

# Utilized Resources of Hope, Orientation, and Inspiration in Life of Persons with Multiple Sclerosis and Their Association with Life Satisfaction, Adaptive Coping Strategies, and Spirituality

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**Abstract** In a cross-sectional survey among 213 patients with multiple sclerosis, we intended to analyze their resources of hope, orientation, and inspiration in life, and how these resources are related to health-associated variables, adaptive coping strategies, and life satisfaction. Resources were categorized as *Faith* (10 %), *Family* (22 %), *Other sources* (16 %), and *No answer* (53 %). These non-respondents were predominantly neither religious nor spiritual (70 % R–S–). Although R–S– persons are a heterogeneous group with varying existential interest, they did not significantly differ from their spiritual/religious counterparts with respect to physical and mental health or life satisfaction, but for an adaptive *Reappraisal* strategy and *Gratitude/Awe*.

**Keywords** Multiple sclerosis · Resources · Adaptive coping · Life satisfaction · Spirituality

## Introduction

People with chronic diseases are the largest conglomerate of patients in our society. In Europe, 77 % of diseases come from non-contagious, mostly chronic diseases (Maaz et al. 2007). One of such chronic diseases is multiple sclerosis (MS), which significantly impairs both quality of life and life goals. Due to its often unpredictable course of exacerbations and remissions, and due to the fact that there is no “cure” and only symptomatic and immunomodulatory therapy (Bragazzi 2013), patients often experience social isolation, are depressed, and report lower quality of life than community comparison groups (McCabe and McKern 2002), and thus, they have a higher risk of suicide (Feinstein 2002; Pompili

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et al. 2012; Turner et al. 2006). Therefore, patients with MS have to find strategies to deal with their unpredictably occurring symptoms and insecure future.

With respect to the “Transactional Model of Stress and Coping” by Park and Folkman, the ability to cope with stressors (i.e., symptoms of illness) requires that people are able to reflect their resources, can find meaning in it, and recognize this stressor as important. It is about an active effort and not about just an appliance of successful coping strategies (Eppel 2006; Kaluza 2011; Lazarus and Folkman 1984). Persons require an awareness of their own resources to cope with illness. Particularly, when the medical management of illness is insufficient or disease cannot be “cured,” persons may ask for other, more powerful sources of help and could rely on a specific faith tradition or individual approaches to more individual forms of spirituality (i.e., also in terms of finding meaning in life, emotional comfort, finding new hope, and praying to connect with the sacred). These strategies can be both emotion and problem oriented.

So far, there are only a few studies which address the relevance of spirituality in the life of patients of MS, or ask for their sources of hope and orientation in life at all. Interestingly, a qualitative study among seven patients with MS found that during the course of disease, they observed “positive changes in terms of their values and outlook,” and these patients reported that their functional difficulties and psychological challenges were “ameliorated to some extent by an increased appreciation for life and spirituality” (Irvine et al. 2009). An other qualitative study enrolling older patients with MS found that adaptation to the disease was influenced by social comparisons, mobility/independence, integration of MS into self-identity, acceptance, pacing and planning, finding meaning/cognitive reframing, social support, generativity, and religion/spirituality (DiLorenzo et al. 2008). Skår et al. (2013) underlined the importance of peer support for self-identity and empowerment in MS.

Currently, research is accumulating that spirituality/religiosity (SpR) may in fact be a helpful resource to cope with chronic disease (Büssing et al. 2005b, 2007, 2009b, 2013a; Koenig 1998; Koenig et al. 1992; Levine et al. 2009; Pargament 2001; Pargament et al. 2004; Wachholtz and Pearce 2009; Zwingmann et al. 2006, 2008). Ken Pargament introduced the concept of “Religious Coping” (Pargament 2001), where he differentiated a *deferring style* (all problems are delegated to an external source such as God who may solve these problems), a *self-directing style* (the individual chooses to utilize the power of an external sources such as God has given them to solve the problem on their own), and a *collaborative style* (individuals treat external sources such as God as a teammate in the problem solving process) (Phillips III et al. 2004). The latter style has the greatest psychological benefit with an increased self-esteem and a lower level of depression.

However, first empirical findings indicated that patients with MS may have relatively low religious trust (Büssing et al. 2005b) and are less engaged in spiritual/religious forms of practice (Büssing et al. 2005a) when compared to patients with other chronic disease. Having lower interest in spiritual/religious issues would mean that faith as a resource is of minor relevance for these patients (Büssing et al. 2013a, b). This lack of religious interest must not necessarily mean lack of interest in any form of secular (non-religious) spirituality (i.e., “cosmic unity,” “loving kindness,” and “mindful awareness”). While one cannot ignore the fact that the proportion of individuals who have no interest in institutional religiosity or with a specific atheistic attitude is increasing (REMID 2012), one has to recognize that occasionally atheists may be “spiritual” as well (Streib and Hood 2011). Atheism per definition means to reject a belief in God or something divine, but these (“skeptical”) persons could nevertheless rely on other, non-theistic forms of

spirituality. With respect to Schnell (2010), one may talk about “existential indifference” on the one hand, or a strict self-declared a-theism on the other hand. Keenan and Schnell (2011) identified three types of atheists which differ with respect to their levels of meaningfulness and frequency of crises of meaning they may suffer from. Particularly, “existential indifferent” persons showed “low commitment to all sources of meaning” and were even disinterested in self-knowledge, spirituality/religiosity, and generativity (Schnell 2010). Particularly, these “indifferent persons” will be addressed in the following analyses, too.

Up to now, there is limited knowledge about this growing fraction of relatively young “skeptical” persons which might be the chronically ill persons of the near future. The relevant point of interest thereby is to identify the resources “a-religious skeptics” (or indifferent persons) may use to cope. Because age is positively related to measures of spirituality, even secular forms of spirituality (Büssing et al. 2005b), we intended to focus on patients with MS which are diagnosed often at relatively low age of the persons (between 25 and 40 years of age), and thus might be rather an a-religious person than a nominal believer. Which are their sources of hope, orientation and inspiration in life?

