had little impact on negative affect once the effects of performance were controlled ($\beta = -.244, p = .147$,

Variable	B	β	R	R^2_{Adj}	R^2_{change}	Overall R^2
Step 1 Control						
Participants' age	-.085	-.293				
Participants' age at stroke onset	.004	-.015				
Marital status	-.715	-.104				
Socio-economic status	-.031	-.670	.819	.653	.671***	.671
Step 2 Physical functioning Barthel Index	-.016	-.061	.821	.652	.004	.674
Step 3 Well-being components Satisfaction with Life Scale Positive Affect Scale	-.009 -.135	-.023 -.144	.833	.663	.019	.693
Step 4 Regression 1 Self-efficacy in daily living Daily Living Self-Efficacy Scale (DLSES)	-.003	-.254	.854	.699	.037**	.730
Regression 2 Self-efficacy in psychosocial functioning Psychosocial subscale of the DLSES	-.004	-.223	.852	.693	.032**	.725
Regression 3 Self-efficacy in activities of daily living Activities of Daily Living subscale of the DLSES	-.004	-.128	.838	.667	.009	.702

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 5: Hierarchical Multiple Regression of Negative Affect on Self-Efficacy in Daily Functioning, Physical Functioning, Life Satisfaction, Positive Affect, and Control Variables for Stroke Survivors.

Variables	DLSES	PS	ADLS	SWLS	PA	NA	OWB	PCRS
DLSES	1.00							
PS	.97***	1.00						
ADLS	.88***	.73***	1.00					
SWLS	.48***	.49***	.36**	1.00				
PA	.50***	.45***	.51***	.29**	1.00			
NA	-.34**	-.42***	-.19	-.31**	-.38**	1.00		
OWB	.55***	.57***	.40***	.66***	.68***	-.88***	1.00	
PCRS	.76***	.73***	.71***	.46***	.43***	-.31**	.52***	1.00

Note. DLSES = Daily Living Self-Efficacy Scale; PS = Psychosocial Subscale of the DLSES; ADLS = Activities of Daily Living Subscale of the DLSES; SWLS = Satisfaction with Life Scale; PA = Positive Affect; NA = Negative Affect; OWB = Overall Well-Being; PCRS = Patient Competency Rating Scale.

** $p < .01$. *** $p < .001$.

Table 6: Bivariate Correlations between the Independent Variables of Self-Efficacy in Daily Functioning, the Mediator of Actual Performance in Daily Tasks, and the Dependent Variables of Well-Being.

Self-efficacy in daily functioning (independent variables)	Actual performance in daily tasks (mediator)	Positive affect (dependent variable)	Relationship between actual performance in daily task and positive affect when self-efficacy in daily functioning is added to the equation	Positive affect with actual performance in daily tasks as the mediator	Sobel test	% of variance accounted for by indirect effect
Self-efficacy in daily living <i>Daily Living Self-Efficacy Scale (DLSES)</i>	$\beta = .763$ ($p = .000$)	$\beta = .498$ ($p = .000$)	$\beta = .114$ ($p = .458$)	$\beta = .411$ ($p = .009$)	$z = .740$ ($p = .230$)	17%
Self-efficacy in psychosocial functioning <i>Psychosocial subscale of the DLSES</i>	$\beta = .728$ ($p = .000$)	$\beta = .449$ ($p = .000$)	$\beta = .215$ ($p = .152$)	$\beta = .293$ ($p = .052$)	$z = 1.418$ ($p = .078$)	35%
Self-efficacy in activities of daily living <i>Activities of Daily Living Subscale of the DLSES</i>	$\beta = .714$ ($p = .000$)	$\beta = .505$ ($p = .000$)	$\beta = .137$ ($p = .338$)	$\beta = .407$ ($p = .005$)	$z = .960$ ($p = .169$)	19%

Table 7: Results of Regression Analyses Testing for the Effect of the Mediator 'Actual Performance in Daily Tasks' on the Relationship between Self-Efficacy in Daily Functioning and Positive Affect.

