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A Personal Projects Analysis

Examining Adaptation to Low Back Pain

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Abstract

Personal Projects Analysis (PPA) offers an alternative approach to studying adaptation to illnesses. This study investigated adaptation to low back pain using PPA to examine the relationship between participants' perceptions of pain, and their functioning and well-being. Participants appraised their five most important projects on 26 dimensions, such as project value, success and difficulty. Factor analyses of the project ratings yielded five dispositions (Integrity, Personal Agency, Social Visibility, Pain Salience and Stressfulness). In regression analysis all five dispositions significantly predicted Physical and Social Function, Disruption of Roles, and Well-being. 'Pain Salience' was the strongest predictor of functional outcomes, and 'Stressfulness' was the best predictor of well-being.

Keywords

- *adaptation*
- *function*
- *low back pain*
- *Personal Projects Analysis*
- *well-being*

Introduction

The suffering associated with low back pain (LBP) reaches beyond physical pain; it affects thoughts and emotions, and the loss of routine activities undermines sense of identity. Individuals' reports of pain intensity and physical limitations of LBP do not necessarily correlate with tissue damage or anatomical anomalies, nor is their pain severity always proportional to expressed emotional distress (May, Rose, & Johnstone, 2000). Challenged by the needs of people with LBP, physicians describe it as one of the most unrewarding problems to deal with in clinical medicine (McCombe, Fairbank, Cockersole, & Pynsent, 1989).

When we conceptualize LBP as occurring in people's ongoing life stories, the focus of inquiry becomes how people understand and make sense of LBP in their lives. Such a focus requires an integrative research methodology because people are seen as 'social agents actively engaged in mutual projects, [which includes] the creation and maintenance of their personal identity' (Spicer & Chamberlain, 1996, p. 167). It is important to assess how individuals perceive and pursue their daily purposive activities when they have an illness, because illness disrupts engagement in projects. Hence, a person's project choices and appraisals of projects will provide information about the way an individual understands and responds to an illness.

One such integrative methodology is Personal Projects Analysis (PPA). The premise of PPA is that people actively organize and structure their lives in the pursuit of personal projects; therefore, projects represent the flow of people's lives (Little, 1993). Life involves choosing, initiating, modifying and relinquishing projects and it is through this process that people construct a symbolic view of self and their relationship with the world (Bruner, 1990; Little, 1993).

Projects can be simple, concrete, subordinate activities (e.g. shop for groceries, getting a haircut, cooking an evening meal) or they can be complex or multidimensional (e.g. to be a good parent, succeed at my job, increase my network of friends). Other projects can be abstract such as achieving a state of grace or the desire to have a balanced life style. Collectively, personal projects and a person's appraisal of them are the manner in which a person navigates life, providing continuity and responding to events. In exploring both the type of projects and how a person construes personal projects in the context of an illness provides insight and access to information about how a person responds to an illness.

A decision to use PPA as a research methodology tacitly acknowledges that people's actions, their engagement in and their appraisals of projects are related to their well-being (Little & Chambers, 2004). It is in the content, the organization and conceptualization of people's personal projects, and where and with whom projects are done that the volitional processes that shape and regulate behaviour are observed (Karoly, 1993; Little, 1998). The meaning that individuals attribute to their projects, their appraisals of projects, and their appraisal of their performance in relation to these projects inform us about individuals' dispositional characteristics.

The type of projects (e.g. health-related, interpersonal or most important) that is examined is determined by the research question (Little, 1993). A person's appraisal of and the meaning attributed to the selected projects are evaluated by having the person rate projects on predetermined items that are referred to as 'dimensions'. Dimensions are items, such as, how difficult, meaningful, enjoyable or successful a person expects his/her projects are likely to be (Little, 1989). Other dimensions evaluate whether other people contribute to or hinder a project, whether a person perceives s/he has control over his/her choice of projects and how congruent a project is with a person's values (Little, 1989; McGregor & Little, 1998). This study includes 'specific' dimensions related to the experiences of LBP patients such as ratings of pain or negative mood while engaging in each project, as well as 'core' dimensions that are consistently used in other PPA research. Core dimensions evaluate each project's achievability, integrity, organization, enjoyment, meaningfulness, manageability and sociability (e.g. whether the project involves other people, is valued and supported by other people or is done to benefit others) (Little, 1989).

