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The Structure of Affective Symptomatology in Older Adults with Osteoarthritis

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Abstract

Objective—to examine the structure of symptoms of affective disorder among older adults with a chronic health problem (osteoarthritis), and to explore cross-sectional and longitudinal associations of obtained affective symptom clusters with key health outcomes (pain, functional disability, perceived health).

Methods—One-year longitudinal study of older adults with diagnosed osteoarthritis of the knee. Symptoms of DSM depression and anxiety were assessed in a research diagnostic interview using a DSM-IV symptom checklist; self-reports captured demographic characteristics, objective health, pain, disability, and perceived health. Confirmatory factor analysis tested comparability of affective symptom structure in this sample to findings of previous research; ordinary least squares regression examined cross-sectional and longitudinal associations of affective symptoms with health outcomes, controlling for demographics and objective health.

Results—The current sample displayed an affective symptom structure comparable to that observed in previous research, with symptoms clustering into Depressed Mood, Somatic Symptoms and Psychic Anxiety factors. Depressed Mood was cross-sectionally associated with pain and disability and marginally with perceived health; Somatic Symptoms predicted current pain and perceived health. Only Depressed Mood predicted one-year change in disability and perceived health (but not pain).

Conclusions—This research confirms the role of somatic symptoms of distress in fueling disability and perceived ill health among chronically ill older adults. However, it is depressed mood that drives changes in perceived health and functional ability.

Keywords

Affective Symptoms; Comorbidity; Depression; Anxiety; Osteoarthritis

Introduction

Physical and mental health are closely associated throughout life (Kukull et al., 1986, Hays et al., 1994), and confluence of somatic and affective symptoms can make psychiatric diagnosis a complicated endeavor. This is especially problematic in late life, when physical

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symptoms such as pain and functional limitations may fuel emotional distress (Blazer et al., 1987, Lyness et al., 2006). Even normal age changes may mimic or be mistaken for clinical symptoms of affective distress.

Early notions that older people “mask” depression by substituting physical for emotional complaints (Goldfarb, 1974) have evolved into a focus on somatization and medically unexplained symptoms in all age groups (Henningsen et al., 2003, Kroenke, 2003). Reporting of somatic symptoms is closely associated with both depression and anxiety (Simon and Von Korff, 1991, Kroenke et al., 1997, Haug et al., 2004). Indeed, the majority of cases of depression may present primarily as somatic complaints (Simon et al., 1999). In general outpatients, somatization does not increase markedly with advancing age (Pribor et al., 1994, Kirmayer and Robbins, 1996), but depressed older adults may be more prone to express somatic symptoms and concerns (Lyness et al., 1993, Terntini et al., 2005). Among medically ill elders, somatic factors predict major depression equally as well as do affective symptoms (Koenig et al., 1993). Similarly, in a mixed sample of elderly primary care and psychiatric patients, somatic symptoms were strongly correlated with depression severity but not medical comorbidities (Drayer et al., 2005). Thus, somatic complaints are best regarded as an integral element of depression, rather than a “masking” factor that obscures it.

Anxiety and depression are highly comorbid (Judd et al., 1998), especially in older adults (Cassidy et al., 2005). As with depression, somatic symptoms are common and may complicate diagnosis and treatment (Lenze et al., 2005, Wetherell et al., 2010). Risk of diagnosable anxiety disorder is also greater among elders with more physical health problems and poorer functional ability (Schoevers et al., 2003).

In sum, conflation of physical symptoms, depression, and anxiety in late life presents notable challenges in differentiating physical from mental disorders, and anxiety from depression. However, one analysis with elderly long-term care residents suggests that this may be less problematic than previously thought. Parmelee and colleagues (Parmelee et al., 1998a, Parmelee et al., 1998b) parsed a Diagnostic and Statistical Manual, 4th ed. (DSM-IV; American Psychiatric Association, 1994) checklist into clusters representing Depressed Mood, Somatic Symptoms, and Psychic Anxiety. Although Somatic Symptoms was cross-sectionally associated with a range of health outcomes, Depressed Mood was by far the strongest predictor of cognitive and functional decline as well as 1-year mortality. For pain, Somatic Symptoms was the strongest cross-sectional correlate; no longitudinal effects emerged.

