Ridder, D. de, Fournier, M., Bensing, J.
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Journal of Psychosomatic Research: 56, 2004, nr. 3, p. 341-350

Postprint Version	1.0
Journal website	http://linkinghub.elsevier.com
Pubmed link	http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15046972&query_hl=32&itool=pubmed_docsum
DOI	10.1016/S0022-3999(03)00034-5

Does optimism affect symptom report in chronic disease? What are its consequences for self-care behaviour and physical functioning?

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ABSTRACT

Objective: The aim of the present study was to examine whether optimistic chronically ill patients [50 multiple sclerosis (MS) patients and 65 Type 1 diabetes mellitus (IDDM) patients] overestimate their health status by decreased symptom report, and to what extent such an optimistic interpretation of health status affects self-care behaviour and physical functioning.

Method: Hierarchical regression analyses were employed to determine the relationship of three concepts of optimistic beliefs (positive outcome expectancies, positive efficacy expectancies and unrealistic optimism) with symptom report, controlling for objective measures of health status; and whether this relationship was mediated by negative affectivity or denial. Hierarchical regression analyses were also employed to assess the impact of optimistic beliefs on self-care behaviour and physical functioning 6 months later.

Results: Optimistic beliefs did not affect symptom report with the exception of positive outcome expectancies relating to decreased fatigue report in IDDM patients, a relationship that was mediated by decreased negative affectivity. In addition, positive efficacy expectancies contributed to more self-care behaviours in both MS and IDDM patients.

Conclusion: Optimistic chronically ill patients do not tend to have a biased perception of their health status, and positive efficacy expectancies appear to encourage selfcare behaviour 6 months later.

INTRODUCTION

Several studies have demonstrated that optimism is associated with decreased report of physical symptoms such as fatigue, pain and dizziness in both healthy individuals [1–3] and those who are chronically ill [4,5]. As symptoms are, by definition, assessed by self-report, it is unknown to what extent decreased symptom report in optimistic people is due to a biased ‘‘optimistic’’ interpretation of physical sensations [6]. Moreover, it is unknown whether an optimistic interpretation of health status, if present, threatens health outcomes in the long run in a way that the presence of unnoticed symptoms decreases efforts of self-care and health protection [7]. Therefore, the purpose of the present study is to

examine the impact of optimism on self-reported health status in chronic disease, along with its consequences for self-care behaviour and physical functioning.

In order to study optimism, its definition needs to be clear. Former research has demonstrated that the broad concept of optimism comprises at least three kinds of optimistic beliefs, namely positive outcome expectancies, positive efficacy expectancies and unrealistic optimism [7–9]. In the present study, it is expected that these three optimistic beliefs play a role in symptom report, but each in a different way. Positive outcome expectancies, defined by ‘‘the tendency to believe that one will generally experience good outcomes in life’’ [10], may affect symptom report by focusing attention on positive elements, even when people are confronted with a major life event such as serious illness [5,11]. Positive efficacy expectancies, or ‘‘the global confidence in one’s coping ability across a wide range of demanding situations’’ [12], on the other hand, may influence symptom report because it increases one’s coping capacity in terms of knowledge, skills and strategies [13]. Finally, unrealistic optimism, or ‘‘the belief that pleasant events are more likely to happen to the self than to others, and the belief that negative events are less likely’’ [14], can affect symptom report because it may promote denying signs of one’s vulnerability [15]. The critical theoretical difference between the concepts of outcome expectancies and efficacy expectancies on the one hand, and unrealistic optimism on the other hand, has been related to their potential to activate risk appraisal processes [16]. Whereas individuals with high expectancies of positive outcome or self-efficacy are believed to be willing to accept health risks and cope with these risks in an adaptive manner, unrealistically, optimistic individuals may be less prepared to consider such health risks. It may thus be argued that unrealistic optimism implies a focus on positive elements of physical sensations at the cost of denying the negative ones, while both positive outcome expectancies and positive efficacy expectancies involve a focus on positive elements of health, but with awareness of the negative ones [17]. Therefore, we expect that patients high in unrealistic optimism are indeed more ‘‘unrealistic’’ and will report lower symptom levels than patients with positive outcome expectancies or positive efficacy expectancies.

