Health care providers' orientations towards common low back pain predict perceived harmfulness of physical activities and recommendations regarding return to normal activity

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ABSTRACT

The Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) differentiates between a biomedical versus a biopsychosocial treatment orientation with regard to common low back pain. This study re-examined the factor structure and psychometric properties of the PABS-PT, along with the relationship between PABS-PT scores and the perceived harmfulness of physical activities and treatment recommendations for common low back pain. Two hundred and ninety-seven paramedical therapists completed the PABS-PT and questionnaires measuring related concepts, rated the perceived harmfulness of 41 daily physical activities depicted in photographs and gave recommendations for return to normal activity for three patients with low back pain. Analysis revealed two factors labelled 'biomedical' and 'biopsychosocial treatment orientation'. Furthermore, scores on both factors of the PABS-PT were related to measures of related concepts (statistically significant Pearson correlation coefficients between 0.30 and 0.65) such as the HC-PAIRS and a therapist version of the TSK. Regression analyses revealed that both factors were consistent predictors of judgements of the harmfulness of physical activities (PHODA) and of recommendations for return to work and normal activity.

1. INTRODUCTION

Non-specific Chronic Low Back Pain (CLBP) is a major medical, social and economic problem, presenting a major challenge to the health care system (Waddell, 1998), for which development it has become clear that it is best understood from a biopsychosocial perspective. Quite recently, a number of studies have theoretically highlighted the role of fear-avoidance beliefs as important predictors of chronic pain disability (Lethem et al., 1983; Philips, 1987; Waddell et al., 1993), and this role has also been shown in longitudinal studies (Klenerman et al., 1995; Picavet et al., 2002). In line with these findings, an aetiological model has been proposed which is based on the specific fear that physical activity will cause (re)injury (Vlaeyen et al., 1995b; Vlaeyen and Linton, 2000). According to this model, a patient who

catastrophises (who is convinced that his/her body is extremely vulnerable, weak and must be carefully protected from overstrain) is likely to be fearful of movement/(re)injury when experiencing pain, may avoid physical activity and show increased muscular reactivity, which may lead to disuse, depression and disability. On the other hand, a patient who does not catastrophise will be more likely to resume daily activities and recover successfully.

In this model pain-catastrophising is considered an important precursor of pain-related fear, and hence one of the important targets for interventions aimed at reducing fear, avoidance and disability levels in patients with CLBP. Catastrophising may be fuelled by experienced bodily sensations that are novel, intense and unexpected, but is not solely determined by these internal stimuli. On the one hand, there is evidence that catastrophising is associated with relatively stable personality traits such as negative affectivity (NA) (Sullivan et al., 1995). On the other hand, catastrophising may also be influenced by external factors such as the information patients receive about their complaints. As Sullivan (2001) recently argued, the external context is important in the perception of pain, and the most important features of this context are those that refer to the relation between pain and danger. It has been shown several times that pain is perceived as more intense if it is seen as a sign of danger to a person (Sullivan, 2001). Several studies have shown that the belief that pain is invariably linked to movement and activities is an important factor in the degree of patient's disability (Barrios and Riley, 1987; Put and Witkower, 1991; Riley et al., 1988; Slater et al., 1991). One instrument to measure beliefs with regard to the relationship between pain and impairment in low back pain patients is the Pain and Impairment Relationship Scale (PAIRS) which was originally developed by Riley et al. (1988). To further explore the influence of medical information provided by health care providers, Rainville et al. (1995) have adapted the PAIRS such that health care providers themselves can complete it. These authors argue that, in addition to internal sources of a patient's attitude, an important source of information could be the transmission of beliefs by the health care provider.

While seeking treatment for their back pain, patients come into contact with several health care providers (e.g., general practitioners, medical specialists, physiotherapists and psychologists). The beliefs or orientations of all these providers can play a role in the patients' complaints. But treatments vary widely across disciplines, and therefore it is unlikely that a single measure of treatment orientations can be developed that is applicable to all disciplines. In the treatment of CLBP, physiotherapists are very frequently consulted, and often already at an early stage of the complaints. Patients with CLBP make up 27% of all patients seen by physiotherapists (Ravensberg et al., 1995) in the Netherlands. Furthermore, physiotherapists spend considerable time with their patients, so there is ample opportunity for interaction. It could be argued that during this interaction physiotherapists' attitudes influence the beliefs (e.g., catastrophising) and attitudes of their patients.