These analyses support the role of depressed mood per se in fueling physical problems and even health declines over time. However, long-term care residents are older, frailer, and have more health problems and greater cognitive and functional disability than community-residing older people (Agency for Healthcare Research and Quality, 2001, Margallo-Lana et al., 2001). Thus, extrapolation to persons who are chronically ill but still able to live independently is risky. The current study therefore used the same methodology with a more able group who are nonetheless at heightened risk of emotional disorder: community residents with osteoarthritis (OA) of the knee.

Osteoarthritis is an apt choice for exploring the physical-mental health dynamic. Extremely common, it affects 50–80% of all individuals over age 65 (Felson and Zhang, 1998). About 25% of older community residents report knee pain (Peat et al., 2001) and more than 40% show clear clinical signs of knee OA (Jordan et al., 2007). Arthritis-related pain and disability are associated cross-sectionally and longitudinally with depression and anxiety (Lenze et al., 2001, Machado et al., 2008, Wetherell et al., 2010). Additionally, OA sufferers report poorer general health than do other older adults (Hochberg et al., 1995), an important

finding given the strong associations of perceived health with emotional well-being (Molarius and Janson, 2002), objective health and functioning (Lyness et al., 2004) and longevity (Idler and Benyamini, 1997).

This research examined the extent to which the physical symptoms and effects of OA may be confounded with vegetative symptoms of psychological disorder. First, confirmatory factor analysis tested replicability of the affective symptom structure documented for Parmelee et al.'s (1998a, 1998b) institutional sample, to establish whether that structure is unique to very old, frail individuals or also applies to a more able group of chronically ill elders. We next explored cross-sectional and longitudinal relationships of obtained factors with three health outcomes: pain, functional disability, and perceived health. Following Parmelee et al., we hypothesized that Depressed Mood and Somatic Symptoms, but not Psychic Anxiety, would be contemporaneously associated with health outcomes. Depressed Mood was expected to be the strongest predictor of one-year change. In other words, we postulated that despite conflation of symptoms, it is depressed mood, rather than somatic complaints or even anxiety, that is most strongly associated with health problems and health declines in late life.

Method

Sample and procedures

The Time 1 (T1) sample comprised 367 metropolitan Philadelphia residents, all with physician-diagnosed osteoarthritis of the knee. To capture the range of OA symptoms, participants were recruited from rheumatology clinics at university (15% of total) and Veterans Affairs (12%) medical centers, a general geriatric outpatient clinic (12%), previous OA research participants (13%), and public service announcements (48%). Diagnoses were obtained through chart review and/or direct physician contact. Exclusion criteria were (1) cognitive impairment (≤ 6 on the Short Portable Mental Status questionnaire; Pfeiffer, 1975); (2) inability to complete interviews in English, (3) other rheumatological disorder, and (4) life-threatening or severely disabling disorders (e.g., non-basal cell carcinoma; emphysema requiring oxygen use).

Recruitment methods were IRB-approved. Following telephone screening for eligibility, T1 participants completed consent forms, questionnaires, and an in-person interview. All participants were recontacted a year later for Time 2 (T2) follow-up.

The 367 T1 participants (Table 1) were predominantly female, with a mean income in the \$20-\$30,000 range; 93 of the 99 non-White respondents were African American. Twelve (3.3%) met research diagnostic criteria for major depressive disorder; another 81 (22.1%) displayed dysphoria or anhedonia with fewer than 4 additional symptoms. Similarly, 11 participants (3.0%) met criteria for generalized anxiety disorder; 53 others (14.4%) displayed lower-level anxiety.

The middle column of Table 1 describes the 292 (79.6% of T1) T2 completers. Attrition, overwhelmingly due to refusal, was greater among T1 participants who were younger, non-White, less educated, and who reported poorer perceived health, and greater pain and disability.

Measures

Demographic characteristics, used as covariates, include age, sex, race (White vs. Nonwhite), education (7-point scale), marital status (married/cohabiting vs. not) and income (8 categories, "under \$10,000" to "more than \$70,000"). For the roughly 20% who declined to report income, we substituted the group mean.