This analysis is the second part of a study among patients with MS (Büssing et al. 2013b) and aims (1) to analyze resources of hope, orientation, and inspiration in life used by persons with MS with and without a religious/spiritual attitude, (2) whether these individual resources are of self-ascribed benefit to deal with various life concerns, and (3) how these resources are related to health-associated variables, mood states, life satisfaction, and adaptive coping strategies—particularly with respect to a reappraisal attitude in terms of life reflection in the light of illness.

## Materials and Methods

### Patients

We focused on patients with MS because they are relatively young (that means a relatively large cohort of a-religious persons to compare with religious/spiritual persons), and they have to deal with an illness which is characterized by an often unpredictable course of exacerbations and remissions with significant impairment of life goals and by the fact that there is no “cure.” One may assume that this insecurity may have an influence on their sources to find or maintain meaning in life.

All individuals of this anonymous, multi-center, cross-sectional study were informed about the purpose of the study, were assured of confidentiality and their right to withdraw at any time, and were asked to provide informed consent. Ethical approval was obtained by the IRB of Witten/Herdecke University (#03/2012).

Patients with MS were consecutively recruited from four specialized hospitals, i.e., Department of Neurology, Communal Hospital Herdecke, Herdecke; Department of Neurology and Palliative Care, Köln-Merheim Hospital, Cologne; Neurological Hospital, Clinic of Lüdenscheid, Lüdenscheid; and Augustahospital, Isselburg-Anholt. Eighty one percent of the distributed questionnaires were answered.

Inclusion criteria were verified diagnosis of MS, age between 18 and 65 years, and written consent to participate; exclusion criteria were manifest psychic diseases/affectations (ICD-10 classifications F0-F5).

## Measures

All patients received a set of standardized questionnaires (including options for free statements, too) and responded by themselves to these instruments which were described in detail below.

### *Resources of Hope and Self-Ascribed Benefit*

Because we expected that several patients might have objections against institutionalized religion or may not regard their faith as a resource, we provided an open question about their personal resource which gives hope, orientation, and inspiration to personal life. This question was introduced by the phrase: “Each person has its own points of view and attitudes about spirituality (this does not mean card reading or belief in ghosts). Even those who are more reserved against religion in a closer sense, may have something what gives meaning, orientation, hope and inspiration to their life (some may call it ‘spirituality’).”

Then, the patients were invited to formulate their own resource: “That, what gives hope, orientation and inspiration to my life, or that what carries me through, is....” These responses were categorized later on as *Faith/Religion* (=Faith); *Family, Partner, Children* (=Family); *Other sources of meaning* (=Other sources); or *No answer* (=No answer). This “no answer” category includes persons who did not state a specific resource, but have answered the other questions, indicating that they either have no specific resource or are unclear about such a resource,

Finally, patients were advised to refer the items of the following *Benefit* scale (Büssing and Koenig 2008) to their individual resource, i.e., “Referring to your above mentioned meaning of “spirituality,” how far do you agree with the following statements?” (with the exception of persons in the “no answer” category). This *Benefit* scale was used to determine the role of the stated resources with respect to various life concerns. Items address whether or not the own “spirituality/religiosity” (including the above mentioned interpretations) helps to cope better with illness or arising problems, to manage life more consciously, and to restore to mental and physical health, gives rise of feeling of inner peace, promotes inner strength, and brings a deeper connection with others and the world around (Büssing and Koenig 2008).

The *Benefit* scale has a very good internal reliability (Cronbach’s alpha = .93) (Büssing and Koenig 2008). All items were scored on a five-point scale from disagreement to agreement (0—does not apply at all; 1—does not truly apply; 2—do not know (neither yes nor no); 3—applies quite a bit; 4—applies very much).

### *Engagement in and Importance of Spiritual Activities*

To differentiate various forms of specific spiritual practices and to investigate the self-ascribed importance of these activities, we used the SpREUK-P questionnaire (Büssing 2012; Büssing et al. 2005a). The generic instrument was designed to measure the engagement in organized and private religious, spiritual, existential, and philosophical practices. In its shortened 17-item version, it differentiates five main factors (Büssing 2012; Büssing et al. 2005a):

- *Religious practices* (alpha = .82), i.e., praying, church attendance, religious events, religious symbols

- *Prosocial-Humanistic practices* (alpha = .79), i.e., help others, consider their needs, do good, connectedness
- *Existentialistic practices* (alpha = .77), i.e., meaning in life, self-realization, get insight
- *Gratitude/Awe* (alpha = .77), i.e., feeling of great gratitude, feelings of wondering awe, experienced and valued beauty
- *Spiritual (mind body) practices* (alpha = .72), i.e., meditation, rituals, working on a mind–body discipline [i.e., yoga, qigong, mindfulness]

The items of the SpREUK-P are scored on a four-point scale (0—never; 1—seldom; 2—often; 3—regularly). The scores can be referred to a 100 % level (transformed scale score), which reflect the degree of an engagement in the distinct forms of a spiritual/religious practice (“engagement scores”). Scores >50 % indicate higher engagement, while scores <50 indicate rare engagement.

To measure the corresponding self-ascribed importance, we added a four-point scale to describe the degree of importance of respective activities (0—not at all, 1—some, 2—very much, 3—essential). Also these scores were referred to a 100 % level (transformed scale score). Scores >50 % indicate higher importance, while scores <50 % indicate lower importance.

### *Engagement in and Importance of Specific Daily Life Activities*

To specify daily life activities and to investigate the self-ascribed importance of these activities which might be of relevance for the patients, we added 13 single items theoretically categorized as (A) Arts and crafts [“I do my own thing with arts (painting, handworking, pottery), I make music alone or with others”], (B) Culture (“I make use of cultural offers”), (C) Writing reflection (“I write down my thoughts like diary, poetry, short stories”), (D) Physical activities (“I do physical training,” “I dance”), (E) Enjoying life (“I enjoy good food”), (F) Speaking with others (“I often or regularly speak about myself and my disease to...” ... friend, partner, pastor, doctor or others), (G) Physical closeness (“I consume massages,” “I get physical closeness from partner”).