Two possible important physiotherapists' attitudes (or treatment orientations) can be extracted from literature regarding non-specific low back pain. First of all, physiotherapists can derive their treatment orientation from the biomechanical model of disease, based upon the notion that pain and disability are a consequence of physical pathology. Since pain is a signal of pathology or tissue damage, a physiotherapist with a predominantly biomechanical treatment orientation towards CLBP will very likely adapt his treatment to the pain level of the patient (i.e., use a pain-contingent treatment approach). Furthermore, treatment will primarily be aimed at finding the physical pathology that is the cause of the pain and treating this pathology. The second source of physiotherapists' treatment orientation comes from the biopsychosocial model of CLBP, where pain does not have to be a sign of pathology or tissue damage, but is also influenced by social and psychological factors. Because of these factors, disability due to pain can be maintained long after the initial pathology has healed. According to this model, treatment should rather focus on an increase in activity according to a previously defined timeframe (i.e., a time-contingent treatment approach) (Lindstrom et al., 1992).

The Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) was developed to distinguish between physiotherapists with the two different treatment orientations mentioned above (Ostelo et al., 2003). In a previous study, responses of 420 physiotherapists were obtained and analysed. Factor analysis yielded two factors whose content was similar to the two treatment orientations mentioned before. Furthermore, analysis showed that a biomedical and a biopsychosocial orientation are not the two opposites of the same scale, but rather that both factors are important in determining a physiotherapist's orientation (Ostelo et al., 2003). In their discussion, these authors mentioned that especially the biopsychosocial factor

was open to improvement (e.g., by adding items), since the internal consistency of this factor was only just acceptable. Furthermore, a preliminary validation by assessing the effect of several physiotherapist characteristics (e.g., content of attended courses, speciality and work setting) on the scores on the PABS-PT, showed that groups of physiotherapists selected in this manner did differ in the expected directions. Physiotherapists within a biomedical speciality scoring higher on the biomedical orientation factor, while those who followed courses in biopsychosocial approaches scored higher on the second factor. A more extensive investigation of the validity of the PABS-PT was recommended, for instance by using an external criterion, such as the Photograph Series of Daily Activities (PHODA) (Kugler et al., 1999). Finally, Ostelo et al. (2003) mentioned that scores on several PABS-PT items were very homogeneous, with only very few physiotherapists scoring in the extreme categories. For further development of the PABS-PT it was suggested to administer the questionnaire also among related disciplines like chiropractors, manual therapists and highly specialised chronic pain therapists, who are likely to show more extreme scores because of the theoretical background of these disciplines.

The purpose of the current study was (1) to re-examine the factor structure of the PABS-PT by means of an exploratory factor analysis, (2) to determine more extensively the validity of the PABS-PT by comparison with measures of related concepts (i.e., general health care provider attitudes (Rainville et al., 1995), general beliefs about back pain (Symonds et al., 1996) and fear-avoidance beliefs (Kori et al., 1990; Vlaeyen et al., 1995b)), and (3) to test the hypothesis that PABS-PT scores would predict judgements of the harmfulness of daily activities depicted in photographs (Kugler et al., 1999) and recommendations for physical activity for three patients who were described in brief vignettes (Rainville et al., 2000). For this study, people from disciplines strongly related to physiotherapy were also included in the sample. Since not only physiotherapists participated in the study, the more general term therapists will be used to describe all subjects.

2. METHODS

2.1. Sample

Two hundred and ninety-seven (297) therapists were recruited from the following sources: a random sample of 150 of all approximately 2000 members of the Dutch Association for Manual Therapy, a group of physiotherapists attending an informative meeting of a treatment outcome study, and five education courses of professional associations in the Netherlands (i.e., the Knowledge Centre for Professions Allied to Health, the McKenzie Association, the Association of Therapists in Manual Health, the Chiropractic Association, and a regional physiotherapists' association). In short, there was one random sample and several samples of convenience. The therapists recruited from the samples of convenience were all attending meetings that were unrelated to the subject of low back pain. Furthermore, all these therapists have to attend such meetings for their professional accreditation. However, it cannot be completely ruled out that these samples of convenience were biased with regard to their low back pain attitude. All therapists were physiotherapists or therapists from closely related disciplines (i.e., chiropraxis, manual therapy, Cesar therapy, McKenzie, Osteopathy). Two therapists were excluded because of too many missing values on the PABS-PT (more than 10%), so 295 therapists remained for analysis.

3. MEASUREMENTS

3.1. Sociodemographics

Characteristics such as age, gender, treatment discipline, work setting and years of experience in the field of back pain management were recorded prior to the other measures.

3.2. Treatment orientation measurements

The Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) is a 31-item questionnaire aimed at determining the treatment orientation of physiotherapists towards the treatment of CLBP (Ostelo et al., 2003). Therapists are asked to rate statements about the treatment of CLBP on a six-point Likert scale ranging from 'totally disagree' to 'totally agree'. As explained before, in a previous study two factors with 14 and 6 items, respectively, were found, and it was mentioned that the internal consistency of the second factor was open to improvement. Five additional items, aimed at enhancing the second factor, were added at

to the original 31 items of the PABS-PT. These items were phrased by the same experts that were involved in the development of the PABS-PT. Validity of these items was not checked, other than by looking at their face validity.

The Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS) is a questionnaire for assessing the attitudes and beliefs of health care providers about functional expectations for patients with CLBP (Rainville et al., 1995). It consists of 15 statements that have to be rated on a six-point Likert scale ranging from 'totally disagree' to 'totally agree'. An example of an item on the HC-PAIRS is 'Chronic back pain patients find themselves frequently thinking about their pain and what it has done to their life'. The HC-PAIRS is a questionnaire aimed at measuring treatment orientations of health care providers in general, whereas the PABS-PT is aimed at physiotherapists and related disciplines only. It was added to the measurements halfway through the study, so scores on this measure were obtained for about half of the therapists. A high score on the HC-PAIRS reflects a belief in a strong relationship between pain and impairment. A recent psychometric study of the HC-PAIRS revealed that this measure contains only one factor, which consists of 13 items (all items except 10 and 13) (Houben et al., 2004). For the analyses in the current study a sumscore of this factor was used.

The Back Beliefs Questionnaire (BBQ) is aimed at measuring beliefs about the inevitability of negative consequences of low back pain (Symonds et al., 1996). The questionnaire consists of nine statements that, again, have to be rated on a six-point Likert scale ranging from 'totally disagree' to 'totally agree'. All statements were adapted in such a way that they now measured whether physiotherapists viewed the negative consequences as inevitable for a patient with low back pain. For example, the original item 'Once you have had back trouble there is always a weakness' was adapted to read 'Once someone has had back trouble there is always a weakness'. A high score on the BBQ-HC indicates that the negative consequences of low back pain are regarded to be avoidable. Since the adapted BBQ had never been studied psychometrically, Cronbach's α was computed. α was 0.71, which is adequate. The adapted BBQ (BBQ-HC) was administered until halfway through the study, at which point the HC-PAIRS was added to the measures. For practical reasons it was not possible to include both measures. The BBQ-HC was completed by 139 therapists and the HC-PAIRS by 156 therapists.

The Tampa Scale for Kinesiophobia (TSK) is designed to measure fear of movement or (re)injury in patients (Kori et al., 1990; Vlaeyen et al., 1995a), and was adapted to measure concerns of movement or (re)injury therapists have for their patients. The adapted TSK (TSK-HC) consisted of 17 items that had to be rated on a six-point Likert scale ranging from 'totally disagree' to 'totally agree' also. As an example, the original item 'If I were to try to overcome it, my pain would increase' was adapted to read 'If a low back pain patient was to try to overcome his or her pain, it would increase'. A high score on the TSK-HC indicates a strong concern for the possibility of aggravating back pain through physical movement. Since the adapted TSK had never been studied psychometrically, Cronbach's α was computed, together with a Pearson correlation with the HC-PAIRS. α was 0.81, which is more than adequate, and the correlation with the HC-PAIRS was 0.633, which is of a reasonable magnitude and in the expected direction.

3.3. Harmfulness ratings of physical activities

The Photograph series of Daily Activities (PHODA) consists of 98 photographs of people carrying out daily activities (Kugler et al., 1999). A selection of 41 pictures was made for this study, based on elevated ratings of patients (above 60 on a 100-point scale) for the activities on these photographs in a previous study (Vlaeyen et al., 2001). It was expected that the contrast between therapists with different treatment orientations would be largest on these photographs. Therapists were asked to rate each of these photographs on a seven-point scale (ranging from 'not harmful at all' to 'extremely harmful') according to how harmful they judged each activity to be of patients with non-specific low back pain. For the analyses the sum-score of all 41 ratings was computed. Cronbach's α of the PHODA was 0.96, which is good.

3.4. Recommendations for physical activity

Rainville et al. (2000) used three vignettes of work disabled, chronic low back pain patients without severe pathology. Physicians were asked to rate each vignette on four aspects (each on a five-point scale). These aspects were severity of pain symptoms and severity of pathology (both ranging from 'very mild' to 'extremely severe'), recommendations for physical activity levels (ranging from 'no activity limitations' to 'limit all physical activities') and recommendations regarding work levels (ranging from 'full time full duty'

to 'remain off work'). The vignettes contained descriptions of symptoms, relevant physical findings, results of diagnostic tests and previous treatments. All vignettes suggested back pain with a non-specific cause, for example by stating that there were no neurological deficits. The three vignettes and the corresponding questions were translated into Dutch by the authors. The patient vignettes were added to the measurement at the same time as the HC-PAIRS. In the current study only the last two aspects (recommendations for physical activity and work) were included in the analyses, since these are most indicative of actual therapists' behaviour. For the analyses a mean score of recommendations for work and physical activity were computed by averaging the scores across all three vignettes. Cronbach's α for the mean recommendations for work and physical activity were 0.65 and 0.67, respectively, which is adequate for scales consisting of only three items.