Affective symptoms. A modified Schedule for Affective Disorders and Schizophrenia (Spitzer and Endicott, 1979) guided a research diagnostic interview assessing depression, generalized anxiety and panic, and global symptoms of psychosis. This instrument, previously validated in older adults (Parmelee et al., 1989), uses semi-structured probes to rate 35 symptoms as (1) not present, (2) present but doubtful clinical significance, (3) present but attributed to medical or environmental causes, or (4) present and significant. The latter two categories were collapsed to yield 3-point scales for all items. Present analyses used only the 17 items included in Parmelee et al.'s (1998a, 1998b) final factor structure: depressed mood, worrying/brooding, hopelessness, negative self-concept, guilt, suicidal thoughts, somatic anxiety, psychic anxiety; initial, middle, and terminal insomnia (collapsed into one item); fatigue, decreased appetite, weight loss, indecisiveness, decreased concentration, loss of interest/pleasure, psychomotor agitation and psychomotor retardation. Data were collected by research assistants trained to 70% agreement with doctoral-level clinicians (mirroring inter-clinician concordance).

Objective health, used as a covariate, comprised (1) number of physical *health conditions*, captured with a 31-item checklist (Lawton et al., 1982, National Center for Health Statistics, 1983), and (2) an OA-specific *joint count* of up to 9 symptomatic sites other than the knee.

Health outcomes included (1) *pain*, assessed with the 6-item Philadelphia Geriatric Center Pain Scale (Parmelee et al., 1991); T1 $\alpha = .84$. (2) *Functional disability* was assessed with Arthritis Impact Measurement Scales, 2nd edition (Meenan et al., 1992) subscales tapping mobility, walking and bending, hand and finger function, arm function, self-care and household tasks (T1 $\alpha = .78$); higher scores reflect greater impairment. (3) *Perceived health* was measured by a 3-item composite tapping overall health, and health now compared both with 5 years ago and with others one's age. Higher scores indicate poorer perceived health; T1 alpha was .64.

Analytic plan

Confirmatory factor analysis (CFA) examined fit of affective symptoms data with Parmelee et al.'s (1998a, 1998b) exploratory structure. Composites representing obtained factors were then subjected, along with the three health outcomes, to ordinary least squares regression (OLS) to identify demographic and objective health covariates requiring statistical control. Primary regression analyses explored the cross-sectional association of affective symptoms with each health outcome after controlling covariates. Additional OLS analyses examined associations of T1 affective symptoms with one-year change in pain, disability and perceived health.

Results

Affective symptom structure

Fit of current data to Parmelee et al.'s exploratory factor structure was examined in CFA using maximum likelihood estimation of the simple correlation matrix in LISREL 8.8 (Jöreskog and Sörbom, 2006). Each item was specified to load on a single factor, per the earlier model, with residual covariances initially constrained to zero. There were no missing data for this analysis.

An initial model did not consistently meet accepted fit standards, $X^2 = 359.74$, $df = 116$, GFI = .896, CFI = .933, RMSEA = .076. Modification indices suggested four additional measurement paths and numerous error covariances. *Worrying/brooding* and *loss of interest/pleasure*, despite sizeable loadings on Depressed Mood (.65 and .60, respectively) were associated with all three factors (estimated loadings .34 – .50). Given our intent to replicate previous work and the conceptual ambiguity of recommended modifications, we did not add

these paths. However, adding suggested error covariances to a second, re-estimated model significantly improved fit, $\Delta X^2 = 136.44$, $df = 8$, $p < .05$; fit to observed data was excellent, $X^2 = 195.80$, $df = 107$, $GFI = .940$, $CFI = .975$, $RMSEA = .048$ (Marsh et al., 1988, Browne and Cudeck, 1993). Figure 1 portrays the final model.

Based on this model, we computed symptom cluster composites by averaging items representing Depressed Mood (DM; $\alpha = .83$), Somatic Symptoms (SS; .49) and Psychiatric Anxiety (PA; .63). The resulting composites were moderately intercorrelated, DM - SS $r = .452$, DM - PA $r = .648$, SS - PA $r = .495$.