Self-efficacy in daily functioning (independent variables)	Actual performance in daily tasks (mediator)	Negative affect (dependent variable)	Relationship between actual performance in daily task and negative affect when self-efficacy in daily functioning is added to the equation	Negative affect with actual performance in daily tasks as the mediator	Sobel test	% of variance accounted for by indirect effect
Self-efficacy in daily living <i>Daily Living Self-Efficacy Scale (DLSES)</i>	$\beta = .763$ ($p = .000$)	$\beta = -.337$ ($p = .002$)	$\beta = -.121$ ($p = .469$)	$\beta = -.244$ ($p = .147$)	$z = -.074$ ($p = .230$)	22%
Self-efficacy in psychosocial functioning <i>Psychosocial subscale of the DLSES</i>	$\beta = .728$ ($p = .000$)	$\beta = -.420$ ($p = .000$)	$\beta = -.004$ ($p = .979$)	$\beta = -.417$ ($p = .008$)	$z = -.034$ ($p = .486$)	0.7%

Table 8: Results of Regression Analyses Testing for the Effect of the Mediator 'Actual Performance in Daily Tasks' on the Relationship between Self-Efficacy in Daily Functioning and Negative Affect.

Self-efficacy in daily functioning (independent variables)	Actual performance in daily tasks	Overall well-being	Relationship between actual performance in daily task and overall well-being when self-efficacy in daily functioning is added to the equation	Overall well-being with actual performance in daily tasks as the mediator	Sobel test	% of variance accounted for by indirect effect
Self-efficacy in daily living <i>Daily Living Self-Efficacy Scale (DLSES)</i>	$\beta = .763$ ($p = .000$)	$\beta = .550$ ($p = .000$)	$\beta = .230$ ($p = .124$)	$\beta = .374$ ($p = .014$)	$z = 1.551$ ($p = .060$)	32%
Self-efficacy in psychosocial functioning <i>Psychosocial subscale of the DLSES</i>	$\beta = .728$ ($p = .000$)	$\beta = .574$ ($p = .000$)	$\beta = .208$ ($p = .133$)	$\beta = .422$ ($p = .003$)	$z = 1.642$ ($p = .050$)	36%
Self-efficacy in activities of daily living <i>Activities of Daily Living Subscale of the DLSES</i>	$\beta = .714$ ($p = .000$)	$\beta = .401$ ($p = .000$)	$\beta = .468$ ($p = .002$)	$\beta = .067$ ($p = .640$)	$z = 2.956$ ($p = .002$)	83%

Table 9: Results of Regression Analyses Testing for the Effect of the Mediator 'Actual Performance in Daily Tasks' on the Relationship between Self-Efficacy in Daily Functioning and Overall Well-Being.

Self-efficacy in daily functioning (independent variables)	Actual performance in daily tasks (mediator)	Life satisfaction (dependent variable)	Relationship between actual performance in daily task and life satisfaction when self-efficacy in daily functioning is added to the equation	Life satisfaction with actual performance in daily tasks as the mediator	Sobel test	% of variance accounted for by indirect effect
Self-efficacy in daily living <i>Daily Living Self-Efficacy Scale (DLSES)</i>	$\beta = .763$ ($p = .000$)	$\beta = .477$ ($p = .000$)	$\beta = .225$ ($p = .154$)	$\beta = .306$ ($p = .054$)	$z = 1.435$ ($p = .076$)	35%
Self-efficacy in psychosocial functioning <i>Psychosocial subscale of the DLSES</i>	$\beta = .728$ ($p = .000$)	$\beta = .489$ ($p = .000$)	$\beta = .218$ ($p = .140$)	$\beta = .330$ ($p = .026$)	$z = 1.462$ ($p = .071$)	32%
Self-efficacy in activities of daily living <i>Activities of Daily Living Subscale of the DLSES</i>	$\beta = .714$ ($p = .000$)	$\beta = .358$ ($p = .001$)	$\beta = .412$ ($p = .007$)	$\beta = .064$ ($p = .665$)	$z = 2.673$ ($p = .004$)	82%

Table 10: Results of Regression Analyses Testing for the Effect of the Mediator 'Actual Performance in Daily Tasks' on the Relationship between Self-Efficacy in Daily Functioning and Life Satisfaction.