All subjects completed the PBAS-PT, TSK-HC and PHODA, while 156 therapists completed the HC-PAIRS and patient vignettes and 139 therapists completed the BBQ-HC.

4. PROCEDURE

Therapists participated in various ways. Therapists from the random sample (N=150) and from the education course of the regional physiotherapists (N=25) participated by mail only. All therapists from these two sources received the PABS-PT, HC-PAIRS, TSK-HC, patient vignettes and the photograph series of daily activities (PHODA) with a stamped addressed envelope. They were requested to return the completed package by mail. Eighty-six of the questionnaires that were sent out, were returned (response rate 49%). Of these therapists, no other data were available to the researchers than their address and gender. χ^2 Analyses showed that there were no significant differences in the gender distribution between responders and non-responders (χ^2=5.346, df=3, p=0.148).

The therapists from all other sources received the PABS-PT, TSK-HC, HC-PAIRS and patient vignettes (or BBQ-HC) by mail a week before the course, and were asked to fill out the questionnaires and bring them to the course meeting. During the meeting the photographs from the PHODA were shown and all therapists rated the harmfulness of the depicted daily activities individually on a scoring form. The questionnaires and scoring forms were then collected. Two-hundred-and-nine therapists participated in this way. In total, valid data from 295 therapists were collected.

5. STATISTICAL ANALYSES

Factor structure of the PABS-PT was determined with a Principal Axis Factor Analysis (PAF) with an Oblique rotation. An exploratory factor analysis was chosen since five new items had been added to the original PABS-PT. Before factor analysis, all items were examined for heterogeneity, since this can bias the results of the analysis (Bernstein and Teng, 1989). In order to avoid skewed items, the following exclusion criteria were used: a Skewness and Kurtosis between −1.5 and +1.5, more than 70% of the scores located in extreme categories (either 1–2 or 5–6). For the factor analysis, the number of factors extracted was based on the content of the factors, the scree plot, and the item loading on the different factors. Factors were extracted until the eigenvalue dropped below 1 or until the eigenvalue hardly changed between two subsequent factors, visible as a levelling off of the scree plot. Items with a factor loading below 0.25 were removed. If an item loaded on more than one factor, the item was removed if the difference in loading was below 0.1. This procedure is similar to the one followed by Ostelo et al. (2003).

Validity of the PABS-PT was determined by examining Pearson correlation coefficients of PABS-PT scores and scores on measures TSK-HC, BBQ-HC and HC-PAIRS. Furthermore, regression analyses were carried out to determine whether scores on the PABS-PT could predict scores on these three measures. Finally, it was tested whether differences existed on the PABS-PT for subgroups based on characteristics of therapists.

The hypothesis that PABS-PT scores would predict judgements of harmfulness of activities (PHODA) and recommendations for activity was tested (a) by computing Pearson correlation coefficients between PABS-PT scores and scores on the PHODA and patient vignettes, and (b) by examining through regression analyses whether scores on the PABS-PT could predict scores on the PHODA and patient vignettes when controlling for other variables. All analyses were performed using the Statistical Package for the Social Sciences 8.0.2 (SPSS) (SPSS-Inc., 1998).

6. RESULTS

6.1. Sociodemographics

As mentioned before, 295 therapists (59.4% men) with an average age of 41 years (SD=8.0, range 24–73 years) were included in the analyses. The predominant treatment disciplines were manual therapy (38.3%), physiotherapy (23.4%), McKenzie (19.3%) and chiropraxis (8.8%). Most therapists worked in private practice (90.2%) for an average of 35 h per week (SD=12.4, range 2–64 h). The average years of work experience was 12.1 years (SD=7.9, range 0.5–33 years), and the experience with the treatment of back pain was 11.7 years (SD=7.9, range 0–33 years).

7. DATA EXAMINATION

Of the 295 therapists included in the analysis, 273 had no missing values on the PABS-PT. Twenty-two therapists had missing values, but in all cases less than 10% of all values were missing. A neutral score (on the middle of the scale) replaced missing values on the PABS-PT. The same procedure was followed to replace missing values in all other measures. If there were more than 10% missing values on a scale, then, for that therapist, the scale was excluded from the analyses. This means that 273 therapists completed the PHODA, 293 completed the TSK-HC, 138 completed the BBQ-HC, 156 completed the HC-PAIRS, and 155 completed the patient vignettes.