Engagement frequency was measured like the items of the SpREUK-P on a four-point scale (0—never; 1—seldom; 2—often; 3—regularly), while self-ascribed importance was scored on a four-point scale, too (0—not at all, 1—some, 2—very much, 3—essential).

### *Spiritual/Religious Self-Categorization*

According to their responses to the SpREUK items f2.6 (“To my mind I am a religious individual” = R) and f1.1 (“To my mind I am a spiritual individual” = S), the participants were categorized as religious but not spiritual (R+S−), as not religious but spiritual (R−S+), as both religious and spiritual (R+S+), or as neither religious nor spiritual (R−S−) (Büssing et al. 2005b).

The respective items were scored on a five-point scale from disagreement to agreement (0—does not apply at all; 1—does not truly apply; 2—do not know (neither yes nor no); 3—applies quite a bit; 4—applies very much). To avoid internal conflicts, we did not provide information how a religious or a spiritual individual should be defined.

### *Awareness of Existential Problems*

To further characterize a-religious/“skeptical” patients, we used the eight-item scale “Awareness of Existential problems” (“Existenzielles Problembewusstsein”; ExisPro)

(Rosendahl and Strauss 2008). These eight items address how important it is for a person to be concerned with questions of the existence of higher powers and God, existence and meaning of man, meaning of death, ethical issues, etc. Interest in the respective issues was scored as “not at all,” “weak,” “moderate,” “fairly,” and “very/strong.”

The respective items were categorized as “Immanence” ( $\alpha = .75$ ) on the one hand and “Transcendence” ( $\alpha = .80$ ) on the other hand (Rosendahl and Strauss 2008). According to the pattern of answers, one may identify four types of “existential interest,” i.e., Type 1: low Immanence and low Transcendence scores (=low existential interest); Type 2: high Immanence and low Transcendence scores (=humanistic interest); Type 3: low Immanence and high Transcendence scores (=mystic interest); Type 4: high Immanence and high Transcendence scores (=comprehensive existential interest). For this study, Types 2 and 3 were combined and labeled as “partial existential interest.”

### *Adaptive Internal Coping Strategies*

Adaptive coping strategies in response to MS were measured with the AKU questionnaire (AKU is an acronym of the German translation of “Adaptive Coping with Disease”), which was designed to identify adaptive coping styles, such as to create favorable conditions, search for information, medical support, religious support, social support, initiative spirit, and positive (re)interpretation of disease (Büssing et al. 2006, 2008). For this analysis, we focused on internal resources rather than external resources and used the following sub-scales:

- *Reappraisal: Positive Interpretation of Illness* (Cronbach’s  $\alpha = .83$ ), which addresses a reappraisal attitude referring to cognitive processes of life reflection in response to illness (i.e., reflect on what is essential in life; illness has meaning; illness as a chance for development; appreciation of life because of illness).
- *Conscious Way of Living* ( $\alpha = .73$ ), which addresses cognitive and behavioral strategies in terms of internal powers and virtues (i.e., healthy diet; physical fitness; living consciously; keep away harmful influences; change life to get well).
- *Positive Attitudes* ( $\alpha = .68$ ), which refers to internal cognitive and behavioral strategies (i.e., realization of shelved dreams and wishes; resolving cumbering situations of the past; take life in own hands; doing all that what pleases; positive thinking; avoiding thinking of illness).

We added two single items addressing the attitudes toward own belief, i.e., X1 (“My faith is a strong hold in difficult times”) and X2 (“Because of my experiences I have lost my faith”).

All items were scored on a five-point scale from disagreement to agreement (0—does not apply at all; 1—does not truly apply; 2—do not know (neither yes nor no); 3—applies quite a bit; 4—applies very much). The sum scores were referred to a 100 % level (transformed scale score). Scores >60 % indicate high agreement or utilization of coping strategy, while scores <40 % indicate low usage of respective strategy; scores between 40 and 60 indicate indifference.

### *Life Satisfaction*

Life satisfaction was measured with the *Brief Multidimensional Life Satisfaction Scale* (BMLSS) (Büssing et al. 2009a) which refers to Huebner’s “Brief Multidimensional Students’ Life Satisfaction Scale” (Huebner et al. 2004; Zullig et al. 2005). The eight items

of the BMLSS address intrinsic (*Myself, Life in general*), social (*Friendships, Family life*), external (*Work situation, Where I live*), and prospective dimensions (*Financial situation, Future prospects*). The internal consistency of the instrument was good ( $\alpha = .87$ ) (Büssing et al. 2009a). For this analysis, we used a 10-item version of the BMLSS which also includes satisfaction with the health situation and satisfaction with the own abilities to manage daily life concerns. This 10-item scale has a very good reliability ( $\alpha = .92$ ).

Moreover, we used three further items addressing satisfaction with the support by family, partner or friends as an additional scale (“Satisfaction with social support” scale).

Each item was introduced by the phrase “I would describe my level of satisfaction as ...,” and scored on a seven-point scale from dissatisfaction to satisfaction (0—terrible; 1—unhappy; 2—mostly dissatisfied; 3—mixed (about equally satisfied and dissatisfied); 4—mostly satisfied; 5—pleased; 6—delighted). The BMLSS sum score refers to a 100 % level (“delighted”).

### *Mood States*

To assess patients’ mood states (in terms of mental quality of life/well-being), we relied on the 19-item ASTS scale (“Aktuelle Stimmungslage Skala”) of Dalbert (Dalbert 1992) which refers to McNair’s Profile of Mood States (POMS). The ASTS measures the state component of subjective well-being and differentiates five mood states, i.e., Positive Mood (six items), Sorrow (three items), Despair (three items), Tiredness (four items), and Anger (three items). The internal consistency of the factors ranges from  $\alpha = .83$  to  $.94$ . The scale has a seven-point rating scale ranging from 0 (not at all) to 7 (very strong).