The project dimensions ratings are reduced by factor analysis to yield factors that identify dispositions, which are regarded as the flexible characteristics that typify how a person construes and engages in his or her life's array of projects. Like their constituent dimensions, dispositions can be study-specific or core dispositions that typically emerge from factor analysis in PPA research such as an individual's appraisal of positive project attributes including Autonomy, Integrity, Social Connectedness, and negative project attributes such as Stressfulness.

Personal Projects Analysis researchers have reported positive relationships among PPA dispositions and quality of life outcomes, subjective well-being, happiness and physical and mental health (Little, 1999), as well as successful navigation of life's transitions (e.g. retirement, adolescence) (Cantor, Norem, Neidenthal, Langston, & Brower, 1987; Lawton, Moss, & Winter, 2002). In this study, we hypothesized that Integrity, Personal Competence, Autonomy and Social Visibility dispositions are inter-correlated and that individuals who score high on these PPA dispositions would exhibit better adaptation to illness. They would function better in their everyday activities, have less pain-related fear (kinesiophobia) and report a greater sense of well-being than individuals with lower scores would report on these dispositions. Our exemplar illness for this inquiry was low back pain.

The current study

The objective was to assess whether PPA dispositions would account for variability in responses to LBP in order to understand how LBP shapes some people's entire lives and sense of self, whereas for other people, it is an adjunctive experience. Patients with LBP evaluated their five most important personal projects on 26 dimensions and their functioning, pain severity and well-being. We hypothesized that project stressfulness and pain salience, and low levels of personal agency, integrity and social visibility for projects would predict poor adaptation such as difficulties with physical function, social function, disruption of emotional and physical roles and lower reported feelings of well-being in patients with LBP.

Method

Participant sampling procedure

The study was approved by the Institutional Review Board for the Protection of Human Subjects of the researchers' affiliate university and a data site hospital. Patient anonymity was maintained in accordance with the United States Health Insurance Portability and Accountability Act (1996). Fifty-nine males and 84 females participants (N = 143) with LBP (musculoskeletal pain located below the 12th thoracic vertebrae and above the gluteal fold) were recruited from health care facilities (e.g. ambulatory medical centres, physical therapy or chiropractic clinic) throughout north-east New England. Post-surgical participants and individuals with LBP due to malignancies/chronic inflammatory disorders (e.g. rheumatoid arthritis), pregnancy or infections were excluded. The questionnaire return rate was 31.5 per cent. However, the actual questionnaire return rate was difficult to estimate and may have been higher since many questionnaires left with practitioners were not distributed but instead were misplaced at these sites.

Participant characteristics

Participants were between 19 and 83 years old. Forty-nine per cent were between 40 and 60 years, which is the peak age range for prevalence for LBP. Most participants (96.9%) identified themselves as White (non-Hispanic). Sixty-two per cent were working full-time and 12% part-time. Seventeen per cent were on sick leave, 5 per cent received disability/worker's compensation and 18 per cent were either retired or students.

Fifty-six per cent of participants had acute LBP (three months or less) and 44 per cent had chronic LBP (persistent pain longer than three months). Participants' current episode of LBP varied from one day to 22 years. The mean duration of LBP was 262 days; the median was 60 days (N = 132, SD = 451.68). Fifty per cent of the episodes were a recurrence of LBP and the frequency of episodes varied from once a year to four or more times per year.

Measures

Personal Projects Analysis (PPA)

The PPA measure involves a three-step procedure. In step one, participants are asked to list all their current personal projects. The instructions state that projects are 'activities, tasks and goals' and that, 'everyone has a number of projects at any one time that they are thinking about, planning and doing ...' Participants were informed:

> We are interested in *all* the different and many personal projects that you have. For example, the personal projects you have at work or do for fun, to relax, your projects at home and in the community. Some projects are everyday activities e.g. get to work on time, mowing the lawns this weekend, exercising twice a week or avoiding eating junk food. Other projects are more long-term. These projects are about what we are doing now or they may be about what we are working towards in the future. Examples are saving to buy a house, learning to trust others,

> considering a holiday, learning to play golf or being a good husband or wife ..., trying to stop smoking or perhaps to lose weight, or take care of my health or maybe retire at 55 ...