Then, all items on the PABS-PT were examined for heterogeneity, since this influences the results of the factor analysis. Eight items (1, 9, 13, 15, 16, 18, 21 and 32) were excluded from analysis because of a Skewness or Kurtosis not falling between ±1.5, or more than 70% of all scores being located in the extreme categories (either 1–2 or 5–6). Table 1 shows the descriptives for all items ultimately included in one of the extracted factors. Table 2 shows the descriptives for all items excluded during the process of factor analysis.

[TABLE 1]

For clarity of presentation, items are sorted in descending order based on the factor loadings on factor 1 and factor 2, respectively.

[TABLE 2]

8. FACTOR EXTRACTION

To examine underlying dimensions, a principal axis factor analysis (PAF) with oblimin rotation was performed on the remaining 28 items. The Kaiser–Meyer–Olkin Measure (0.810) and Bartlett's Test of Sphericity (χ^2=1741.4; p=0.000) both justified continuation of the analysis. Examination of the eigenvalues in combination with the scree plot suggested the extraction of two factors. The subsequent factor analysis confirmed this. Eight items were removed after examination of the factor loadings because of a loading of less than 0.25 (item 2, 3, 4, 5, 8, 28 and 36) or a difference in loadings on both factors of less than 0.1 (item 26). Two factors remained consisting of 11 items (factor 1) and 9 items (factor 2). The total variance explained was 23.4% for factor 1 and 10% for factor 2. Pearson correlation between the two factors was −0.36, suggesting that the two factors are not totally independent.

Before examining the content of both factors, their internal consistency was determined using Cronbach's α. For factor 1 α was 0.73, but removing one item from the factor (item 19) raised α to 0.80. Factor 2 had an α of 0.68, and there was no item indicated to yield a raise in α after removal.

Finally, two well interpretable factors remained. A high score on the first factor (10 items) refers to a conviction of a relation between pain and tissue-damage. This is characteristic of a biomechanical treatment orientation as described in Section 1, where pain is invariably linked to tissue damage. This is illustrated by the item with the highest loading on this factor, which was 'The severity of tissue damage determines the level of pain'. A high score on factor 2 refers to a belief that it is possible to overcome functional disability despite pain. This is a distinctive feature of a biopsychosocial treatment orientation. The item with the highest loading on this factor was 'Learning to cope with stress promotes recovery from back pain'. For

factor 1 the mean score was 29.5 (SD=7.9, range 10–52) and for factor 2 this was 35.6 (SD=5.6, range 17–49).

9. VALIDITY

To examine the validity of both factors of the PABS-PT, Pearson correlation coefficients were computed between both factors and scores on the TSK-HC, BBQ-HC and HC-PAIRS. The computed correlation coefficients are presented in Table 3. Since the TSK-HC and BBQ-HC were used in the development of the PABS-PT (Ostelo et al., 2003), there was an overlap on three items between the TSK-HC and factor 1 and on one item between the BBQ-HC and factor 2. In these cases correlation coefficients were computed with exclusion of the relevant items from the TSK-HC or BBQ-HC.

[TABLE 3]

As can be seen in Table 3, all correlations are in the expected direction and highly statistically significant, except for the correlation between the BBQ-HC and the biopsychosocial factor, where no association was observed. The magnitude of the correlations is only moderate, but that might be as high as can be expected for correlations with measures of related, but not exactly similar, constructs.Besides associations between PABS-PT and other measures, scores for several subgroups based on characteristics of therapists were computed. These scores and statistical test for differences in means are shown in Table 4. No differences were observed with regard to gender, age or years of work experience. On the biopsychosocial factor, a difference was found with respect to treatment discipline. Post hoc analysis revealed that chiropractors scored lower on this factor (i.e., are less convinced of the possibility of normal function despite pain) compared to manual therapists, physiotherapists and McKenzie therapists. Since chiropraxis is often viewed as a manipulative treatment option aimed at organic defects, this difference could be expected. For the same reason, it would also be expected that chiropractors would score higher on the biomedical factor. Although they did have the highest average score, the difference was not significant.

[TABLE 4]

10. PREDICTION OF HARMFULNESS RATINGS OF PHOTOGRAPHS AND RECOMMENDATIONS FOR ACTIVITY

The third aim of this study was to determine whether a therapists' treatment orientation is predictive of harmfulness ratings of photographs depicting physical activity (PHODA), and of recommendations for physical activity and work. First, Pearson correlation coefficients were computed between PABS-PT scores on both factors and scores on the PHODA and the recommendations for activity and work on the patient vignettes. The mean score of the recommendations for physical activity and work level across all three vignettes was used in computing these correlations. The results can be seen in Table 3.