### *EDSS Score*

To classify the condition of the patients, we used the “Expanded Disability Status Scale” (EDSS). The EDSS is a method of quantifying disability (in terms of physical and cerebral functioning/quality of life) in MS and monitoring changes in the level of disability over time (Kurtzke 1983). The EDSS scale ranges from 0 to 10 in .5 unit increments that represent higher levels of disability. Scoring is based on an examination by a neurologist.

EDSS steps 1.0–3.5 refer to people with MS who are able to walk unrestricted, and are based on measures of impairment in eight functional systems, i.e., pyramidal—weakness or difficulty moving limbs; cerebellar—ataxia, loss of coordination or tremor; brainstem—problems with speech, swallowing and nystagmus; sensory—numbness or loss of sensations; bowel and bladder function; visual function; cerebral (or mental) functions; and other.

Each functional system is scored on a scale of 0 (no disability) to 5 or 6 (more severe disability). EDSS steps 4.0–9.5 are defined by the impairment to walking.

### *Multiple Sclerosis Associated Fatigue*

To measure fatigue associated with MS (in terms of physical and cognitive quality of life/function), we used the “Fatigue Scale for Motor and Cognitive Functions” (FSMC) (Penner et al. 2009). This 20-item instrument has a very good internal consistency ( $\alpha > .91$ ). Ten items refer to the cognitive scale and ten items to the motoric scale, which all were scored on a five-point Likert scale ranging from 1 (does not at all) to 5 (applies very



much). FSMC sum scores  $\geq 43$  indicate mild fatigue,  $\geq 53$  moderate fatigue, and  $\geq 63$  strong fatigue.

### *Self-Perceived Health Affections*

Patients' self-perceived impairment of daily life because of the health situation/disease ("health affections") was measured with a visual analogue scale ranging from 0 (none) to 100 (unbearable).

## **Statistical Analyses**

Descriptive statistics as well as analyses of variance, first-order correlations, and regression analyses were computed with SPSS 22.0. In this study, mean values  $\pm$  standard deviations are given and also standardized scores ( $z$  values). We judged  $p < .05$  as significant; for correlation analyses, we chose a significance level  $p < .001$ . With respect to classifying the strength of the observed correlations, we regarded  $r > .5$  as a strong correlation, an  $r$  between  $.3$  and  $.5$  as a moderate correlation, an  $r$  between  $.2$  and  $.3$  as a weak correlation, and  $r < .2$  as no or a negligible correlation.

## **Results**

### **Characteristics of Enrolled Patients**

Two-hundred and thirteen patients from four different German hospitals were enrolled in this study. As shown in Table 1, 75 % were women and 22 % were men (4 % did not provide these data). All were diagnosed with MS with a mean affection time of  $11 \pm 9$  years. The gender distribution corresponds to a women surplus approximately to the MS prevalent of twice as many females affected as males. Patients' average age was  $43 \pm 11$  years. More than two-thirds (73 %) were living with a partner (either married or not) and 27 % were living alone (either single or divorced).

With respect to their spiritual/religious self-perception, 70 % regarded themselves as not religious (54 % R–S–, and 16 % R–S+), while 12 % were R+S+ and 19 % R+S– (Table 1). All further socio-demographic data are presented in Table 1.

Within the sample, 51 % had a relapsing remitting MS course, 25 % progressive relapsing MS, and 23 % chronic progressive MS. The average EDSS score was  $3.7 \pm 1.8$  ranging from 0 to 9.5 (26 % did not provide the respective data).

All patients showed a moderate level of positive mood ( $24.4 \pm 7.6$  from the maximum 41), low scores for grief ( $7.7 \pm 4.7$ ; maximum 21), and very low scores for hopelessness ( $6.0 \pm 3.8$ ; maximum 19), but considerable tiredness ( $15.1 \pm 6.6$ ; maximum 28).

### **Individual Resources of Orientation, Hope, and Inspiration**

Our main aim was to analyze patients' self-perceived resources of orientation, hope, and inspiration. Patients' individual statements to this open question can be categorized as either *Faith* (10 %), or *Family* (22 %), or *Other sources* (16 %; i.e., nature, creativity, individual fulfillment, appreciation, happiness, animals, and love), or *No answer* (53 %).



**Table 1** Characteristics of 213 patients with MS

Variables*	Mean/%
Gender (%)	
Women	78
Men	22
Age, years (mean, SD)	42.6 ± 11.4
Family status (%)	
Married	56
Living with partner	17
Divorced	8
Single	19
Educational level (%)	
Secondary (Hauptschule)	22
Junior high school (Realschule)	33
High school (Gymnasium)	36
Other	9
Religious orientation (%)	
Christian	74
Other	8
None	18
Spiritual/religious self-perception (%)	
Neither religious nor spiritual (R–S–)	54
Not religious but spiritual (R–S+)	16
Religious but not spiritual (R+S–)	19
Both religious and spiritual (R+S+)	20
Employment status (%)	
At pension	32
Unable to work	7
Unemployed	3
House work	8
Self-employed	4
Employed (business)	46
Course of MS (%)	
Relapsing remitting	51
Progressive relapsing	25
Chronic progressive	23
EDSS score (mean, SD; range)	3.7 ± 1.8 (0–7.5)
0.0–1.5 (%)	10
2.0–3.5 (%)	29
4.0–6.5 (%)	33
7.0–10 (%)	2
No information (%)	26
Support group (%)	13
Self-perceived health affection (mean ± SD, range)	42.3 ± 21.5 (0–100)

\* Data refer on the responding patients (i.e., eight individuals did not state their gender, or 20 individuals did not provide information on their course of MS)

When asked for the perceived benefit of their given resources, individuals with *Faith* as a resource had the highest Benefit scores (mean:  $75.4 \pm 22.5$ ;  $z$  value:  $.86 \pm .68$ ), followed by *Other sources* (mean:  $61.9 \pm 31.4$ ;  $z$  value:  $.46 \pm .95$ ) and *Family* (mean:  $55.1 \pm 29.1$ ;  $z$  value:  $.25 \pm .88$ ). These differences are statistically significant ( $F = 3.5$ ;  $p = .035$ ).