Correlates of affective symptom clusters

Initial OLS analyses regressed each symptom cluster blockwise onto demographic (Step 1) and objective health variables (Step 2) to identify variables requiring statistical control in primary analyses.

For Depressed Mood, a marginal effect of demographics, $F(6, 360) = 2.07$, $p < .06$, was driven by age, $\beta = -.112$, marital status, $\beta = -.115$, both $ps < .045$, and marginally by education, $\beta = -.105$, $p < .06$. At Step 2, health conditions, $\beta = .173$, $p < .002$, and joint count, $\beta = .130$, $p < .02$, significantly improved prediction, final $R = .298$, adj. $R^2 = .068$, $F(8, 358) = 4.35$, $p < .001$. For Somatic Symptoms, education was significant, $\beta = -.152$, $p < .005$; sex was marginal, $\beta = -.095$, $p < .075$, $F(6, 360) = 4.89$, $p < .001$. Addition of health conditions, $\beta = .231$, and joint count, $\beta = .272$, significantly increased explained variance, final $R = .476$, adj. $R^2 = .209$, $F(8, 358) = 13.12$, all $ps < .001$. The initial equation for Psychiatric Anxiety, $F(6, 360) = 2.68$, $p < .015$, reflects contributions of education, $\beta = -.156$, $p < .005$, and marital status, $\beta = -.119$, $p < .035$. Health conditions, $\beta = .190$, $p < .001$, and joint count, $\beta = .126$, $p < .02$, significantly improved prediction, final $R = .321$, adj. $R^2 = .083$, $F(8, 358) = 5.15$, $p < .001$.

Parallel analyses identifying covariates for pain, disability and perceived health are portrayed in conjunction with primary analyses (Table 2). Based on both sets of analyses, we retained all covariates except race.

Cross-sectional associations of symptom clusters with health outcomes

Separate OLS equations examined associations of DM, SS, and PA with pain, disability and perceived health, controlling demographic (Step 1) and health variables (Step 2) blockwise. Table 2 presents the final Step 3 for each equation.

Pain was significantly greater among women, $\beta = .169$, $p < .001$, and those with lower education, $\beta = -.133$, $p < .04$, and income, $\beta = -.180$, $p < .002$, Step 1 $F(5, 361) = 6.25$, $p < .001$. Health covariates, specifically joint count, $\beta = .408$, $p < .001$, significantly improved prediction of pain, Step 2 $\Delta F(2, 359) = 41.87$, $p < .001$. Affective symptom clusters further increased variance explained, Step 3 $\Delta F(3, 356) = 10.15$, $p < .001$. Somatic Symptoms was the strongest contributor, but Depressed Mood was also significant (Table 2).

Functional disability was similarly associated with sex, $\beta = .116$, $p < .025$, education, $\beta = -.110$, $p < .04$, and income, $\beta = -.217$, $p < .001$; Step 1 $F(5, 361) = 9.81$, $p < .001$. Age was marginal, $\beta = .093$, $p < .075$. Health covariates improved prediction, Step 2 $\Delta F(2, 359) = 67.12$, $p < .001$, joint count $\beta = .324$, health conditions $\beta = .307$, both $ps < .001$. The affective symptom clusters were marginal, Step 3 $\Delta F(3, 356) = 2.46$, $p < .065$. Only Depressed Mood was a significant univariate predictor (Table 2).

For perceived health, a significant effect of demographics, $F(5, 360) = 5.20$, $p < .001$, was again driven by sex, $\beta = -.130$, $p < .015$, education, $\beta = -.118$, $p < .035$, and income, $\beta = -.110$, $p < .015$.

157, $p < .006$. Both health conditions ($\beta = .421$) and joint count (.208; both $ps < .001$) contributed to the significant Step 2 ΔF (2, 358) = 66.58, $p < .001$; the effect of income was attenuated. Affective symptom clusters improved prediction, Step 3 ΔF (3, 355) = 5.12, $p < .002$, due mainly to Somatic Symptoms (Table 2). Depressed Mood just missed significance, $p < .06$; Psychic Anxiety was not uniquely associated with perceived health.