CI = -.007, .001) (Table 8) and the apparent relationship between self-efficacy in activities of daily living and overall well-being ($\beta = .067$, $p = .640$, CI = -.002, .003) (Table 9) and life satisfaction ($\beta = .064$, $p = .665$, CI = -.019, .030) were fully mediated by actual performance (Table 10).

Discussion

In this research it was proposed that levels of self-efficacy may play a key role in increasing individuals' level of well-being after a stroke. The results obtained provide support for this hypothesis but only for the effects of self-efficacy in psychosocial functioning. According to Bandura [14] self-efficacy determines whether an individual will engage in certain activities, how much effort the individual is likely to invest; and for how long he/she will persist when faced with obstacles and aversive experiences. The stronger the perceived self-efficacy, the more likely one will persist in attempting to overcome obstacles and difficult situations. Consequently, stroke survivors with a high level of self-efficacy should be better prepared to overcome the many obstacles they face in their daily life and hence be better able to adapt to their changed circumstances. What was found in the current research supports this – stroke survivors who had greater confidence in their ability to manage various aspects of their psychosocial life such as overcoming negative thoughts about themselves, taking part in new hobbies and activities, and attending social gatherings with friends reported higher levels of well-being than those with less confidence.

Furthermore, the findings of the current research support previous studies relevant to stroke which examined the relationship between self-efficacy in specific areas such as self-care [16,46], fear of falling [47,48], and losing balance [49]. These studies indicate that high levels of self-efficacy in aspects of physical functioning are associated with higher quality of life, lower levels of depression, and higher functioning in everyday activities. Similarly, studies examining the role that self-efficacy plays in adjustment to chronic illnesses [22-24,50-52] have also found that high levels of self-efficacy contributed to better coping and reduced symptoms in individuals living with a chronic medical condition.

In summary, this research has found that level of self-efficacy in psychosocial functioning does indeed play an important role in influencing all three components of well-being in stroke survivors. Furthermore, the effects of self-efficacy were apparent above and beyond the level of physical functioning and perceived ability to perform daily tasks. Clearly, interventions designed to enhance confidence and the strength of belief in one's own capacities would be beneficial to the adaptation and well-being of individuals learning to live with the aftermath of a stroke.

In contrast to the widespread beneficial effects of self-efficacy in psychosocial functioning, the effects of self-efficacy in activities of daily living were apparent for only one component of well-being; namely, positive affect. As predicted, higher levels of self-efficacy contributed to higher levels of positive affect. These results thus provide only partial support for the hypothesis which proposed that self-efficacy in activities of daily living would be positively associated with life satisfaction and positive affect and negatively associated with negative affect. The pattern of results obtained here raises the question of why self-efficacy in activities of daily living did not contribute significantly to life satisfaction and negative affect.

One possibility concerns the subscale itself. There were only four items in the self-efficacy in activities of daily living subscale. However, despite this problem, the scale was significantly related to positive affect

in the predicted manner, indicating that the relatively low number of items in the scale cannot fully account for the failure to predict levels of life satisfaction and negative affect.

In the present research, socio-economic status was found to be strongly related to overall well-being ($r = .69$) and negative affect ($r = -.76$), moderately related to life satisfaction ($r = .38$), and weakly related to positive affect ($r = .24$). These findings differ in a couple of ways from those generally reported in the literature on well-being and economic indicators. First, the relationship between overall well-being and socio-economic status was much stronger than generally found [53]. Second, the relationship was stronger for negative affect ($r = -.76$) than life satisfaction ($r = .38$), a pattern that differs from that found in the literature [54].