### Differences in Individual Resources with Respect to Socio-Demographic and Health-Related Variables

Patients within these four categories did not significantly differ for age, course of disease, life satisfaction, health affection, or MS fatigue (Table 2). However, patients in the *No answer* group were more often male, had a lower educational status, and had higher EDSS scores when compared to the persons in the other resource groups.

Moreover, there were no significant differences in their engagement in leisure time activities (i.e., cultural offers, making music, arts and crafts, physical training, dancing, massages, and physical closeness) (data not shown), while there were some marginal differences with respect to enjoying food ( $F = 3.9$ ;  $p < .0001$ ; highest in *Other sources* and lowest in *Family* patients) and writing down thoughts ( $F = 3.2$ ;  $p = .024$ ; highest in *Faith* and lowest in *No answer* patients).

We are unclear about the reasons why they did not state a specific resource, particularly because they were able and willing to comment on their mood states, quality of life, health affections, and their spiritual/religious engagement. Particularly, this spiritual/religious self-categorization may have an influence on the stated resources. It was striking that in the *No answer* group 70 % were R–S–, while in the *Family* group 50 % were R–S– and 40 % in the *Other sources* (further 40 % R–S+), while in the *Faith* group most were religious (44 % R+S– and 28 % R+S–) (Table 2).

We therefore focused on MS patients' spiritual/religious self-categorization (specifically R–S– vs. their religious and/or spiritual counterparts) and analyzed the associations with health-associated variables, mood states, life satisfaction, and adaptive coping strategies.

### Characterization of R–S– Patients in Contrast to Their SpR+ Counterparts

As shown in Table 4, R–S– patients did not differ from their religious and/or spiritual counterparts (R+S+ or R+S– or R–S+) with respect to their age, health status, life satisfaction, or adaptive coping strategies and other variables (Table 3). However, R–S– patients had a somewhat lower educational status and were more often male than female. However, R–S– persons had lower *Reappraisal* scores and were less engaged in various spiritual practices, including *Gratitude/Awe* and *Existential practices* (which are not necessarily spiritual issues).

These R–S– patients stated as resources of hope and orientation, *Family* in 21 %, *Other sources* in 12 % (i.e., nature, animals, hope, enjoy life, etc.), *Faith* in 1 %, while 65 % did not state any resource (*No answer*), while their SpR+ counterparts stated *Faith* in 20 %, *Family* in 25 %, *Other sources* in 21 and 33 % gave *No answer* ( $p < .0001$ ).

To further characterize these R–S– patients, we analyzed their grade of “existential interest.” As shown in Table 4, 49 % had comprehensive existential interest, 19 % partial existential interest, and 32 % had no existential interest. Among R+S+ patients, none were existentially not interested, yet 10 % of R+S– patients, and 17 % of R–S+ patients.

**Table 2** Resources and socio-demographic and health-associated data

	Faith	Family	Other sources	No answer	F value/ $\chi^2$ (p value)
% of the sample	10	22	16	53	
Age (years)	44.3 ± 11.6	40.1 ± 10.9	42.5 ± 11.0	43.3 ± 11.6	1.0 (n.s.)
Gender*					.044
Women	100	82	77	71	
Men	0	18	23	29	
Educational status*					.027
Secondary (Hauptschule)	10	20	9	28	
Junior high (Realschule)	35	20	31	37	
High school (Gymnasium)	55	44	53	25	
Other	0	16	6	9	
SpR self-categorization*					<.0001
R+S+	44	14	13	3	
R+S-	28	21	7	20	
R-S+	22	14	40	8	
R-S-	6	50	40	70	
Course of disease*					n.s.
Relapsing remitting	60	59	59	43	
Progressive relapsing	25	18	21	31	
Chronic progressive	15	23	21	26	
Health/life satisfaction associated variables					
Perceived health (0–100) affection (VAS)	39.2 ± 21.8	40.7 ± 22.5	39.6 ± 23.0	44.8 ± 20.8	9 (n.s.)
z value	-.17 ± 1.01	-.10 ± 1.04	-.15 ± 1.07	.09 ± .97	
Fatigue (20–100) (FSMC)	67.7 ± 23.0	66.6 ± 20.7	60.3 ± 19.7	67.3 ± 19.9	1.0 (n.s.)
z value	.08 ± 1.14	.03 ± 1.03	-.29 ± .98	.06 ± .99	
EDSS score (0–10)	3.3 ± 1.2	3.6 ± 1.9	2.9 ± 1.7	4.1 ± 1.7	3.7 (.014)
z value	-.27 ± .99	-.08 ± 1.06	-.46 ± .97	.22 ± .99	

Table 2 continued

	Faith	Family	Other sources	No answer	F value/ $\chi^2$ (p value)
Life satisfaction (0–100) (BMLSS)	67.6 ± 21.1	69.5 ± 15.2	72.3 ± 14.2	68.8 ± 17.2	.4 (n.s.)
z value	-.09 ± 1.24	.02 ± .89	.18 ± .83	-.02 ± 1.01	
Positive mood (0–41)	24.8 ± 6.6	24.1 ± 7.6	26.4 ± 6.7	24.0 ± 7.8	.9 (n.s.)
z value	.05 ± .87	-.04 ± 1.01	.26 ± .89	-.06 ± 1.03	