In total, 20 examples of personal projects were provided.

In step two, so that the PPA would be representative of participants and the socio-ecological context of their projects, participants were asked to select their 'five most important' projects (Little, 1993). In the third and final step, participants rated (appraised) each of these five projects from 0 (strongly disagree) to 7 (strongly agree) on 26 dimensions which were phrased in the first person (e.g. 'I find this project difficult', 'This is really me' and 'Doing this helps me become the person I want to be'). Sixteen of the 26 dimensions were core dimensions (McGregor & Little, 1998) and the remaining 10 dimensions were specific to LBP. The ratings data were collapsed across the five most important projects.

Factors that conceptually represented participants' 'dispositions' (also referred to as 'domains' in PPA literature) were derived by principal axis factor analysis of the 26 dimensions. It was expected that this factor analysis would yield dispositions similar to those seen in other PPA studies, such as self-efficacy, stressfulness, integrity (congruent with identity and values) and social connectedness (Little, 1989; McGregor & Little, 1998), and dispositions specific to the experiences of LBP patients.

Measurements of function

Short-Form-36 Health Survey Questionnaire (SF-36) The SF-36 is an extensively used outcome measure of functioning and role performance. This study used four of the SF-36 subscales: Physical Function, Social Function, Disruption of Emotional Roles and Disruption of Physical Roles and the Bodily Pain subscale as a measure of pain severity. Subscale items were modified to specify LBP. For example, the standard SF-36 item asks participants, '… about activities you might do during a typical day. Does your "health" limit you in these activities?' This item was revised to ask, '…about activities you might do during a typical day. Does your "back pain" limit you in these activities?'

SF-36 survey raw scores were transformed so that higher item scores represented better health outcomes (Ware, 2000). The SF-36 has well-established validity; subscale reliabilities exceed recommended minimum standards of 0.70 for test–retest reliability and internal consistency (Ware, 2000). In the present study, Cronbach α reliability coefficients of the five subscales were all acceptable, ranging between 0.79 and 0.93.

Subjective well-being

Although moderately correlated, both the Satisfaction with Life Scale (SWLS) and the Center for Epidemiologic Studies Depression Scale (CES-D) were used because cognitive and emotional evaluation of life satisfaction can exhibit different relationships with other variables. The SWLS, which provided a cognitive assessment of life satisfaction, has been shown to have good convergent validity with other scales of subjective well-being (Pavot & Diener, 1993). In the current study, the Cronbach α was 0.91.

The CES-D, a 20-item measure of depressive symptoms in adults, was used to assess affective components of well-being (Radloff, 1977). The CES-D asks participants to rate frequency of depressive actions and feelings during the past week on a 0 to 3 scale with a possible score range of 0 to 60. Higher scores indicated an increased severity of depressive symptoms and a score of 16 is considered to have predictive validity for clinical depression (Radloff, 1977). It is a measure of depressive symptoms that is regarded to be unaffected by differences in somatic health (Devins et al., 1988).

Pain-related fear

The Tampa Scale of Kinesiophobia (TSK) is a 17-item instrument designed to assess beliefs on a 1 to 4 scale that movement will cause pain and re-injury in patients with musculoskeletal disorders. Higher scores indicate greater fear or avoidance of physical activity (Kori, Miller, & Todd, 1990). The TSK has demonstrated predictive validity and sufficient reliability ($\alpha = 0.77$) (Vlaeyen, Kole-Snijder, Boeren, & van Eek, 1995). The internal consistency reliability coefficient for this scale in the current study was 0.79.