In order to assess the impact of optimistic beliefs on symptom report, it is important to determine its relationship with concepts that are also known for their biasing effect on self-reported health status. A number of studies have demonstrated that both negative affectivity and denial are related to symptom report, although in opposite directions. According to the Symptom Perception Model developed by Watson and Pennebaker [18], subjects with high scores on negative affectivity are more perceptive of physical sensations and tend to interpret and recall health status as being worse than it really is [18–20]. Negative affect has also been shown to be negatively associated with optimism [1,21], but the effects of optimism cannot be entirely explained by decreased negative affect [22]. In contrast, denial reduces health complaints in healthy subjects as well as in chronically ill patients [23], even when they are physiologically aroused [24]. In order to assess whether denial and (the absence of) negative affectivity are in fact the causal mechanisms by which optimism affects symptom report, we will examine whether the impact of optimistic beliefs on symptom report may be explained by the mediating effects of either of both concepts.

Another important issue is whether optimistic beliefs threaten the performance of health-protective measures. Two opposite views exist regarding this issue. Theories of self-regulation such as those described by Carver and Scheier [25] and Taylor [15] emphasize the beneficial consequences of a positive ‘‘bias’’ in a sense that optimistic beliefs about one’s health status encourage engagement in continued coping efforts. In contrast, the self-regulatory model described by Gonder-Frederick and Cox [26] states that an accurate perception of health status is a prerequisite for adequate self-care behaviour. The apparent contradiction between both views may be explained by differentiating between different types of optimistic beliefs and assuming that they have a differential impact on self-care and physical functioning. Indeed, empirical evidence shows that unrealistic optimism interferes with health-care behaviour both in healthy individuals with regard to the risk of contracting AIDS (relating unrealistic optimism to unsafe sexual practices) [27] and in coronary heart disease patients (relating unrealistic optimism to decreased exercise behaviour) [16]. In contrast, it has been demonstrated that both positive outcome expectancies and positive efficacy expectancies contribute to more self-care behaviour and better physical functioning in patients with HIV [28], diabetes [29], heart disease [30] and multiple sclerosis (MS) [31]. Therefore, we expect that unrealistic optimism will have negative consequences for self-care in chronic disease and decreases the possibility of patients

engaging in self-care behaviours, while positive outcome expectancies and positive efficacy expectancies increase engagement in self-care behaviours.

In order to determine whether the role of optimistic beliefs in symptom report, self-care behaviour and physical functioning also depends on disease-specific characteristics, the expected differential role of optimistic beliefs will be investigated in two types of chronic diseases. The first being Type 1 diabetes mellitus (IDDM), which requires accurate monitoring of blood glucose level in order to engage in adequate self-care behaviours such as adjusting insulin use, diet and exercise. When physical symptoms are not accurately recognized, which is the case in about 40% of the patients, patients may seriously harm their physical condition (resulting in, e.g., ketoacidosis or coma) [26]. The second type of disease is MS, characterized by few options to influence one's condition by self-care behaviours. When symptoms are inaccurately recognized, which is the case in 42% of the patients [32], patients do not risk direct negative consequences for their physical condition. Therefore, we assume that the potential negative impact of optimistic beliefs (and especially unrealistic optimism) is more manifested in diseases that impose huge self-care demands, such as IDDM, than in diseases that do not require such self-care demands (MS).

In sum, this study addresses three hypotheses. First, we hypothesize that unrealistic optimism leads to more inaccurate symptom report than positive outcome expectancies and positive efficacy expectancies; and we also hypothesize that unrealistic optimism affects symptom report through the working mechanisms of increased denial and less negative affect. Second, we hypothesize that unrealistic optimism has a negative impact on the performance of self-care behaviour and physical functioning, while we expect that both positive outcome expectancies and positive efficacy expectancies have a beneficial impact on the performance of self-care behaviour and promote better physical functioning. Third, with regard to differential self-care options relating to the type of disease, we hypothesize that the expected negative impact of unrealistic optimism on symptom report, self-care behaviour and physical functioning is more detrimental in case of chronic illness characterized by a strict self-care regimen (IDDM) than in chronic diseases characterized by limited self-care options (MS).