Next, regression analyses were performed to determine if the scores on the PABS-PT were predictive of scores on the PHODA and of recommendations for physical activity and work level, even when controlling for other variables. Table 5 shows that both factors of the PABS-PT were significant predictors in all three analyses. Other incidental predictors were treatment discipline being manual therapy or McKenzie on work recommendations, chiropraxis on activity recommendations and years of experience treating back pain on harmfulness ratings.

[TABLE 5]

11. DISCUSSION

A re-examination of the factor structure of the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) largely confirmed the results of the study by Ostelo et al. (2003). Again, two factors were extracted. The first factor (10 items) refers to a biomedical treatment orientation, and the second factor (9 items) to a biopsychosocial treatment orientation. Compared to the Ostelo et al. (2003) study there are only

small differences in the items making up both factors. Nine out of the 10 items in the biomedical factor (items 10, 14, 20, 22, 23, 24, 25, 30 and 31) and five out of the nine items in the biopsychosocial factor (items 6, 7, 11, 12 and 27) were included in the same factors by Ostelo et al. (2003). The remaining item for the biomedical factor (item 35) and two of the remaining items for the biopsychosocial factor (items 33 and 34) were newly added for the purpose of this study. Only two items from the biopsychosocial factor had been excluded by Ostelo et al. (2003) because of non-heterogeneity (item 17) or a difference in loading on both factors of less than 0.1 (item 29). Both factors found in the current study had satisfactory reliability when measured with Cronbach's α. As expected, the addition of a few extra items did increase the reliability of the second factor compared to the study by Ostelo et al. (2003). α for this biopsychosocial factor increased from 0.54 to 0.68.

Examination of the validity of the PABS-PT showed that this questionnaire is a reasonably valid measure of treatment orientation of physiotherapists and therapists of closely related disciplines. Scores on both factors of the PABS-PT were correlated with scores on measures of related constructs. The magnitude of the correlations was only moderate, but that may be seen as high as can be expected for correlations with measures of related, but not exactly similar, constructs. Furthermore, regression analyses showed that both factors of the PABS-PT are significant predictors of the scores on measures of related constructs when controlling for other variables.

The results of the current study also suggest that the PABS-PT could be predictive of therapists' perception of the harmfulness of daily activities and treatment recommendations regarding return to normal activity. When looking at the results of the regression analyses, it appears that therapists with a more biomedical treatment orientation (measured on the PABS-PT) view daily activities as more harmful for the back of a low back pain patient compared with therapists with a more biopsychosocial treatment orientation, even when controlling for other variables. Furthermore, biomedically oriented therapists might be more inclined to advise patients to limit daily activity and work compared with biopsychosocially oriented therapists. Of course, since the current study is of a cross-sectional nature, no actual causal inferences can be made.

There are also some limitations to this study. First of all, the same sample of therapists has been used to determine the factor structure of the PABS-PT, and to determine whether the PABS-PT could be predictive of therapists' perception of the harmfulness of daily activities and treatment recommendations regarding return to normal activity. It would have been better to use two different samples for these parts of the study. A second limitation concerns the fact that both the TSK-HC and the BBQ-HC have been adapted from original questionnaires. Therefore, the psychometric properties of these adapted measures have never been studied. Although the current data and an inspection of face validity suggest that both measures are reliable and valid, more extensive investigation is needed before a conclusion on this can be drawn. A third limitations lies in the fact that the questionnaires were not administered to all participants in the same manner. One-third of the sample completed all questionnaires at home. The other two thirds had to complete on measure (PHODA) during a meeting that took place one week after they had received all other measures at home. To make sure that the latter group was under no time constraints during the completion of the PHODA, it was made sure that sufficient time was reserved during the meeting. Since a number of the therapists participated in samples of convenience, it cannot be ruled out that they may have been biased in their attitude towards the treatment of common low back pain, compared to the whole therapist population.

A closer look at the content of the items in the biomedical factor shows that they bear a striking resemblance to some of the myths that still exist about low back pain. Deyo has eloquently described these myths (Deyo, 1998). The myths that are also reflected in the biomedical factor of the PABS-PT regard the need for accurate diagnosis of organic causes in all cases of low back pain, the need to take it easy as long as the pain lasts, and the expectation that back pain will always lead to disability.