Results

Data management

Data management and analysis used SPSS-15. Screening indicated that scores on the two SF-36 scales, Disruption of Emotional Roles (D-Emotional Roles) and Disruption of Physical Roles (D-Physical Roles), were not normally distributed. The D-Emotional Roles scale was bimodal, and the

D-Physical Roles scale was positively skewed. To correct for non-normality, scores on these two variables were dichotomized for correlation analysis and log transformed for regression analyses.

Descriptive data: participants' pain, functional status and well-being

In the current study, analysis showed no significant differences between participants with acute and chronic LBP on measures of demographic characteristics, reported pain level, functional status (SF-36 measures of emotional role disruption, physical role disruption and social limitations), pain-related fear, depression or general health and they were therefore treated as one group. Although this is not common in LBP studies, it is not without precedent. Others have found individuals with acute and chronic LBP are similar on measures of psychosocial variables and have suggested that individuals with chronic and acute LBP may differ less than commonly is believed (Crombez, Vlaeyen, Heuts, & Lysens, 1999; van den Hoogen, Koes, van Eijk, Bouter, & Devillé, 1997).

Compared to the US general population, study participants' function was more impaired and their pain rated more severe. They had difficulty with self-care, work and daily instrumental activities. Mean Pain Severity was 40.12 (SD = 21.65), which was below the 25th percentile compared to the SF-36 bodily pain normative data (US population; higher percentiles represent better health). Most participants reported an inability to carry out their physical roles (91% were below the 50th percentile of the SF-36 subscale for D-Physical Roles), but non-physical activities were also disrupted. Mean scores on the SF-36 Social Function and D-Emotional Roles subscale fell in the 25th percentile for US normative scores. Social Function significantly correlated with Physical Function ($r = 0.475$, $p < .01$), D-Physical Roles ($r = 0.489$, $p < .01$) and D-Emotional Roles ($r = 0.321$, $p < .01$). D-Emotional Roles scores were not correlated with either D-Physical Roles or Physical Function.

Fifty-seven per cent of participants screened positive for depressive symptoms (scored 16 or greater), which is higher than in general and primary care populations, but consistent with CES-D scores in other LBP studies (Staiger, Gaster, Sullivan, & Deyo, 2003). The mean score for SWLS was 22.4 (SD = 7.90). A score of 21–25 reflects slightly satisfied with life. One-third of the participants' scores showed they were dissatisfied or extremely dissatisfied with their lives. Participants' mean pain-related fear on the TSK was 36 (SD = 8.23). Thirty-seven is the cut-off score used to diagnose kinesiophobia (severe fear of pain and pain avoidance behaviour) in patients with chronic back pain.

Personal Projects Analysis

In the elicitation stage, participants listed an average of 14 (range 3–47) projects related to work, leisure, interpersonal relationships, intrapersonal (self-related) goals and everyday tasks such as maintaining the home and self-care. Examples ranged from the mundane, 'fill up the car with gas' or 'clean out the garage', to intrapersonal projects, such as 'understand myself' or 'learn to be a happier person'. Women listed significantly more projects than men ($F(1, 141) = 5.52$, $p < .05$), $\eta^2 = 0.04$).

Although participants were receiving treatment for LBP, in the elicitation stage only 11.8 per cent of the projects identified were LBP-related (e.g. 'be able to work without pain' or 'go to physical therapy'). When participants were asked to identify their most important projects, the percentage of LBP-related projects dropped to 1.4 per cent.

Personal project dimensions

The scores for participants' appraisals of their five most important projects were averaged to produce a mean score for each of the 26 dimensions (see Table 1). Factor analysis was performed on this set of 26 dimension scores. Principal axis factor extraction with Varimax orthogonal rotation yielded the most interpretable solution and factors with eigenvalues greater than 1 were retained. This solution yielded seven factors. The first five factors had items with loadings above 0.32 and explained 50.3 per cent of the total variance (see Table 1). Each of these five factors represented psychological constructs (dispositions towards personal projects) that were conceptually interpretable.