METHOD

Procedure

Patients were recruited via their physician at the outpatient departments of three hospitals in the Netherlands. They were eligible for inclusion in the study if they met the following criteria: (1) diagnosis according to relevant medical criteria [33,34]; (2) between 18 and 65 years of age; (3) being diagnosed at least 1 year ago. Patients were excluded when they met the following criteria: (1) severe disability due to disease (IDDM: retinopathy, neuropathy, renal disease and macrovascular symptoms; MS: Expanded Disability Status Scale (EDSS) score 7.0 and higher [35]); (2) severe comorbidity (such as, e.g., asthma or cancer); (3) being involved in psychotherapy or psychosocial counselling, or using psychotropic medication at the time of the study.

Inclusion and exclusion criteria were chosen in order to make patients' stage of adaptation to disease comparable. Patients in their first year of diagnosis were excluded because during that period, they experience typical adaptive tasks: IDDM patients experience a so-called ''honeymoon'' period with temporary recuperation of the metabolism system [36], while MS patients experience temporary relief followed by an emotional collapse [37]. One year postdiagnosis, most patients are aware of the irreversibility of their disease.

Participants

Physicians handed out a leaflet on the study procedure to 155 IDDM patients and 155 MS patients; 104 IDDM patients and 98 MS patients agreed to participate in the study and gave informed consent. The first measure included a number of questionnaires that were administered at the hospital. From a selected group of 50 MS patients and 65 IDDM patients, objective medical data on health status were also obtained. In this study, we will report only on patients for whom medical data were available. These patients were similar in demographic and illness characteristics, compared with the full samples of the study [9]. The second measure, 6 months later, included questionnaires that were mailed to patients.

Table 1 shows that the male–female proportions in the IDDM sample and the MS sample were similar, as was the percentage of patients with a partner. Significantly more IDDM patients than MS patients were in paid employment, which is most likely related to their better physical functioning in combination with their younger age. The exclusion of severely impaired patients resulted in a MS sample with relatively short disease duration, because impairment increases with disease duration [38]. Despite these differences, it appears that the samples experienced a comparable stage of adaptation, as 80% of the IDDM patients and 84% of the MS patients reported the acceptance of being chronically ill (‘‘integration stage’’, indicated by a preference for one of five statements referring to different adaptation stages) [39].

[TABLE 1]

Measures

Data were collected at two points in time. At baseline, patients responded to questionnaires on optimistic beliefs, negative affectivity, denial and symptom report. Data on objective health status were also obtained at baseline. Data on physical functioning and self-care behaviour were collected both at baseline and at follow-up, 6 months later.

Optimistic beliefs

Positive outcome expectancies were assessed by the Revised Version of the Life Orientation Test (LOT-R) [22], which consists of six items and four filler items. Patients were asked to indicate their agreement with the items on a five-point Likert scale ranging from *strongly disagree* (0) to *strongly agree* (4). Scheier et al. [22] showed that the LOT-R measures optimism in an internally consistent way. Cronbach’s alphas in the present study were .65 and .80 for the MS sample and IDDM sample, respectively.

Positive efficacy expectancies were measured by the Generalized Self-Efficacy Scale [12], consisting of 10 items. A higher score reflects more confidence in one’s ability to handle difficult situations. The scale is internally consistent and valid [12]. Cronbach’s alphas were .88 and .82 for the MS sample and IDDM sample, respectively.

Unrealistic optimism was measured by an adapted version of the Dutch translation of the Comparative Risk Judgment Rating Form [40]. Patients were asked to judge their chances of experiencing 15 situations compared to those of an average person of the same age and sex and with the same kind of disease. Sample items are ‘‘Having to stay in bed with flu for one or more days next winter’’ and ‘‘Getting financial problems’’. Possible responses ranged from -4 (*my probability is very much lower*) to 4 (*my probability is very much higher*) and were transformed to a range from 1 to 9 in the present analyses. After correcting for low (near zero) item–total correlation, 2 of the 15 items were removed as they presumably referred to conditions only relevant for students for whom the scale was originally developed (e.g., ‘‘Find affordable housing’’). Cronbach’s alphas were .76 and .79 for the MS sample and IDDM sample, respectively.

Factors relating to positive bias

Negative affectivity was measured by the Negative Affect scale (10 items) of the Positive and Negative Affectivity Schedule (PANAS) [41]. As the Positive Affect scale is unrelated to symptom report [18], it was not included in the present study. Patients were asked to rate how they generally felt regarding a particular affect on a five-point scale ranging from *slightly* (1) to *very much* (5). Cronbach’s alphas for the NA scale were .78 in the MS sample and .80 in the IDDM sample.