\* % of the respective source group

**Table 3** Characterization of patients with and without spiritual/religious orientation

	R–S–	R+S+/R+S–/R–S+	F value/ $\chi^2$ (p value)
% of the sample	54	46	
Age (years)	42.5 ± 10.6	41.4 ± 11.8	.4 (n.s.)
Gender*			<.0001
Women	67	89	
Men	33	11	
Educational status*			.002
Secondary (Hauptschule)	30	10	
Junior high (Realschule)	33	32	
High school (Gymnasium)	27	50	
Other	10	8	
SpR self-categorization*			<.0001
R+S+	0	25	
R+S–	0	40	
R–S+	0	35	
R–S–	100	0	
Course of disease*			n.s.
Relapsing remitting	51	57	
Progressive relapsing	29	25	
Chronic progressive	21	19	
EDSS score	3.8 ± 1.7	3.4 ± 1.8	2.0 (n.s.)
z value	.06 ± .98	–.18 ± .99	
Life satisfaction (BMLSS)	67.3 ± 17.8	70.9 ± 15.8	2.1 (n.s.)
z value	–.11 ± 1.04	.10 ± .92	
Perceived health affection (VAS)	44.6 ± 21.0	38.6 ± 21.9	3.4 (.065)
z value	.08 ± .98	–.20 ± 1.02	
Fatigue (FSMC)	65.0 ± 20.7	66.0 ± 20.5	.1 (n.s.)
z value	–.05 ± 1.03	–.00 ± 1.02	
Adaptive coping strategies (AKU)			
Conscious way of living	71.1 ± 17.1	75.2 ± 17.6	2.5 (n.s.)
z value	.09 ± .98	.15 ± 1.01	
Positive attitudes	69.6 ± 17.9	74.2 ± 14.9	3.5 (.064)
z value	–.09 ± 1.08	.19 ± .90	
Reappraisal	40.1 ± 22.7	58.1 ± 25.1	25.7 (<.0001)
z value	–.26 ± .87	.42 ± .96	
Engagement in spiritual practices (SpREUK-P)			
Humanistic practice	61.8 ± 19.1	68.8 ± 16.7	6.6 (.011)
z value	–.17 ± 1.01	.20 ± .89	
Existential practices	37.3 ± 21.8	57.6 ± 25.5	32.8 (<.0001)
z value	–.31 ± .82	.46 ± .96	
Gratitude/awe	36.1 ± 18.4	55.5 ± 21.8	40.9 (<.0001)
z value	–.37 ± .83	.51 ± .99	
Religious practices	12.7 ± 14.1	34.7 ± 27.0	48.4 (<.0001)
z value	–.41 ± .51	.51 ± 1.13	

**Table 3** continued

	R–S–	R+S+/R+S–/R–S+	F value/ $\chi^2$ (p value)
Spiritual (mind body) practices	14.1 ± 18.9	30.7 ± 27.0	23.1 (<.0001)
z value	–.28 ± .78	.41 ± 1.11	
Speaking about disease (0–100)	52.1 ± 24.0	55.3 ± 23.0	.08 (n.s.)
z value	.07 ± 1.02	–.07 ± 1.02	

Results are % of the respective variables or mean ± standard deviation, respectively

\* Cross tabulation ( $\chi^2$ )

Interestingly, MS patients with or without existential interest/disinterest did not significantly differ with respect to socio-demographic variables, health status, mood or positive attitudes, but for *Reappraisal* on the one hand and *Gratitude/Awe* and *Existential practice* on the other hand, which scored lowest in patients with no existential interest (Table 4).

### Predictors of Reappraisal as an Adaptive Coping Strategy

Because of the outstanding relevance of the *Reappraisal* variable in the aforementioned analyses (which is not necessarily a specific aspect of spirituality/religiosity), we performed stepwise regression analyses to reveal the best predictors of this adaptive coping strategy. As shown in Table 5, the best predictors were *Religious practices*, *Existential practices*, *Conscious Way of Living*, *Positive Attitudes*, and positive mood. These variables account for 36 % of variance. Socio-demographic variables (i.e., gender, age, living with/without partner, high school education; spiritual/religious self-categorization) on the one hand and health/life satisfaction associated variables (i.e., EDSS score, cognitive MS-associated fatigue, general life satisfaction) on the other hand were not among the significant variables entering the regression model.

### Discussion

While several studies have shown that patients with chronic diseases may rely on their spirituality as a resource to cope (Büssing et al. 2005a, 2007, 2009b, 2013a, b; Koenig 1998; Koenig et al. 1992; Levine et al. 2009; Pargament 2001; Pargament et al. 2004; Wachholtz and Pearce 2009; Zwingmann et al. 2006, 2008), first studies among patients with MS have shown relatively low religious trust (Büssing et al. 2005b, 2007) and low engagement in spiritual/religious forms of practice (Büssing et al. 2005a) when compared to patients with other chronic diseases. This would indicate that for several patients with MS, other resources than spirituality/religiosity might be of relevance. This study aimed to analyze such resources of hope, orientation, and inspiration in life, and whether or not these individual resources were of benefit to deal with patients' life concerns on the one hand, and how these resources are related to health-related variables and adaptive coping strategies on the other hand.

### Differences between the Four Resource Groups

With respect to the personal resources of hope, orientation, and inspiration, and what carries them through life and illness, we found that most patients with MS did not state a