The five factors were labelled: Integrity, Stressfulness, Personal Agency, Pain Salience and Social Visibility. Each factor was interpreted as representing a PPA disposition. A score for each of the five dispositions was obtained by averaging the raw scores for items with large positive loadings (> +.30) on the corresponding factor. Within each participant, scores on each of the 26 items were averaged across the five projects; then scores on the selected items that had high loadings on each factor (such as Stressfulness) were averaged to create a score

Table 1. Rotated factor loadings from principal axis factor analysis of personal project dimensions (items)

	Factor							
Dimensions	*Integrity*	*Stressfulness*	*Pain Salience*	*Personal Agency*	*Social Visibility*	*Factor 6*	*Factor 7*	*Communalities*
Really me	*.780*	.069	.029	.141	.007	.136	–.034	.638
Become me	*.726*	.202	–.023	.118	.065	–.040	.199	.723
Enjoy	*.688*	–.122	.169	.089	.047	.288	.044	.597
Values	*.675*	.028	–.177	.258	.081	–.090	.310	.698
Want to	*.570*	–.094	–.066	*.481*	–.034	***–.465***	.005	.795
Good about me	*.401*	.207	.169	.351	.024	–.094	.231	.591
Difficult	.045	*.885*	.122	–.065	–.025	–.127	.097	.773
Stressful	–.124	*.784*	.147	–.098	.147	–.087	.163	.703
Challenging	.220	*.642*	.107	.171	.020	***–.361***	.054	.691
Others make difficult	–.020	*.534*	.086	–.277	.162	.052	–.090	.426
Failure	.286	*.455*	.075	–.090	.102	.140	.053	.400
Cause pain	–.056	.124	*.940*	–.050	.007	–.071	.041	.827
Pain will interfere	.142	.082	*.805*	–.102	.074	–.187	.141	.732
Feel pain	.003	.191	*.803*	–.115	.033	.133	.037	.759
Successfully finish	.106	–.057	–.257	*.668*	.105	.211	–.091	.553
Abilities & skills	.150	–.262	–.247	*.628*	.050	–.044	–.039	.586
Commitment	*.502*	–.146	–.064	*.595*	.011	–.070	.169	.764
Decision	*.449*	.055	.105	*.542*	–.097	–.131	–.075	.550
Control	.160	***–.378***	.117	*.459*	.081	.289	.217	.562
Others help	.042	–.091	.024	–.031	*.836*	.041	.022	.530
Choose to do with others	–.089	.164	–.044	.053	*.630*	.072	–.011	.440
Important to others	.060	.284	.112	–.127	*.554*	.243	–.028	.481
Others know about	.180	.033	.062	.235	*.416*	–.116	.070	.375
Success to date	.169	–.210	–.143	.082	.173	*.678*	–.122	.573
Feel important	.177	.332	.236	.115	.181	.211	*.556*	.466
Enough time	–.100	–.014	–.042	.035	.028	.095	*–.388*	.264
Percentage of variance (%)	12.89	11.48	9.94	9.28	6.73	5.06	3.22	–

on the corresponding disposition (Stressfulness). Internal consistency reliability analysis for these scales yielded alpha coefficients above 0.70 (except for Social Visibility, $\alpha = 0.66$). The computed factor scores were correlated highly with the unit-weighted raw scale score with correlations between $r = 0.90$ and $r = 0.96$. Because the two methods of scoring produced essentially equivalent results, the simpler method (averaging items to create a score for each of the five dispositions) was used to create the five PPA dispositional scores used in further analyses.

The first scale, Integrity, represented appraisals of fit between projects and personal beliefs and values, view of self and future self, as well as evaluation of projects as enjoyable and whether projects are pursued for personal reasons rather than a sense of obligation. The second scale, Stressfulness, was an appraisal of projects as being challenging, difficult and stressful as well as the psychological cost if a project failed. It included assessment of other people hindering progress or outcome of projects. The third scale, Pain Salience, was an appraisal of the influence of pain upon participating in and achieving projects. The fourth scale, Personal Agency, was an appraisal of self-efficacy, personal control and an expectation of project success, and a commitment and autonomy in doing the projects. The fifth scale, Social Visibility of projects, related to the extent that other people are involved, supportive of and valued the projects.