Denial was measured by the Denial scale of the COPE [42], consisting of four items representing refusal to believe that a stressor exists or trying to act as if the stressor is not existent [42]. Patients were asked to indicate the employment of this strategy on a five-point scale ranging from *never* (1) to *very often* (5). Cronbach’s alphas were .75 in the MS sample and .84 in the IDDM sample.

Objective physical health status

The EDSS [35] measures neurological functioning in MS patients. In the present study, EDSS was assessed by experienced neurologists familiar with EDSS recording. Although the EDSS is subject to interrater variability, rating by an experienced neurologist and the exclusion of the extreme end of the

EDSS scale (> 6.5), which is the case in the present study, increases interrater reliability [43]. According to the EDSS scores, 48% of the patients had minimal objective abnormality (score 1–2), 38% had mild disorder that did not interfere with normal activities of daily functioning (score 3–4), 4% was limited with regard to full activity without the need for assistance (4.5–5), and 10% needed assistance with walking (6–6.5).

Glycosylated haemoglobin (HbA1c) was used as a measure of objective health status of IDDM patients and assessed by the mean of daily blood glucose level for 60 days. HbA1c levels up to 7.5% indicate good metabolic control [44]. Forty percent of the IDDM patients in the present study were assessed as having good metabolic control (< 7.5%), while 60% had poor metabolic control (>7.5%).

Symptom report

Symptom report in MS patients was assessed by the *MSRelated Symptoms Checklist* [45], consisting of 26 neurological symptoms, including skeletal functions, kinaesthetic functions and emotions. In the present study, the four emotion-specific items were removed from the scale to determine the number of physical symptoms. Patients were asked to indicate the current frequency of experienced symptoms on a scale from *never* (0) to *always* (5). The MS-Related Symptoms Checklist has proven to be a reliable and valid measure for measuring neurological status in MS [45]. Cronbach's alpha was .86 in the present study. As fatigue is one of the most serious symptoms accompanying MS [46], fatigue symptoms were also measured by the General Fatigue scale of the Multidimensional Fatigue Inventory [47] (MFI). Patients answered four items about general fatigue on a five-point scale ranging from *completely* disagree (1) to completely agree (5). Cronbach's alpha was .85.

In order to assess symptom report in IDDM patients, they were asked to indicate whether their blood glucose level was unstable (yes/no). In addition, as fatigue is one of the most common symptoms accompanying hypoglycaemia and hyperglycaemia [26], fatigue symptoms were also measured by the General Fatigue scale of the MFI [47]. Cronbach's alpha was 0.89.

Self-care behaviour and physical functioning

Disease-specific self-care behaviours were measured by asking patients to indicate the frequency of such behaviours on a four-point scale ranging from *never* (1) to *always* (4). Relevant self-care behaviours for both diseases were derived from the literature. In the MS sample, *Energy Conservation*, a significant aspect of managing MS [46,48], was measured by 10 items including such behaviours as preserving the balance between activity and rest, preventing exhaustion, having sufficient sleep and asking other persons for help if necessary. Cronbach's alphas were .76 (t1) and .75 (t2). In the IDDM sample, Hypo/Hyperglycaemia Management directed at dealing with variations in blood glucose level, was measured by 13 items [49]. Patients were asked to indicate the frequency of testing their blood glucose level on a daily basis, pursued a regular living pattern, ate according to the dietary advice for IDDM and planned insulin injections when they were active. Cronbach's alphas were .70 (t1) and .67 (t2). Measures of self-care behaviour of the IDDM sample and MS sample were made comparable by transforming them to a 0–100 scale.

Physical functioning was measured by the physical functioning scale of the Outcome Study 36-Item Short-Form Health Survey (SF-36) [50]. This scale consists of 10 items and is internally consistent [51]. A lower score implies increased limitation in physical activity (including mobility range and activity level) and thus poorer physical functioning. Cronbach's alphas were .93 (t1) and .94 (t2) for the MS sample, and .70 (t1) and .85 (t2) for the IDDM sample.