Similar to the previous study (Ostelo et al., 2003), several items were excluded from the analysis because the vast majority of therapists either totally agreed or totally disagreed with the statement. Again these items reflected issues addressed in guidelines on CLBP for general practitioners (Faas et al., 1996) and for physiotherapists (Bekkering et al., 2001). Both guidelines stress the importance of motivating the patient to resume normal activities as soon as possible, and convincing them that there is nothing dangerously wrong with their back. Therefore, scores on these items might have been indicative of therapists' knowledge of

guidelines and the intention to comply with these, rather than their actual orientation and behaviour. This tendency towards socially desirable answers is a well-known bias in all self-report measurements of explicit concepts (concepts that can be put into words). It is therefore that researchers have begun to develop assessment instruments for the identification of implicit attitudes and beliefs. Greenwald and Banaji (1995), for example, argue that people also have an implicit orientation, which is not under conscious control. This implicit orientation, next to the explicit orientation, can also have an important influence on behaviour (Greenwald and Banaji, 1995). But since an implicit orientation is not under conscious control, it is less likely to be influenced by processes such as social desirability and demand characteristics. One important method to measure implicit orientations is the Extrinsic Affective Simon Task (EAST) (De Houwer, 2003). To gather information on whether scores on the PABS-PT are influenced by social desirability, it would be interesting to compare PABS-PT scores with responses on the EAST. Of course it would be even more interesting to link these implicit attitudes to actual behaviour, but this remains a challenge for the future.

An important practical use of the PABS-PT could be the evaluation of the effect of specific education courses of therapists' associations. Similarly, the questionnaire could be used to monitor the development of treatment orientations in physiotherapy students during their study. Furthermore, an interesting question remains whether the treatment orientation of a health care provider influences their actual behaviour and of course the attitudes of their patients. The authors are currently undertaking a study addressing these questions.

Although alternative attitude measurements are also available, the PABS-PT has two features that make it suitable among paramedical health care providers. First of all, all items have been developed specifically with this group of therapists in mind and therefore items are representative for these therapists. Second, because of the two-factor structure, the PABS-PT gives more detailed information on a therapist's treatment orientation than a measure with only one outcome dimension. This is especially relevant because of the nature of non-specific chronic low back pain complaints. Since these complaints can not be attributed exclusively to biomedical or psychosocial causes, it might be assumed that therapists have a treatment orientation that can not be placed on one scale as being either biomedical or psychosocial. A measurement instrument that measures both orientations separately in the same subject could be appropriate.

TABLE 1

Table 1
Descriptives (mean, standard deviation (SD), initial communalities (IC) and factor loadings on both factors (F1 and F2)) for items selected during factor analysis

No.	Item	Mean (SD)	IC	F1	F2
31	The severity of tissue damage determines the level of pain	2.5 (1.4)	0.429	0.695	
25	Increased pain indicates new tissue damage or the spread of existing damage	2.7 (1.2)	0.418	0.664	
10	Pain is a nociceptive stimulus, indicating tissue damage	3.2 (1.5)	0.351	0.593	
22	If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly	3.9 (1.4)	0.373	0.580	
30	If patients complain of pain during exercise, I worry that damage is being caused	2.7 (1.2)	0.414	0.543	
14	Patients with back pain should preferably practice only pain free movements	3.0 (1.4)	0.349	0.515	
24	Pain reduction is a precondition for the restoration of normal functioning	3.4 (1.4)	0.353	0.510	
23	If therapy does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term	2.7 (1.2)	0.305	0.486	
20	Back pain indicates the presence of organic injury	2.6 (1.3)	0.295	0.373	
35	In the long run, patients with back pain have a higher risk of developing spinal impairments	2.9 (1.4)	0.235	0.313	
33	Learning to cope with stress promotes recovery from back pain	4.9 (0.9)	0.341		0.561
11	A patient suffering from severe back pain will benefit from physical exercise	4.1 (1.3)	0.334		0.547
29	Even if the pain has worsened, the intensity of the next treatment can be increased	4.3 (1.1)	0.391		0.537
34	Exercises that may be back straining should not be avoided during the treatment	4.8 (1.0)	0.301		0.511
17	Therapy may have been successful even if pain remains	4.8 (1.2)	0.254		0.447
7	The cause of back pain is unknown	3.1 (1.3)	0.218		0.355
12	Functional limitations associated with back pain are the result of psychosocial factors	3.1 (1.2)	0.136		0.313
27	There is no effective treatment to eliminate back pain	2.3 (1.2)	0.159		0.308
6	Mental stress can cause back pain even in the absence of tissue damage	4.2 (1.2)	0.284		0.281

For clarity of presentation, items are sorted in descending order based on the factor loadings on factor 1 and factor 2, respectively.