Table 2. Correlations of PPA disposition scales and well-being and functional outcomes ($N = 138$)

		Well-being and functional outcomes					
PPA disposition scales	*Cronbach alpha*	*Depression*	*Satisfaction with life*	*Physical function*	*Disruption of physical roles*	*Disruption of emotional roles*	*Social function*
Stressfulness	.78	.478**	–.444**	–.114	.046	–.266**	–.084
Integrity	.83	.023	–.030	–.042	–.042	.008	–.126
Social Visibility	.66	.080	.021	–.035	.139	.045	–.020
Pain Salience	.90	.349**	–.283**	–.429**	–.245**	–.365**	–.447**
Personal Agency	.76	–.287*	.229**	.140	.112	.159	.005

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

Relationship between PPA disposition scores

Correlations between PPA disposition scores ranged from a low of .20 to a high of .55. The Cronbach alphas are reported in Table 2. When these PPA variables are used as predictors in multiple-regression, the unique contribution of each predictor variable was assessed by examining its squared semi-partial correlation (sr^2); this indicates the proportion of variance in scores on the dependent variable uniquely predictable from each independent variable when other predictor variables are statistically controlled.

Correlations of PPA dispositions with participant demographic characteristics

Younger participants were slightly more likely to appraise their projects as stressful ($r = 0.27$, $p < .01$). Education level was positively correlated with Stressfulness ($r = 0.18$, $p < .05$), and negatively correlated Pain Salience ($r = –0.22$, $p < .05$). Sex correlated with Integrity ($r = –0.27$, $p < .01$). Men and women differed on project Integrity ($F(1, 141) = 11.52$, $p < .001$, $\eta^2 = 0.08$); women reported higher Integrity scores than men. Three of the PPA dispositions significantly correlated with characteristics of LBP. Specifically, participants who scored high on Pain Salience were more likely to report greater pain severity ($r = 0.52$, $p < .01$), more frequent episodes of LBP ($r = 0.23$, $p < .01$) and greater pain-related fear on the TSK ($r = 0.44$, $p < .01$). Personal Agency and Stressfulness were only correlated with pain-related fear ($r = 0.034$, $p < .01$; $r = .264$, $p < .01$).

Correlations of PPA dispositions and function and well-being

Functional status Table 2 lists correlations between PPA dispositions and measures of function. Participants with higher PPA Pain Salience scores were more likely to be impaired in their function (low scores) in all areas assessed: D-Physical Roles, D-Emotional Roles, Physical Function and Social Functioning. Participants' PPA Stressfulness of personal projects was associated only with D-Emotional Roles. The expectation that Integrity, Social Visibility and Personal Agency would be associated with higher scores on the measures of function was not borne out in analyses.

Well-being Three dispositions, Stressfulness, Pain Salience and Personal Agency, were correlated positively and significantly with measures of well-being (Table 2), but Integrity was not associated with measures of well-being. Findings are consistent with McGregor and Little's (1998) suggestion that there is a difference between well-being associated with measures of happiness, and measures of well-being associated the meaningfulness and purpose of life. Personal Agency was correlated with depression and satisfaction with life (see Table 2), whereas Integrity, a disposition more about meaningfulness, was not associated with well-being or happiness.

Relationships between PPA dispositions, function and well-being

Multiple regression analyses were performed using all five PPA disposition scores as predictor variables because the PPA disposition scores correlated.

Table 3. Prediction of SF-36 scales of function and measures of well-being from PPA dispositions using standard multiple regression