Analyses

Before considering the hypotheses presented in the Introduction, the associations between optimistic beliefs and negative affectivity and denial were determined. Next, the impact of optimistic beliefs on symptom report was analysed by means of hierarchical regression analyses. The hierarchical model to be assessed involved objective health indicators including illness duration as control variables (Step 1) and the impact of the three optimistic beliefs (Step 2). Logistic regression analysis was employed for the prediction of the dichotomised symptom report of unstable blood glucose level (yes/no) as a dependent variable. In case of a significant relationship between optimistic beliefs and symptom report, the mediating role of negative affectivity and denial was tested according to the criteria of Baron and Kenny [52], implying that a mediator effect is present when the associations between the

predictor variable and the mediator as well as between the mediator and the outcome variable are stronger than the association between predictor and outcome.

With regard to the analysis of the impact of optimistic beliefs on self-care behaviour and physical functioning, the following model was tested by hierarchical regression analyses: Depending on the dependent measure, self-care behaviour at T1 or physical functioning at T1 was introduced as a control variable in the first step, followed by objective indicators of health status (Step 2) and optimistic beliefs (Step 3). Dependent variables were self-care behaviour at T2 and physical functioning at T2, respectively. In case of a significant relationship between optimistic beliefs and self-care behaviour or physical functioning, the mediating role of negative affectivity, denial, and symptom report was tested [52].

RESULTS

Descriptive data

Descriptive data on optimistic beliefs, negative affectivity, denial and outcome variables are presented in Table 2. Both samples were characterized by somewhat higher positive outcome expectancies compared to the norms for a healthy population (*M*= 14.3; S.D. = 4.3) and for coronary bypass patients (*M*= 15.2; S.D. = 4.0) [22]. Positive efficacy expectancies in both samples were equal to those in a healthy population [12]. As a group, patients reported high levels of unrealistic optimism, which was determined by comparing the group mean of each sample with the scale mean indicating unrealistic optimism (scale mean = 65) [14]. Both samples reported equally high levels of optimistic beliefs, negative affectivity and denial. IDDM patients reported significantly less fatigue symptoms and better physical functioning than MS patients.

[TABLE 2]

Optimism, negative affectivity and denial

Table 3 shows the associations between optimistic beliefs, negative affectivity and denial for both samples. Positive outcome expectancies were significantly related to less negative affectivity in both MS patients (r = -.39; P < .01) and IDDM patients (r = -.36; P < .01), while positive efficacy expectancies were significantly related to less denial in MS patients (r = -.39; P < .01), but not in IDDM patients. Unrealistic optimism was not related to either negative affectivity or denial in both samples.

[TABLE 3]

In the IDDM sample only, positive outcome expectancies were related to less self-reported unstable blood glucose (r = -.26, P < .05) and less fatigue (r = -.33, P < .01), thus indicating decreased symptom report. In both the MS and the IDDM sample, positive efficacy expectancies were related to increased report of self-care behaviours 6 months later, and in MS patients also to better physical functioning. Positive outcome expectancies and unrealistic optimism were related to better physical functioning 6 months later, but only in IDDM patients. In the following section, we will describe the results a series of regression analyses reporting the multivariate relations between optimistic beliefs, symptom report, self-care behaviour and physical functioning.

Optimistic beliefs and symptom report

Results of the regression analyses are presented in Table 4 and show that none of the optimistic beliefs were significantly related to symptom report by MS patients, controlling for the impact of objective health status (measured by the EDSS) and disease duration. In case of IDDM patients, neither positive efficacy expectancies or unrealistic optimism significantly predicted symptom report, controlling for objective health status (HbA1c) and disease duration. However, positive outcome expectancies were significantly related to a decreased report of fatigue symptoms. The latter

relationship was shown to be mediated by negative affectivity. Fig. 1 shows that the decreased report of IDDM patients with positive outcome expectancies was mediated by their lower negative affect.

[FIGURE 1]
[TABLE 4]

Optimistic beliefs, self-care behaviour and physical functioning

Table 5 shows that both in MS patients and IDDM patients, disease specific self-care behaviours (MS: energy conservation; IDDM: hypo/hyperglycaemia management) were primarily determined by positive efficacy expectancies at Time 1, controlling for the impact of self-care behaviour at T1 and objective health status. In both samples, positive outcome expectancies and unrealistic optimism did not significantly contribute to the prospective prediction of self-care behaviour and physical functioning at T2. We tested whether the relationship between positive efficacy expectancies and self-care behaviour was mediated by negative affectivity, denial or symptom report. There was no evidence of a mediating relationship for each of these variables in both samples.