**Table 4** Characterization of R–S– patients with and without existential interest

	No existential interest (Type 1)	Partial existential interest (Type 2/3)	Comprehensive existential interest (Type 4)	F value	p value
All patients (n = 154)	32 %	19 %	49 %		.002
R+S+ (%)	0	8	92		
R+S– (%)	10	30	60		
R–S+ (%)	17	22	61		
R–S– (%)	39	20	41		
Only R–S– patients (n = 93)					
Adaptive coping strategies					
Conscious way of living	69.8 ± 18.6	68.8 ± 17.7	73.8 ± 16.0	.7	n.s.
z value	–.16 ± 1.07	–.22 ± 1.02	.07 ± .92		
Positive attitudes	69.7 ± 19.7	69.9 ± 23.5	69.1 ± 14.0	.0	n.s.
z value	–.08 ± 1.19	–.06 ± 1.42	–.11 ± .85		
Reappraisal	31.1 ± 20.7	37.8 ± 22.4	47.7 ± 21.9	5.6	.005
z value	–.61 ± .79	–.35 ± .86	.03 ± .84		
Life satisfaction	64.8 ± 21.5	72.0 ± 17.7	68.2 ± 14.4	.9	n.s.
z value	–.25 ± 1.25	.16 ± 1.03	–.06 ± .84		
Positive mood	22.6 ± 9.2	26.0 ± 8.1	24.4 ± 5.4	1.3	n.s.
z value	–.24 ± 1.22	.20 ± 1.07	–.00 ± .72		
EDSS score	3.7 ± 1.1	3.7 ± 2.3	3.9 ± 1.8	.1	n.s.
z value	–.04 ± .60	–.01 ± 1.29	.07 ± 1.03		
Fatigue (sum score)	63.9 ± 20.1	66.9 ± 22.2	62.4 ± 20.8	.3	n.s.
z value	–.11 ± 1.00	.04 ± 1.11	–.18 ± 1.03		
Perceived health affection (VAS)	42.6 ± 21.5	43.4 ± 23.6	44.0 ± 19.6	.0	n.s.
z value	.04 ± 1.00	.03 ± 1.10	.05 ± .91		
Spiritual practices					
Humanistic practices	59.5 ± 18.7	67.1 ± 20.9	62.6 ± 18.9	.9	n.s.



Table 4 continued

	No existential interest (Type 1)	Partial existential interest (Type 2/3)	Comprehensive existential interest (Type 4)	F value	p value
z value	-.30 ± 1.00	.11 ± 1.11	-.13 ± 1.00		
Existential practices	25.6 ± 17.6	39.5 ± 22.6	45.8 ± 20.5	9.7	<.0001
z value	-.75 ± .66	-.22 ± .85	.01 ± .77		
Gratitude/awe	25.4 ± 17.4	42.6 ± 13.3	43.3 ± 16.5	12.6	<.0001
z value	-.86 ± .79	-.08 ± .60	-.05 ± .75		
Religious practices	10.1 ± 13.8	10.3 ± 11.6	15.2 ± 14.4	1.5	n.s.
z value	-.52 ± .58	-.51 ± .49	.31 ± .61		
Spiritual (mind–body) practices	7.6 ± 13.5	17.3 ± 15.0	16.3 ± 21.3	3.0	.055
z value	-.54 ± .56	-.14 ± .62	-.18 ± .88		

Results are % of the respective variables or mean ± standard deviation, respectively

**Table 5** Predictors of reappraisal (stepwise regression analyses)

Dependent variable: <i>Reappraisal: Positive Interpretation of Illness</i> Model 5: $F = 12.9, p < .0001; R^2 = .36$	Beta	<i>T</i>	<i>p</i>	Collinearity statistics*	
				Tolerance	VIF
(constant)		-2.470	.015		
Conscious way of living (AKU)	.222	2.594	.011	.758	1.320
Existential practices (SpREUK-P SF17)	.204	2.512	.013	.847	1.181
Religious practices (SpREUK-P SF17)	.231	3.013	.003	.951	1.052
Positive attitudes (AKU)	.218	2.550	.012	.760	1.316
Positive mood (ASTS)	.159	2.095	.038	.963	1.038

Included variables were gender, age, living with/without partner, high school education; spiritual/religious self-categorization (R–S– vs. SpR+); engagement in spiritual/religious/existential practices (SpREUK-P SF17 subscales); EDSS score, cognitive MS-associated fatigue (FSMC), adaptive coping strategies (AKU), mood states (ASTS), life satisfaction, and satisfaction with family/partner support. Depicted are only significant variables which entered the model

\* Because the regression coefficients may be compromised by collinearity, we checked the variance inflation factor (VIF) as an indicator for collinearity. VIF > 10 is indicative of high collinearity

specific source (53 % *No answer*), while 22 % stated *Family*, 16 % *Other sources* (i.e., nature, creativity, individual fulfillment, appreciation, happiness, animals, and love), and 10 % *Faith*.

The self-ascribed Benefit of the respective resource was highest in patients in the *Faith* category, followed by patients in the *Other sources* category, and lowest in patients within the *Family* category. This Benefit refers to a deeper connection with others and the world around, to the abilities to manage life more consciously, to cope better with illness or arising problems, and to restore them to mental and physical health, feeling of inner peace, and inner strength.

Interestingly, 70 % of those persons who did not state a specific resource regarded themselves as R–S–, but responded to several other items, indicating that they either have no specific resource or are unclear about such a resource—or are not willing to respond to this “private” dimension. These R–S– can be further differentiated as those with a comprehensive existential interest (41 %), with partial existential interest (20 %), and no existential interest (39 %). Thus, it is not per se that R–S– persons are disinterested in any existential issues; rather it seems that a relatively large fraction may not see the relevance of these issues for their life concerns, while particularly the highly spiritual/religious persons and those with comprehensive existential interest would do. Indeed, previous studies have shown that religious trust (as a measure of intrinsic religiosity) was moderately correlated with patients’ reflection of their life concerns (i.e., reflect on what is essential in life; hint to change life; chance for development; and illness has meaning) (Büssing et al. 2005b, 2007). Schnell (2010) reported on atheist persons which can be labeled as “existential indifferent.” These persons had “low commitment to all sources of meaning” and had “particular disinterest in self-knowledge, spirituality, explicit religiosity, and generativity,” while their mental health status (i.e., depression and anxiety) was comparable to that of others. It might be that our group of predominantly R–S– patients could belong at least partially to such a group of existentially indifferent persons. Future studies have to clarify this.

In line with Schnell's finding drawn from a healthy population that mental health measures of "existential indifferent" persons were comparable with those of the other persons, patients with MS in our study did not significantly differ for most physical health-associated variables (i.e., course of disease, perceived health affection, and fatigue) and life satisfaction too. Also their engagement in specific daily life activities (i.e., cultural offers, arts and crafts, physical training, and physical closeness) did not differ significantly between these groups. Yet, patients who stated no resource had significantly higher EDSS scores than the other patients, indicating slight functional disability. However, we have no data on whether particularly these patients might have had frontal lobe lesions or ideation/ thought disturbances which may have an impact on states of consciousness, ideations, and self-reflection. On the other hand, these patients did not differ from others with respect to their general life satisfaction or perceived health affections. Nevertheless, the *No answer* patients further stand out for a lower educational status and a higher part of male patients. These variables are known to have a negative influence on aspects of spirituality (Büssing et al. 2005b, 2007).