Dependent variables: Function			$p < .05$, $^{**}p < .01$		
Physical Function (SF-36)	Beta	Sr^2	*Social Function (SF-36)*	Beta	Sr^2
Integrity	.076		Integrity	−.157	
Stressfulness	.029		Stressfulness	.084	
Pain Salience	−.439**	0.17	Pain Salience	−.455**	0.18
Personal Agency	.111		Personal Agency	−.026	
Social Visibility	.011		Social Visibility	.026	
$R^2 = .214$, $F(5, 128) = 6.82$, $p < .001$			$R^2 = .218$, $F(5, 136) = 7.25$, $p < .001$		
Dependent variables: Role					
Disruption of Emotional Roles (SF-36)	Beta	Sr^2	*Disruption of Physical Roles (SF-36)*	Beta	Sr^2
Integrity	−.138		Integrity	−.131	
Stressfulness	−.020		Stressfulness	−.108	
Pain Salience	−.322**	0.09	Pain Salience	−.267**	0.06
Personal Agency	.163		Personal Agency	.119	
Social Visibility	.081		Social Visibility	.053	
$R^2 = .155$, $F(5, 135) = 4.75$, $p < .001$			$R^2 = .087$, $F(5, 128) = 2.47$, $p < .05$		
Dependent Variable: Well-Being					
Depression (CES-D)	Beta	Sr^2	*Satisfaction with Life (SWLS)*	Beta	Sr^2
Integrity	.064		Integrity	−.060	
Stressfulness	.363**	0.09	Stressfulness	−.371**	0.10
Pain Salience	.204**	0.04	Pain Salience	−.155*	0.02
Personal Agency	−.180		Personal Agency	.126	
Social Visibility	−.006		Social Visibility	.064	
$R^2 = .298$, $F(5, 128) = 10.85$, $p < .001$			$R^2 = .238$, $F(5, 131) = 8.18$, $p < .001$		

The five PPA disposition predictor variables were entered on one step, and separate standard multiple regressions with each of the six outcome variables were performed (summary of results provided in Table 3).

The overall multiple regressions were statistically significant for all six of the outcome variables (the SF-36 subscales, and the Depression, and SWL Scales). The set of PPA disposition scores significantly predicted each outcome, with the percentage of explained variance ranging from .087 (for D-Physical Roles) to .298 (for Depression). When the unique contributions of individual predictor variables were assessed, there were only two dispositions that were statistically significant. Pain Salience was statistically significant in all six regressions, and Stressfulness was significantly predictive of Depression and SWLS scores, but not the SF-36 scores. Integrity, Personal Agency and Social Visibility were not significantly predictive in any of the regression analyses.

Effect sizes for the unique predictive contributions of Pain Salience and Stressfulness were obtained by examining the squared semi-partial correlations (sr^2). Pain Salience uniquely predicted 17 per cent ($sr^2 = .17$) of the variance in Physical Functioning, 18 per cent ($sr^2 = .18$) of the variance in Social Functioning, 9 per cent ($sr^2 = .09$) of the variance in D-Emotional Roles and 6 per cent ($sr^2 = .06$) of D-Physical Roles. Pain Salience also explained 4 per cent ($sr^2 = .04$) of the variance in Depression and 2 per cent ($sr^2 = .02$) of the variance in SWL. Stressfulness accounted for 9 per cent ($sr^2 = .09$) of the variance in Depression and 10 per cent ($sr^2 = .10$) of the variance in SWLS. Many of these sr^2 values represent fairly, large effect sizes.

Discussion

In this PPA study of adaptation to LBP, three relevant findings emerged. The first was that Integrity, Social Visibility and Personal Agency dispositions were not associated with participants' self-reported functioning or well-being in the context of regression analyses that included Pain Salience and Stressfulness as other predictors. High scores in Personal Agency, Integrity and Sociability Visibility failed to have a relationship with adaptation to LBP, although these PPA dispositions under different circumstances have been associated with well-being and successful negotiation of life transitions (McGregor & Little, 1998; Salmela-Aro & Nurmi, 1997). A possible explanation is that the past studies have examined healthy individuals (i.e. college students) or individuals in normative life transition (e.g. retirement or pregnancy). Furthermore, well-being in relation to transitions may reflect the potential people perceive they have to engage successfully in activities and achieve their goal (Brunstein, 1993). Illness, by contrast, is characterized by the loss of ability and opportunities to engage successfully in purposive activities and achieve personal goals.

Pain Salience accounted for fairly large proportions of variance in participants' functional outcomes. It differentiated individuals who managed to continue to function despite their pain from individuals who were unable to function due to their LBP. Participants who had difficulties functioning in their everyday activities exhibited poorer adaptation in all four areas of function (assessed by the SF-36 subscales). They reported difficulties with work, self-care, social activities and maintaining their homes. Their difficulties also included social activities and roles influenced by emotional status, which did not require any physical exertion.