[TABLE 5]

DISCUSSION

In the present study, we examined the impact of three types of optimistic beliefs on symptom report in MS and IDDM, along with its consequences for self-care behaviour and physical functioning 6 months later. We hypothesized that unrealistic optimism would lead to decreased symptom report and that the impact of unrealistic optimism on symptom report would be explained by more denial and less negative affectivity. Regarding the two other types of optimistic beliefs, positive outcome expectancies and positive efficacy expectancies, we hypothesized that they would contribute to increased engagement in self-care behaviour. Finally, we hypothesized that the negative impact of unrealistic optimism on self-care behaviour and physical functioning would be more manifested in IDDM, which requires a strict self-care regimen.

Our findings demonstrated that none of the three optimistic beliefs contributed to decreased symptom report in either MS patients or IDDM patients. Thus, contrary to our hypothesis, unrealistic optimism did not affect symptom report. In line with our hypothesis, the two other types of optimistic beliefs also did not affect symptom report with the exception that IDDM patients with positive outcome expectancies reported less fatigue symptoms, which was statistically explained by lower negative affect reported by these patients. The latter finding may be explained by the fact that IDDM patients are assumed to be able to control fatigue symptoms by adequate self-care behaviour, which may lead to an underestimation of the presence of fatigue symptoms in order to protect themselves from necessary action. Alternatively, decreased fatigue in patients with positive outcome expectancies may also be the result of adequate coping attempts to deal with fatigue—which would point to an adaptive function of optimistic outcome expectancies, reported in the literature [15,53]. Overall, the patients in our study were fairly able to provide accurate reports of symptom experience compared to their objective health status. This finding contradicts earlier studies, showing that subjective symptom report corresponded weakly with objective medical assessments of physical health [18,26,54]. A sense of accuracy in symptom report was also demonstrated by the absence of a relationship between optimistic beliefs and symptom report, showing that optimistic patients generally report similar levels of symptoms as patients who are less optimistic. This finding does not correspond with some earlier findings, reporting a biased influence of optimistic beliefs of symptom report [1,21]. This may be due to the type of measures that we employed, highlighting generalized optimistic beliefs not specific for health and illness. However, we know of only one study assessing the impact of symptom-specific positive expectancies, which demonstrated inconsistent results [53]. Therefore, like most other research on optimistic beliefs and symptom report, we believe that generalized optimistic beliefs are a relevant and useful approach to study the relationship between optimism and health, despite their obvious limitations. Moreover, a fair number of studies reporting on the relationship between optimistic beliefs and objective indicators of health status (e.g., number of activities following

surgery) did not find evidence of a biasing influence of optimistic beliefs [28,42]. Also, in a detailed daily process analysis, following patients with asthma or fibromyalgia for a consecutive number of days, Affleck et al. [53] could not detect an influence of optimistic beliefs on symptom report or attention to symptoms. The authors conclude that optimistic beliefs may provide patients with an adaptive advantage as they are ‘‘reluctant’’ to dwell on symptoms and invest efforts in adequate coping with symptoms [53].

This potential adaptive benefit of optimistic beliefs is also demonstrated in our findings relating to the role of optimistic beliefs in self-care behaviour. Our study showed that positive efficacy expectancies predict increased engagement in self-care behaviour in both MS and IDDM patients. This finding supports our second hypothesis, stating that optimistic beliefs contribute to self-care behaviour. However, contrary to our hypothesis, an impact of positive outcome expectancies on self-care behaviour and physical functioning was absent. Nor did unrealistic optimism have a negative impact on self-care behaviour and physical functioning in both patient groups. We will discuss these findings in the context of recent debate about the assumed beneficial impact of optimistic beliefs on health-protective behaviour.