Clearly, for stroke survivors, limited access to the material goods and services that money can buy has a greater detrimental impact on their well-being than it has for other adults living in highly developed countries. The most likely explanation for this relates to the increased needs of those living with the physical consequences of a stroke. Supportive aids such as walkers, wheelchairs, and stair lifts cost money; an inability to drive often means a reliance on taxis, and ongoing services such as physiotherapy, speech therapy, and cleaning can be expensive as are house modifications needed to accommodate physical disabilities. Lower incomes mean a reduced ability to meet these needs and an increased reliance on the assistance of others, both of which may interfere with the ability to adapt to changed circumstances and therefore perpetuate the adverse effects of a stroke on the well-being of those stroke survivors with limited financial resources. Such factors, however, appear to have great impact on the negative affect and life satisfaction components of well-being and little effect on the positive affective component. Having a stroke and the ensuing physical impairments can be viewed as creating a new set of basic needs that require financial resources to satisfy. It is perhaps because of this that limited financial resources have such a potent effect on stroke survivors' levels of life satisfaction and negative affect, overriding the potentially beneficial effects of self-efficacy in activities of daily living.

Various researchers have cited Maslow's theory of hierarchy of needs to explain the strong association between economic status and subjective well-being as well as the diminishing marginal effect of economic status on subjective well-being as income and wealth increase [55-60]. Several studies have demonstrated that households expressing dissatisfaction with the availability of food, housing, hygiene, health services, or clothing report significantly lower subjective well-being, on average, than do households whose basic needs are reported to be satisfied [57,59,61,62].

Future research with an explicit focus on the costs and disadvantages of limited financial resources may shed further light on the relationship between socio-economic status and the three components of well-being in stroke survivors. This research could include such questions as 'What aspects of your life would be better if you had unlimited financial resources?'; 'What would change in your life, if you had plenty of money and could spend it on whatever you wanted?' and 'What aspects of your life would change little if you had as much money as you wanted?'. Analysis of the responses to questions such as these would help gain a greater understanding of the differential impact that socio-economic status has on the various components of well-being in stroke survivors.

Although self-efficacy in activities of daily living was not associated with negative affect and life satisfaction, it did contribute a significant

amount of variance to the prediction of positive affect (16.8%). Stroke survivors who reported higher levels of confidence in their ability to undertake activities of everyday living (e.g., doing or arranging to get their shopping done, looking after their finances, and doing or arranging to have the house cleaned) were more likely to report greater levels of positive affect when compared to stroke survivors who reported lower levels of self-efficacy in activities of daily living. This relationship between self-efficacy and positive affect perhaps reflects individual differences in temperament, especially in optimism.

Scheier et al. [63] define optimism as a dispositional tendency to hold generalized positive expectancies even when faced with adversity or difficulties. In contrast, those with a tendency to hold a pessimistic view of life are more inclined to have negative outcome expectations, be more passive, and likely to give up on trying to achieve their goals [64]. Furthermore, optimists tend to rely more heavily on positive reframing in that they are more likely to reframe adverse situations so as to see their more positive aspects when compared to pessimistic individuals [65]. Dispositional optimism thus appears to provide a good foundation for individuals to build a strong sense of self-efficacy in various aspects of their life.

Stroke survivors who have a dispositional tendency to be optimistic are perhaps likely to experience greater levels of self-efficacy because of their positive outlook on life and desire to achieve positive outcomes. Consistent with Bandura's self-efficacy theory, they would be more motivated to persevere and increase their efforts to overcome the many obstacles they face in their daily life to achieve a desired outcome. As a result, these individuals would be more likely to adapt to their life after stroke and experience greater levels of positive affect. In contrast, stroke survivors with a pessimistic view of life would be more prone to focus on their personal deficiencies and the adverse consequences of failure and would tend to give up quickly when faced with the many challenges associated with living with a disability, resulting in lower levels of self-efficacy. Due to their low level of self-belief, such individuals probably experience greater difficulty in adapting to their 'new' life after stroke which in turn would negatively impact upon their level of positive affect.