Longitudinal associations of symptom clusters with health outcomes

To explore how affective symptoms predicted one-year change in pain, disability and perceived health, we regressed each T2 outcome on its T1 counterpart (Step 1) and then entered T1 demographics (Step 2), health covariates (Step 3) and affective symptom clusters (Step 4). Step 4 results appear as Table 3.

Change in pain was not associated with demographics, $\Delta F < 1$. However, persons who initially reported more health problems, $\beta = .190$, $p < .001$, and OA-affected joints, $\beta = .143$, $p < .003$, had greater increases in pain, Step 3 ΔF (2, 281) = 16.58, $p < .001$. Addition of T1 affective symptoms proved nonsignificant, Step 4 $\Delta F < 1$.

Functional decline was greater among older individuals, $\beta = .124$, $p < .002$, those with less education, $\beta = -.121$, $p < .002$, and marginally among women, $\beta .076$, $p < .053$, Step 2 ΔF (5, 283) = 5.59, $p < .001$. As for pain, functional decrements were associated with greater numbers of T1 health conditions $\beta = .080$, $p < .025$, and OA-affected joints, $\beta = .161$, $p < .001$, Step 3 ΔF (2, 281) = 12.17, $p < .001$. Affective symptoms significantly improved prediction, Step 4 ΔF (3, 278) = 3.81, $p < .012$, due entirely to Depressed Mood (Table 3).

For perceived health, a significant effect for demographics, Step 2 ΔF (5, 281) = 2.36, $p < .042$, was driven by education, $\beta = -.095$, $p < .035$. Interestingly, T1 health covariates did not predict one-year change in perceived health, Step 3 ΔF (2, 279) = 1.16, n.s. Addition of T1 affective symptoms significantly increased explained variance, Step 4 ΔF (3, 276) = 6.70, $p < .001$, again due solely to Depressed Mood (Table 3).

Discussion

These analyses offer a unique view of the structure of affective disturbance among older adults, and of how different components of emotional distress may affect physical well-being. Parmelee et al.'s (1998a, 1998b) factor structure of DSM symptoms among long-term care residents, was neatly replicated among younger, community-residing persons with knee OA. Cross-sectionally, Depressed Mood was significantly associated with pain and disability, and marginally with perceived health. Somatic Symptoms predicted pain and perceived health, but not disability. Only Depressed Mood predicted decrements in functional ability and perceived health over one year.

These patterns clearly substantiate earlier findings regarding the strong cross-sectional linkage of Depressed Mood and Somatic Symptoms, but not Psychic Anxiety, with health outcomes. Patterns varied slightly in our sample, but overall effects were quite similar. Current analyses also confirmed the strong role only of Depressed Mood in predicting declines in functional ability and perceived health (but not pain) over time.

Some study limitations bear mention. First, we examined psychiatric symptomatology in a nonclinical sample. Rates of diagnosable depression and anxiety paralleled epidemiologic studies (Blazer et al., 1987, Flint, 2005) and OA-specific analyses (Axford et al., 2010, Hawker et al., 2011), bolstering generalizability. However, applicability of the obtained factor structure to clinical populations remains questionable. Concern is assuaged by our confirmation of the structure previously reported for an older, frailer group with much

higher rates of diagnosable mood disorders. Nonetheless, future research should examine replicability in samples with clinically relevant psychiatric symptoms and syndromes.

A second consideration is our decision to replicate Parmelee et al.'s obtained factors, rather than exploring affective symptom structure *a priori*. This allowed direct comparison of the two groups, but at the cost of knowing whether the long-term care structure is the best fit for younger, more able individuals. Current data were a solid fit for the earlier model, but exploratory analysis may have identified some subtle differences. Similarly, we examined only symptom checklist items that had previously cohered meaningfully. Inclusion of a broader range of symptoms, or use of different assessment methods, may yield a different picture.