Pain Salience was a LBP-specific disposition that included pain-related variables, which are traditionally associated with activity avoidance and disability, such as pain severity and pain-related fear. However, Pain Salience also included how participants' evaluated the effect of LBP on the success or failure of their projects. The participants who exhibited poorer function predicted their LBP would prevent them from achieving their 'most important personal projects', even though some of the projects could have been resumed easily after their episode of LBP. Pain Salience was an 'adaptive schema' that was not conditional on reported severity of the LBP. It was instead associated with how individuals' construed their LBP symptoms would influence their ability to engage in activities and the desired outcome. This adaptive schema, for some a mal-adaptive schema explains in part the incongruence between symptom severity and the extent to which functioning was uniquely affected, and the differences in functional ability among individuals with similar symptom profiles. It appears that an adaptive schema underpinned individuals' volitional processes of adaptation or mal-adaptation in relation to their behavioural response to their illness or injury.

There is a precedent for adaptive schema influencing individuals' volitional illness-related behaviours. Studies have shown illness-specific goal profiles and the content and types of goals correlated with well-being, quality of life and the self-management of symptoms such as fatigue, depression and pain (Affleck et al., 1998; Karoly & Ruehlman, 1996). For example, Karoly and Ruehlam (1996) found that individuals with persistent and chronic pain exhibited a profile of low levels of goal-centred values and self-efficacy and higher goal-based self-criticism, and a conflict between work and non-work goals. In the current study, we provide evidence of a relationship between individuals' self-regulatory volitional processes and behaviours associated with LBP. A schema of LBP as a temporary, disruptive condition that required a short-term behavioural adjustment influenced some participants' volitional adaptation. Whereas for other individuals, their schema of LBP was as a debilitating condition that necessitated they discontinue or revise their activities. Frequently these individuals relinquished valued projects and redefined their expectations of the future.

The final finding was that perceived project Stressfulness predicted depressive symptoms and lower values of life satisfaction. Although the present study was cross-sectional, we speculate that perception of stressfulness was a pre-existing disposition of those individuals who had poorer cognitive and affective well-being. Poor psychological health and poor outcomes in patients with LBP have been well documented (Pincus, Burton, Vogel, & Field, 2002). Stressfulness of projects appeared to identify individuals who were likely to have psychosocial difficulties adapting to LBP. When Stressfulness was statistically controlled, Pain Salience predicted an additional .02 of variance in SWLS and .04 of variance in CES-D.

This PPA study joins a small number of empirical studies that have examined processes related to the engagement and shift in purposive activities

and/or goals to understand how an individual represents and adjusts to illness (Peterman & Lecci, 2006). While this study is subject to the inherent limitations of cross-sectional design and self-report measures, it provides evidence of the usefulness of PPA as a method to study illness representation and the effect of illness on function and well-being.

As Elliot and Sheldon (1998) have previously stated, the aim of personality–illness research is not merely to identify variables, but rather to work towards the development of integrative models that elucidate the personality–illness relationship, and the dispositions and coping strategies that predict recovery trajectories. Examination of the dispositions, motives and volition of individuals in their engagement in personal projects advances this agenda. Clinically, concerning treatment outcomes and susceptibility for disability, PPA holds particular relevance to the provision of efficacious interventions and the health maintenance strategies of clients especially for clients with musculoskeletal disorders and chronic health conditions such as arthritis or diabetes. These illnesses involve individuals reorganizing their personal projects and reframing their goals. A better understanding of the schema that informs their adaptive process, their sense of efficacy to manage symptoms and their volitional processes in pursue goal-directed activities may assist in identifying individuals' vulnerability to disability and inform cognitive-based treatment approaches. This experience of using PPA to explore and investigate adaptation processes in clients with LBP suggests a niche for personal action construct methodologies in research that examines illness representations and the volitional processes of behavioural adaptation to illness.

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