The present research has clearly demonstrated that self-efficacy, especially in psychosocial functioning, can and does influence the well-being of stroke survivors. An important implication of this is that encouraging and helping stroke survivors develop confidence in their ability to manage various aspects of their lives will facilitate and enhance their adjustment following stroke.

References

1. Donnan GA, Fisher M, Macleod M, Davis SM (2008) Stroke. *Lancet* 371: 1612-1623.
2. Baumann M, Peck S, Collins C, Eades G (2013) The meaning and value of taking part in a person-centred arts programme to hospital-based stroke patients: findings from a qualitative study. *Disabil Rehabil* 35: 244-256.
3. Korpershoek C, van der Bijl J, Hafsteinsdóttir TB (2011) Self-efficacy and its influence on recovery of patients with stroke: a systematic review. *J Adv Nurs* 67: 1876-1894.
4. Pajalic Z, Karlsson S, Westergren A (2006) Functioning and subjective health among stroke survivors after discharge from hospital. *J Adv Nurs* 54: 457-466.
5. Teoh V, Sims J, Milgrom J (2009) Psychosocial predictors of quality of life in a sample of community-dwelling stroke survivors: a longitudinal study. *Top Stroke Rehabil* 16: 157-166.
6. Wilz G, Barskova T (2007) Predictors of psychological and somatic components of poststroke depression: a longitudinal study. *Top Stroke Rehabil* 14: 25-40.
7. Jones F, Riazi A, Norris M (2013) Self-management after stroke: time for some more questions? *Disabil Rehabil* 35: 257-264.
8. Kendall E, Catalano T, Kuipers P, Posner N, Buys N, et al. (2007) Recovery following stroke: the role of self-management education. *Soc Sci Med* 64: 735-746.
9. Teasell R, Mehta S, Pereira S, McIntyre A, Janzen S, et al. (2012) Time to rethink long-term rehabilitation management of stroke patients. *Top Stroke Rehabil* 19: 457-462.
10. Bhogal SK, Teasell RW, Foley NC, Speechley MR (2003) Community reintegration after stroke. *Top Stroke Rehabil* 10: 107-129.
11. Devins DM, Binik YM (1996) Facilitating coping with chronic physical illness. Wiley, New York. 640-696.
12. Mehta S, Pereira S, Janzen S, McIntyre A, McClure A, et al. (2012) Effectiveness of psychological interventions in chronic stage of stroke: a systematic review. *Top Stroke Rehabil* 19: 536-544.
13. Jones F, Riazi A (2011) Self-efficacy and self-management after stroke: a systematic review. *Disabil Rehabil* 33: 797-810.
14. Nouwen A, Urquhart Law G, Hussain S, McGovern S, Napier H (2009) Comparison of the role of self-efficacy and illness representations in relation to dietary self-care and diabetes distress in adolescents with type 1 diabetes. *Psychol Health* 24: 1071-1084.
15. Hellström K, Lindmark B, Wahlberg B, Fugl-Meyer AR (2003) Self-efficacy in relation to impairments and activities of daily living disability in elderly patients with stroke: a prospective investigation. *J Rehabil Med* 35: 202-207.