In the past, discussion on the role of optimistic beliefs in health behaviour has been dominated by the assumption that optimistic beliefs were to some extent unrealistic or biased [14,15]. However, opinions regarding the impact of a biased interpretation of health status on subsequent health behaviour diverged. A number of authors maintain that the illusory belief that one is able to do something about one’s situation is the very reason why they continue to engage in health-protective efforts [11,15], while other authors believe that a biased interpretation of reality would lead to disengagement from health-protective efforts [6,14]. A number of studies suggest that these apparently opposing views regarding the role of optimistic beliefs may be explained by the type of optimistic belief involved [16]. Although it is unknown to what extent unrealistic optimism is indeed unrealistic [55], the concept of unrealistic optimism is assumed to relate to decreased health-protective efforts [16]. In contrast, both positive outcome expectancies and positive efficacy expectancies are assumed to contribute to increased engagement in health-protective efforts. Our findings regarding self-care behaviour and physical functioning support the assumed differential role of optimistic beliefs to some extent as only positive efficacy expectancies contributed to more health-protective behaviour, while an impact of positive outcome expectancies and unrealistic optimism on self-care behaviour and physical functioning was absent.

Recently, the debate on optimistic beliefs and health behaviour has taken another direction, exploring the possibility that optimistic beliefs may not necessarily be unrealistic and that a beneficial impact of optimistic beliefs on health is resulting from the fact that optimists can afford to attend to negative or threatening information concerning their health, for the very reason that they are optimistic [17,56]. Our study does not explicitly address this issue. However, our results indicate that patients who hold positive efficacy expectancies may indeed be more willing to engage in self-care behaviour.

A limitation of this study lies in its small sample sizes, potentially introducing a selection bias that may threaten generalization from its findings. However, as these samples were similar in demographic and illness characteristics compared with the full samples of our study [9] and representative on basic epidemiological data compared with referent populations [39], our results concerning the role of optimistic beliefs in symptom report, self-care behaviour and physical functioning in these patients may be valid. Taken together, our study strongly suggests that optimistic beliefs do not necessarily lead to biased symptom report and may even promote self-care behaviour. These findings lend some support for the idea that optimists may indeed be as ‘‘realistic’’ as less optimistic patients and at the same time benefit from their positive view regarding their ability to deal with disease-specific stressors. Further research in this area should focus on differential effects of different concepts of optimism as well as on differential effects of optimistic beliefs relating to the extent that disease may be controlled by self-care behaviour.

ACKNOWLEDGMENTS

The authors acknowledge the contribution to the study of Dr. G.E.M.G. Storms, internist; Dr. S.T.F.M. Frequin, neurologist; and Dr. J.E.C. Bromberg, neurologist.

TABLES AND FIIGURES

Table 1
Characteristics of MS and IDDM samples

	MS ($n=50$)		IDDM ($n=65$)		P
Sex (male/female)	42:58 (%)		43:57 (%)		ns
Partner (% yes)	84		80		ns
Paid employment (% yes)	58		83		<.01
	MS ($n=50$)		IDDM ($n=65$)		
	M	S.D.	*M*	S.D.	*P*
Age (in years)	44	9.6	34	9.2	<.001
Time since diagnosis (in years)	4	3.9	11	4.3	<.001

Table 2
Means, standard deviations and scale ranges of all measures

	MS ($n=50$)		IDDM ($n=65$)		Scale
	M	S.D.	*M*	S.D.	range
Optimistic beliefs					
Positive outcomes expectancies	16.9	3.5	16.7	3.4	0–24
Positive efficacy expectancies	29.3	5.4	30.4	3.9	10–40
Unrealistic Optimism	75.4	14.4	78.1	13.2	13–117
Physical status					
EDSS	2.8	1.7			1–6.5
HbA1c			7.9	1.3	5–12
Symptom report[a]					
Gulick (MS)/Unstable blood glucose (IDDM)	28.7	12.5	27.7	45.1	0–100
Fatigue	14.1[1]	4.2	10.3[2]	4.9	4–20
Factors relating to positive bias					
Negative Affectivity	18.9	5.3	18.5	5.3	10–50
Denial	6.6	2.7	6.2	2.8	4–20
Self-care behaviour					
Time 1	44.9[1]	18.2	63.3[2]	35.3	0–100
Time 2	48.9	16.1	54.8	13.6	0–100
Physical functioning					
Time 1	21.6[1]	5.6	28.7[2]	2.0	10–30
Time 2	21.9[1]	5.8	28.4[2]	2.5	10–30

Rows with different numerical superscripts indicate a significant difference between the MS sample and the IDDM sample.