TABEL 2

Table 2
Descriptives (mean, standard deviation (SD) and reason for exclusion) for excluded items

No.	Item	Mean (SD)	Reason for exclusion
1	Back pain sufferers should refrain from all physical activity in order to avoid injury	1.7 (0.9)	A
2	Good posture prevents back pain	4.4 (1.1)	B
3	Knowledge of the tissue damage is not necessary for effective therapy	2.6 (1.4)	B
4	Reduction of daily physical exertion is a significant factor in treating back pain	3.4 (1.3)	B
5	Not enough effort is made to find the underlying organic causes of back pain	3.3 (1.4)	B
8	Unilateral physical stress is not a cause of back pain	2.7 (1.2)	B
9	Patients who have suffered back pain should avoid activities that stress the back	2.2 (1.1)	A
13	The best advice for back pain is: ''Take care'' and ''Make no unnecessary movements''	2.1 (1.1)	A
15	Back pain indicates that there is something dangerously wrong with the back	1.6 (0.7)	A
16	The way patients view their pain influences the progress of the symptoms	5.2 (0.9)	A
18	Therapy can completely alleviate the functional symptoms caused by back pain	5.0 (1.0)	A
19	If ADL activities cause more back pain, this is not dangerous	3.7 (1.3)	D
21	Sport should not be recommended for patients with back pain	2.0 (1.0)	A
26	It is the task of the physiotherapist to remove the cause of back pain	3.3 (1.6)	C
28	TENS and/or back braces support functional recovery	3.4 (1.3)	B
32	A rapid resumption of daily activities is an important goal of the treatment	5.2 (0.9)	A
36	In back pain, imaging tests are unnecessary	3.2 (1.2)	B

Reasons for exclusion: A, non-heterogeneity; B, minimal loading criterion; C, loading on both factors; D, rise in α if item deleted.

TABLE 3

Table 3
Pearson correlation coefficients between relevant measures

		Biomedical factor	Biopsychosocial factor
TSK-HC	Pearson correlation, $n = 293$	$0.650^{***,a}$	-0.497^{***}
BBQ-HC	Pearson correlation, $n = 138$	-0.380^{***}	0.077^{b}
HC-PAIRS	Pearson correlation, $n = 156$	0.517^{***}	-0.472^{***}
PHODA	Pearson correlation, $n = 273$	0.333^{***}	-0.396^{***}
Recommendation for physical activity	Pearson correlation, $n = 155$	0.297^{***}	-0.356^{***}
Recommendation for work	Pearson correlation, $n = 155$	0.322^{***}	-0.265^{***}

PHODA, Photograph Series of Daily Activities; TSK-HC, Tampa Scale for Kinesiophobia adapted for paramedical therapists; BBQ-HC, Back Beliefs Questionnaire adapted for paramedical therapists; HC-PAIRS, Health Care Providers' Pain and Impairment Relationship Scale.
[a] TSK-HC without items that were also included in the biomedical factor of the PABS-PT
[b] BBQ-HC without items that were also included in the biopsychosocial factor of the PABS-PT
*** $p < 0.001$.

TABLE 4

Table 4
Descriptives (mean, standard deviation (SD) and range) and scores on factors 1 and 2 for subgroups based on characteristics of therapists

	Factor 1 – biomedical treatment orientation	Factor 2 – biopsychosocial treatment orientation
Gender		
Male ($n = 161$)	29.9 (8.2)	35.2 (5.8)
Female ($n = 108$)	29.1 (7.2)	36.2 (5.2)
Age		
<41 years ($n = 120$)	29.7 (7.7)	35.4 (5.7)
⩾ 41 years ($n = 175$)	29.3 (8.1)	35.7 (5.6)
Years of experience		
<12 years ($n = 153$)	29.6 (8.0)	35.7 (5.3)
⩾ 12 years ($n = 142$)	29.4 (7.9)	35.5 (6.0)
Treatment discipline		
Manual therapy ($n = 113$)	30.4 (8.7)	35.5 (5.6)
Physiotherapy ($n = 69$)	29.2 (7.3)	37.1 (5.2)
McKenzie ($n = 57$)	27.8 (7.7)	35.1 (5.6)
Chiropraxis ($n = 26$)	32.0 (5.7)	31.9 (4.7)***
Other ($n = 30$)	28.0 (7.7)	37.1 (5.8)

*** Difference in scores significant with $p < 0.001$.

TABLE 5

Table 5
Prediction of scores on HC-PAIRS, TSK-HC, BBQ-HC, PHODA and patient vignettes

	PHODA	Recommendation for physical activity	Recommendation for work
Adjusted R Square	0.225	0.260	0.149
Independent variables (Standardized Beta's):			
Biomedical factor	174**	0.278***	0.275
Biopsychosocial factor	−0.342***	−0.257**	−0.226*
Manual therapy	ns	ns	−0.342*
McKenzie	ns	ns	−0.210*
Chiropraxis	ns	0.292*	ns
Experience with treatment of back pain (in years)	−0.203**	ns	ns

PHODA, Photograph Series of Daily Activities. The treatment disciplines manual therapy, physiotherapy, McKenzie and chiropraxis were added as dummy variables. 'Other' was always coded zero. Never in the equation were age, gender and physiotherapy.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

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