16. Robinson-Smith G, Johnston MV, Allen J (2000) Self-care self-efficacy, quality of life, and depression after stroke. *Arch Phys Med Rehabil* 81: 460-464.
17. Jones F, Mandy A, Partridge C (2009) Changing self-efficacy in individuals following a first time stroke: preliminary study of a novel self-management intervention. *Clin Rehabil* 23: 522-533.
18. Diener E (2006) Guidelines for national indicators of subjective well-being and ill-being. *Applied Research in Quality of Life* 1: 151-157.
19. Diener E (1994) Assessing subjective well-being: Progress and opportunities. *Social Indicators Research* 31: 103-157.
20. Litt MD (1988) Self-efficacy and perceived control: cognitive mediators of pain tolerance. *J Pers Soc Psychol* 54: 149-160.
21. Multon KD, Brown SD, Lent RW (1991) Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology* 38: 30-38.
22. Lorig K, Chastain RL, Ung E, Shoor S, Holman HR (1989) Development and evaluation of a scale to measure perceived self-efficacy in people with arthritis. *Arthritis Rheum* 32: 37-44.
23. Weber BA, Roberts BL, Resnick M, Deimling G, Zauszniewski JA, et al. (2004) The effect of dyadic intervention on self-efficacy, social support, and depression for men with prostate cancer. *Psychooncology* 13: 47-60.
24. Middleton JW, Tate RL, Geraghty TJ (2003) Self-efficacy and spinal cord injury: Psychometric properties of a new scale. *Rehabilitation Psychology* 48: 281-288.
25. Bandura A, Taylor CB, Williams SL, Mefford IN, Barchas JD (1985) Catecholamine secretion as a function of perceived coping self-efficacy. *J Consult Clin Psychol* 53: 406-414.
26. Weinberg R, Gould D, Jackson A (1979) Expectations and performance: An empirical test of Bandura's self-efficacy theory. *Journal of Sport Psychology* 1: 320-331.
27. Brandt J, Welsh KA, Breitner JC, Folstein MF, Helms M, et al. (1993) Hereditary influences on cognitive functioning in older men. A study of 4000 twin pairs. *Arch Neurol* 50: 599-603.
28. de Jager CA, Budge MM, Clarke R (2003) Utility of TICS-M for the assessment of cognitive function in older adults. *Int J Geriatr Psychiatry* 18: 318-324.
29. Moylan T, Das K, Gibb A, Hill A, Kane A, et al. (2004) Assessment of cognitive function in older hospital inpatients: Is the Telephone Interview for Cognitive Status (TICS-M) a useful alternative to the Mini Mental State Examination? *International Journal of Geriatric Psychiatry* 19: 1008-1009.
30. Ferruci L, Del Lungo I, Guralnik JM (1998) Is the telephone interview for status a valid alternative in persons who cannot be evaluated by the Mini Mental State Examination? *Aging Clinical and Experimental Research* 10: 332-338.
31. Maujean A, Davis P, Kendall E, Casey L, Loxton N (2013) The Daily-Living Self-Efficacy Scale: A New Measure for Assessing Self-Efficacy in Stroke Survivors. *Disability and Rehabilitation*.
32. Diener E, Emmons RA, Larsen RJ, Griffin S (1985) The Satisfaction With Life Scale. *J Pers Assess* 49: 71-75.