[a] For reasons of comparison between MS patients and IDDM patients, the original symptom scales were transformed to a 0–100 scale (in this table only).

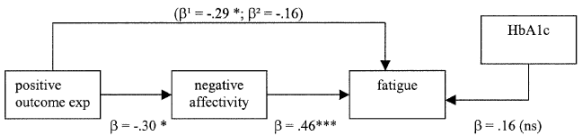

Fig. 1. Mediation effect of negative affectivity between the relation of positive outcome expectancies and fatigue in IDDM patients ($n=65$). [1]Not controlling for negative affectivity in the relation between LOT-R and General Fatigue (see Table 3). [2]Controlling for the mediating role of negative affectivity.

Table 3
Correlation matrix of optimistic beliefs with physical status, symptom report, personality factors and self-care behaviours

	MS ($n=50$)			IDDM ($n=65$)		
Time 1	Positive outcome expectancies	Positive efficacy expectancies	Unrealistic optimism	Positive outcome expectancies	Positive efficacy expectancies	Unrealistic optimism
Optimistic beliefs						
Positive outcome expectancies						
Positive efficacy expectancies	−0.04			0.26*		
Unrealistic optimism	0.16	−0.06		0.19	0.14	
Physical status						
EDSS/HbA1c	−0.11	0.13	0.03	−0.15	−0.09	−0.09
Symptom report						
Gulick/unstable blood glucose	−0.02	−0.01	−0.05	−0.26*	−0.09	−0.18
Fatigue	0.12	0.03	−0.06	−0.33**	−0.13	−0.20
Personality factors						
Negative affectivity	−0.39**	−0.07	−0.08	−0.36**	−0.23	−0.24
Denial	0.11	−0.39**	0.12	−0.10	−0.10	−0.12
Self-care behaviour						
Time 1	0.03	0.16	−0.12	0.11	0.20	0.03
Time 2	−0.02	0.44**	−0.20	0.05	0.30*	−0.04
Physical functioning						
Time 1	0.01	−0.29*	0.13	0.24	0.14	0.14
Time 2	0.04	−0.09	0.14	0.36**	0.15	0.28*

* $P<.05$.
** $P<.01$.

Table 4
Hierarchical multiple regression analyses predicting symptom report at Time 1 (MS: $n=50$; IDDM: $n=65$)

	MS symptom report (Gulick scale)		MS fatigue report		IDDM symptom report (unstable blood glucose)		IDDM fatigue report	
	β	$R^2/p(\Delta F)$	β	$R^2/p(\Delta F)$	β	$R^2/p(\Delta F)$	β	$R^2/p(\Delta F)$
Step 1		22**		05		10*		05
Time since diagnosis	0.10		−0.18		0.15		−0.06	
EDSS/HbA1c	0.44**		0.28		0.18		0.19	
Step 2		24		08		15		16
Positive outcome expectancies	0.05		0.16		−0.16		−0.29*	
Positive efficacy expectancies	−0.08		0.03		0.01		−0.02	
Unrealistic optimism	−0.07		−0.10		−0.13		−0.12	
R^2		24%		8%		15%		16%

* $P<.05$.
** $P<.01$.

Table 5
Hierarchical multiple regression analyses predicting changes in self-care behaviour and physical functioning from baseline to 6 months later (MS: $n=50$; IDDM: $n=65$)

	MS				IDDM			
	Self-care behaviour: energy conservation		Physical functioning		Self-care behaviour: hypo/hyperglycemia management		Physical functioning	
	β	$R^2/p(\Delta F)$	β	$R^2/p(\Delta F)$	β	$R^2/p(\Delta F)$	β	$R^2/p(\Delta F)$
Step 1		48***		65***		13**		29***
Self-care behaviour/ physical functioning at T1	0.62***		0.71***		0.30*		0.39***	
Step 2		48		68		17		39**
EDSS/HbA1c	0.03		−0.21		−0.18		−0.30	
Step 3		60**		70		23		46
Positive outcome expectancies	0.01		0.01		−0.05		0.19	
Positive efficacy expectancies	0.33***		0.14		0.26*		−0.01	
Unrealistic optimism	−0.09		0.06		−0.09		0.16	
R^2		60%		70%		23%		46%

* $P<.05$.
** $P<.01$.
*** $P<.001$.

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