With respect to the relevance of spiritual/religious issues, our findings are in contrast to a qualitative study by DiLorenzo et al. (2008) enrolling 13 older individuals with MS. The authors stated that religious/spiritual beliefs were very important to the enrolled 13 patients and played an important role in their adaptation. In that study, the benefit consisted in experiencing hope, gratitude, awe, and strength (DiLorenzo et al. 2008). Although in our study only for 10 % their *Faith* was a resource, the findings nevertheless fit to our data that particularly patients who stated *Faith* as resource or identified themselves as either religious or spiritual had significantly higher *Reappraisal* scores and higher *Gratitude/Awe* scores (which is often regarded as a specific facet of religiosity, but is of course also of relevance for a-religious persons).

### Predictors of Reappraisal as an Adaptive Coping Strategy

It was striking that particularly the primarily non-religious *Reappraisal* strategy showed strong differences both with respect to the stated resources of hope and orientation on the one hand, and patients' spiritual/religious self-categorization and existential interest categories. In fact, it was lowest in R–S– patients and those with no specific existential interest. This scale addresses cognitive processes of life reflection in response to illness (i.e., reflect on what is essential in life; illness has meaning; illness as a chance for development; appreciation of life because of illness).

Regression analyses revealed that the best predictors of this *Reappraisal* strategy were engagement in religious and existentialistic practices, adaptive coping strategies such as *Conscious Way of Living* and *Positive Attitudes*, and with smaller influence also positive mood states. Thus, this reflexive reappraisal strategy may indicate some kind of "inner transformation" (as observed in patients with HIV too by Ironson and Kremer 2009; Kremer and Ironson 2014) with the option to reconsider priorities and appreciate life as it is, and thus deal with life concerns more consciously. It seems that particularly spiritual/religious patients with MS have more options to refer to this strategy.

Nevertheless, this *Reappraisal* strategy is only marginally related to patients' life satisfaction ( $r = .12$ ;  $p = .096$ ), but moderately with self-ascribed Benefit of the resources of hope and orientation in life ( $r = .48$ ;  $p < .0001$ ). This means, whether or not patients may reflect their life concerns, their life satisfaction is quite high and not influenced by this process of reflection.

## Receiving Social Support

A qualitative study about coping strategies of MS patients showed that peer support was very important to exchange information “for self-identity and empowerment,” which was regarded as a community strategy to coping with the disease-related conditions and social demands (Skår et al. 2013). Also other studies mentioned the importance of social network/support and accessing information about MS (DiLorenzo et al. 2008; Knaster et al. 2011). We asked for patients’ satisfaction with perceived support by family, partner, and friends on the one hand and the frequency of speaking with others about their disease (i.e., family, partner, friends, physician, chaplain, and others) on the other hand. In our study, most were indeed talking with their medical doctor, partner or friends about their disease, regardless of the stated resource or spiritual self-categorization.

## Limitations

A limitation of this study was the cross-sectional design, which does not allow for causal interpretations; longitudinal studies are needed to substantiate the findings of this study. A further limitation is that we recruited patients with rather moderate EDSS scores. Most of them have a normal daily life and thus may “ignore” their underlying disease. With respect to the categorized EDSS scores, patients with higher EDSS scores had higher fatigue scores ( $F = 9.3$ ;  $p < .0001$ ), perceived daily life affections ( $F = 17.0$ ;  $p < .0001$ ), and were more tired ( $F = 2.9$ ;  $p = .037$ ), while the other psychometric variables did not significantly differ (data not shown). Moreover, we did not measure directly cognitive impairment, which could influence the outcome of this study. While mood state, EDSS score, course of disease, perceived health affection, and fatigue would already characterize specific conditions, further studies with a clear coverage of cognitive impairment are needed to verify this hypothesis, as well as further analyses with high-maintenance patients with progressive courses of disease.

Of course we have to deal with the large fraction of persons who did not state a resource of hope and orientation life. They are either not able to state such a resource (because they do not have such a source), or they are unwilling to respond to such “private” issues. On the other hand, they did respond to other variables, including SpR self-categorization, and were found to be predominantly R–S–. Thus, we contrasted these R–S– persons with their SpR counterparts (either R+S+ or R+S– or R-S) and gained more reliable data.

## Conclusions and Consequences for Healthcare Professionals

Whatever the resources of hope, orientation, and inspiration in life were, there were no significant differences with respect to specific measures of physical and mental health. Nevertheless, particularly spiritual/religious patients had significant higher *Reflection* scores and could significantly more often name their personal resource than their R–S– counterparts. This process to reflect life concerns on the one hand and to name a personal resource of hope and orientation in their life on the other hand, might be helpful to cope with disease. Particularly, the spiritual/religious patients appreciated and valued their life stronger—even despite their symptoms. But what do these specific findings signify for healthcare professionals and the healthcare system?

First of all, also the R–S– patients (which are in fact a heterogeneous group with varying existential interest) may have specific resources they may rely on to cope, and these resources are not necessarily different from the resources used by the spiritual/religious counterparts; yet, they differ with respect to other attitudes, behaviors, and perceptions. A simple categorization of patients as “religious” (who may thus receive support from a pastoral minister) or “a-religious/atheist” (who may receive support from a psychologist) might be practicable but is less appropriate. These a-religious persons may nevertheless also have specific spiritual and/or religious needs (Büssing et al. 2013a). Moreover, also these a-religious persons can rely on specific resources such as meditation and yoga, may ask for meaning in life, may experience gratitude and awe, etc. Therefore, healthcare professionals and psychologists have to be aware that even those who cannot state reliable resource of hope and orientation in their life may nevertheless have such resources—yet, they need help to recognize them and to get access.

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