More generally, as Parmelee and colleagues (1998b) noted, their exploratory structure did not conform to existing diagnostic algorithms. In particular, Somatic Symptoms picks up elements of both anxiety and depression, and Psychic Anxiety includes cognitive symptoms usually associated with depression. This may help explain the anxiety factor's failure uniquely to predict health outcomes: the emergent construct simply may not be sufficiently unique from other symptom clusters. But again, the strong fit of current data to the earlier structure is reassuring, and suggests that anxiety and depression are conflated even among younger, more able elders.

Caveats notwithstanding, current analyses solidly corroborate the notion that vegetative symptoms do not unduly color self-reports of psychiatric symptomatology among chronically ill older adults. Somatic symptoms are clearly associated with pain and perceived health (but, importantly, not disability) cross-sectionally. However, the magnitude of the association is not substantially greater than for depressed mood, which was the only unique predictor of T1 disability and of declines in functional ability and perceived health. Thus, as in previous work, the "pure" expression of depression as mood disturbance appears the main driver of the association of affective symptoms with health outcomes over time.

It is also interesting that anxiety, known to be closely associated with pain (Casten et al., 1995, Bair et al., 2008), disability (Brenes et al., 2008, Prorensky et al., 2009) and perceived health (John et al., 2005, Pirkola et al., 2009), showed no such associations in the current sample. This may be due in part to the nature of our Psychic Anxiety construct, discussed earlier, and its substantial overlap with the Depressed Mood cluster. In fact, simple associations of Psychic Anxiety with all health outcomes were positive and significant (Table 2), but washed out in multivariate analyses.

In sum, this research confirms the role of somatic symptoms of distress in fueling disability and perceived ill health among chronically ill older adults, at least cross-sectionally. However, those symptoms cannot account for the causal association of depression with health declines. Rather, it is the emotional experience of depression itself--the feelings of sadness, guilt, and loss of pleasure--that appears to be driving changes in perceived health and functional ability. This recommends careful attention by practitioners to complex presentations of physical and emotional distress among older adults. Clearly, depressed mood demands treatment, as it is associated with long-term decrements in health and function. However, nonspecific somatic symptoms such as fatigue, difficult concentrating, and insomnia may also be fueling existing health complaints as a function of psychological rather than physical problems. Such symptoms therefore recommend careful evaluation to disentangle them from purely physical complaints and, hence, ensure detection and treatment of emotional disorders.

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Figure 1.
Confirmatory Factor Analysis of Affective Symptoms Items: Final Model
Figure footnotes

1. Straight arrows from latent constructs (ovals) pointing towards observed variables (rectangles) indicate that the latent constructs predict the observed variables; the values are standardized path (beta) coefficients. Because observed variables are only partially explained by latent variables, each observed variable has a residual value to the left of its rectangle ($1 - \beta^2$). Bidirectional curved arrows indicate correlations among the latent constructs or residual variances of observed variables.
2. LossInterest = Loss of interest
SubDepress = Subjective depression
Brooding = Worry or brooding
Guilt = self reproach, guilt
NegSelf = Negative self evaluation
Hopelessness = discouragement, hopelessness
Suicidality = suicidal thoughts
Insomnia = Initial, middle, or terminal insomnia
Fatigue = Fatigability
NoAppetite = Loss of appetite
Weightloss = Weight loss