33. Radloff LS (1977) The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1: 385-401.
34. Watson D, Tellegen A (1985) Toward a consensual structure of mood. *Psychol Bull* 98: 219-235.
35. Mahoney FI, Barthel DW (1965) Functional Evaluation: The Barthel Index. *Md State Med J* 14: 61-65.
36. Weinman J, Wright S, Johnston M (1995) Measures in health psychology: A user's portfolio - causal and control beliefs. Nfer-Nelson, UK.
37. Shah S, Vanclay F, Cooper B (1989) Improving the sensitivity of the Barthel Index for stroke rehabilitation. *J Clin Epidemiol* 42: 703-709.
38. Collin C, Davies S, Horne V, Wade DT (1987) Reliability of the Barthel ADL Index. *International Journal of Rehabilitation Research* 10: 356-357.
39. Cohen ME, Marino RJ (2000) The tools of disability outcomes research functional status measures. *Arch Phys Med Rehabil* 81: S21-29.
40. CROWNE DP, MARLOWE D (1960) A new scale of social desirability independent of psychopathology. *J Consult Psychol* 24: 349-354.
41. Prigatano GP, Fordyce DJ (1986) Cognitive dysfunction and psychosocial adjustment after brain injury. Johns Hopkins University Press, Baltimore, MD.
42. Leathem JM, Murphy LJ, Flett RA (1998) Self- and informant-ratings on the patient competency rating scale in patients with traumatic brain injury. *J Clin Exp Neuropsychol* 20: 694-705.
43. Fleming JM, Strong J, Ashton R (1998) Cluster analysis of self-awareness levels in adults with traumatic brain injury and relationship to outcome. *J Head Trauma Rehabil* 13: 39-51.
44. Prigatano GP, Altman IM, O'Brien KP (1990) Behavioural limitations that brain injured patients tend to underestimate. *Clinical Neuropsychologist* 4: 163-176.
45. Baron RM, Kenny DA (1986) The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J Pers Soc Psychol* 51: 1173-1182.
46. Lev EL, Owen SV (1996) A measure of self-care self-efficacy. *Res Nurs Health* 19: 421-429.
47. Hellström K, Lindmark B (1999) Fear of falling in patients with stroke: a reliability study. *Clin Rehabil* 13: 509-517.
48. Jørstad EC, Hauer K, Becker C, Lamb SE; ProFaNE Group (2005) Measuring the psychological outcomes of falling: a systematic review. *J Am Geriatr Soc* 53: 501-510.
49. Salbach NM, Mayo NE, Robichaud-Ekstrand S, Hanley JA, Richards CL, et al. (2006) Balance self-efficacy and its relevance to physical function and perceived health status after stroke. *Arch Phys Med Rehabil* 87: 364-370.
50. Edwards R, Telfair J, Cecil H, Lenoci J (2001) Self-efficacy as a predictor of adult adjustment to sickle cell disease: one-year outcomes. *Psychosom Med* 63: 850-858.
51. Lacker JM, Carosella AM, Feuerstein M (1996) Pain expectancies, pain, and functional self-efficacy expectancies as determinants of disability in patients with chronic low back disorders. *J Consult Clin Psychol* 64: 212-220.
52. Turner JA, Ersek M, Kemp C (2005) Self-efficacy for managing pain is associated with disability, depression, and pain coping among retirement community residents with chronic pain. *J Pain* 6: 471-479.
53. Diener E, Sandvik E, Seidlitz L, Diener M (1993) The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research* 28: 195-223.
54. Diener E, Ng W, Harter J, Arora R (2010) Wealth and happiness across the world: material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. *J Pers Soc Psychol* 99: 52-61.
55. Ahuvia AC (2002) Individualism/collectivism and cultures of happiness: A theoretical conjecture on the relationship between consumption, culture and subjective well-being at the national level. *Journal of Happiness Studies* 3: 23-36.
56. Arhaud-Day ML, Near JP (2005) The wealth of nations and the happiness of nations: Why "accounting" matters. *Social Indicators Research* 74: 511-548.
57. Diener RB, Diener E (2001) Making the best of a bad situation: Satisfaction in the slums of Calcutta. *Social Indicators Research* 55: 329-352.
58. Diener E, Lucas RE (2000) Explaining differences in societal levels of happiness: Relative standards, need fulfillment, culture, and evaluation theory. *Journal of Happiness Studies* 1: 41-78.
59. Fuentes N, Rojas M (2001) Economic theory and subjective well-being: Mexico. *Social Indicators Research* 53: 289-314.
60. Lever JP (2004) Poverty and subjective well-being in Mexico. *Social Indicators Research* 68: 1-33.
61. Ahmed SM, Chowdhury M, Bhuiya A (2001) Micro-credit and emotional well-being: Experience of poor rural women from Matlab, Bangladesh. *World Development* 29: 1957-1966.
62. Brinkerhoff MB, Fredell KA, Frideres JS (1997) Basic minimum needs, quality of life and selected correlates: Explorations in villages in northern India. *Social Indicators Research* 42: 245-281.
63. Scheier MF, Carver CS, Bridges MW (2001) Optimism, pessimism, and psychological well-being. American Psychological Association, Washington DC.
64. Scheier MF, Carver CS (1985) Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychol* 4: 219-247.
65. Wrosch C, Scheier MF (2003) Personality and quality of life: the importance of optimism and goal adjustment. *Qual Life Res* 12 Suppl 1: 59-72.

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