SubRetardation = Subjective retardation

SomAnxiety = Somatic anxiety

Indecisiveness = Indecisiveness

Concentration = Concentration

Subagitation = Subjective agitation

PsychAnxiety = Psychic anxiety

3. Final model $X^2 = 195.80$, $df = 107$, $GFI = .940$, $CFI = .975$, $RMSEA = .048$.

Table 1

Baseline Characteristics of Time 1 and Time 2 Participants

Variable (range in this sample)	Time 1 N=367	Time 2 N=292	F or χ^2	P
	Mean (SD) or %	Mean (SD) or %		
Age in years (48–91)	67.89 (9.72)	68.41 (9.57)	4.26	0.040
% Female	63.8	65.8	2.46	0.117
% Nonwhite	27.0	23.3	9.87	0.002
% Married/cohabiting	53.4	52.4	< 1	0.445
% Some college	50.4	54.5	9.35	0.002
Income (1 – 7)	2.78 (1.48)	2.84 (1.53)	2.26	0.133
Health problems (0 – 11)	2.64 (2.07)	2.56 (1.99)	2.26	0.133
Joint count (0–9)	2.68 (2.10)	2.64 (2.07)	< 1	0.565
Depressed Mood (1 – 3)	1.35 (0.42)	1.34 (0.41)	< 1	0.423
Somatic Symptoms (1 – 3)	1.32 (0.31)	1.31 (0.30)	< 1	0.456
Psychic Anxiety (1 – 3)	1.28 (0.38)	1.28 (0.38)	< 1	0.883
Pain (0.83 – 5.33)	2.77 (1.03)	2.72 (1.02)	3.15	0.077
Disability (6 – 30)	9.93 (3.17)	9.70 (3.06)	7.68	0.006
Subjective health (1 – 4)	1.92 (0.41) ¹	1.89 (0.39) ²	7.22 ³	0.008

Note: Numbers in parentheses following variable names indicate possible range of scores on that scale or variable. All significance tests compared T1 subjects who completed T2 (N = 292) vs. dropped out of the project (N = 75). For all *F*-values, df = 1, 365 unless otherwise noted. For all χ^2 values, df = 1.

Table 2
Pain, Disability and Perceived Health as a function of Demographics, Objective Health, and Affective Symptom Clusters

	Pain			Disability			Perceived Health		
	Adj. R ²	r	β	Adj. R ²	r	β	Adj. R ²	r	β
<u>Demographics</u>	.293 ^f			.355 ²			.348 ³		
Age		-.022	-.077		.171	.049		.067	-.042
Sex		.157	.108 ^a		.136	.086 ^e		-.123	-.146 ^d
Marital status		-.010	.122 ^a		-.121	.024		-.003	.062
Education		-.158	-.066		-.201	-.085 ^e		-.174	-.077 ^e
Income		-.189	-.104 ^a		-.290	-.128 ^b		-.192	-.074
<u>Objective Health</u>									
Health conditions		.183	.000		.442	.286 ^d		.493	.378 ^d
Joint count		.453	.337 ^d		.462	.299 ^d		.331	.163 ^d
<u>Affective Symptoms</u>									
Depressed Mood		.267	.129 ^a		.211	.112 ^a		.246	.111 ^e
Somatic Symptoms		.402	.219 ^d		.342	.077		.349	.128 ^a
Psychic Anxiety		.219	-.040		.170	-.083		.227	-.028

Note: All coefficients are final step of hierarchical regression model. See text for details.

¹ F (10, 356) = 16.18, *p* < .001

² F (10, 356) = 21.11, *p* < .001

³ F (10, 356) = 18.98, *p* < .001

^a *p* > .05

^b *p* < .01

^c *p* < .005

^d *p* < .001

01' > d' > 50'
e

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Table 3

Change in Pain, Disability and Perceived Health over a One-Year Interval as a function of Demographics, Objective Health, and Affective Symptom Clusters

	Pain		Disability		Perceived Health	
	Adj. R ²	β	Adj. R ²	β	Adj. R ²	β
Time 1 Status	.497 ^a		.662 ^a		.547 ^a	
		.558 ^d		.598 ^d		.597 ^d
<u>Demographics</u>						
Age		.009		.125 ^c		.048
Sex		.022		.068 ^e		-.028
Marital status		.038		.047		-.030
Education		-.033		-.116 ^c		-.075 ^e
Income		-.017		.009		-.051
<u>Objective Health</u>						
Health conditions		.180 ^d		.069 ^e		.047
Joint count		.134 ^b		.135 ^d		-.005
<u>Affective Symptoms</u>						
Depressed Mood		.032		.093 ^a		.178 ^c
Somatic Symptoms		.034		.062		.078
Psychic Anxiety		-.009		-.006		-.042

Note: All coefficients are final step of hierarchical regression model. "Time 1 status" refers to baseline score on each respective outcome variable. See text for details.

^a $F(11, 278) = 26.94, p < .001$

^b $F(11, 278) = 52.48, p < .001$

^c $F(11, 278) = 32.50, p < .001$

^a $p > .05$

^b $p < .01$

^c $p < .005$

$p < .001$
 $p < .05$
 $p < .10$