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Stress-stimulated volitional coping competencies and depression in multiple sclerosis

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ABSTRACT

Objective: The present study examined the relationship between volitional modes of coping (self-regulation, volitional inhibition, and self-control) and depression in individuals with multiple sclerosis.
Methods: A cross-sectional study of 121 participants aged 22–60 years with clinically defined MS who were consecutively admitted to a neurological rehabilitation center during a 23-month period. Correlation analyses and hierarchical regressions were conducted to evaluate the predictive value of volitional competencies (Volitional Components Questionnaire, short form, VCQ-S) on depression (Centre for Epidemiologic Studies Depression Scale, CES-D), while controlling for demographic (age, gender, and education) and certain clinical variables (Expanded Disability Status Scale, EDSS; disease duration; and Modified Fatigue Impact Scale, MFIS).
Results: Hierarchical regression analyses of depression revealed a model in which 68% of the variance in the CES-D was explained by *daily stress situations (VCQ-S)*, *self-regulation (VCQ-S)*, *fatigue (MFIS)*, and *education*. However, when the analysis included only participants who had scored above the cut-off of the CES-D (n = 42), the VCQ-S factor *volitional inhibition* seemed to play a more relevant part in depression. In particular, the VCQ-S scales *stimulation of self-access*, *stimulation* of *volitional inhibition*, *self-motivation*, and *emotional perseverance/state orientation after failure* appear to be valuable predictors on CES-D.
Conclusions: The results suggest that personality-accentuated volitional coping competencies elicited by daily stressful situations could be a relevant factor for depressive mood states in individuals with MS. However, to clarify the exact relationships of this rather circular framework, longitudinal study designs with objective measurements and a stronger focus on MS-specific stressors are needed.

Introduction

Multiple sclerosis (MS) is a chronic (immune-mediated) disease. It is the most common cause of chronic neurological disability in young adults in North America and Europe, with onset commonly between 20 and 40 years of age, and two to three females are afflicted for every male [1]. The course of MS is uncertain, with some individuals showing a steady, often rapid, deterioration, and a small number having a benign course with few symptoms, but most have a relapsing–remitting course, marked by periodic attacks or exacerbations that remit partially or fully [2].

MS can produce a wide variety of symptoms, including, but not limited to, loss of function or feeling in limbs, loss of bowel or bladder control, sexual dysfunction, fatigue, blindness, loss of balance, pain, cognitive impairment, and emotional changes [3]. A sizable portion of the emotional impact of MS can be viewed in terms of affective disorders that may accompany the illness. Foremost among these is depression, with prevalence rates ranging from 14% to 57% in cross-sectional studies [4,5]. Evidence for an organic etiology of depression in MS has been mixed, with some studies reporting a depression and lesion load. It has also been suggested that depression may result from MS-specific medications (e.g., interferons) [6]. Other findings indicate that major depressive disorder (MDD) may occur as a prodrome to MS, and may delay diagnosis of the condition [7].

Given the broad spectrum of consequences of MS and its uncertain prognosis, depression may also be related to the stress of having such an illness, because MS can have widespread effects on individuals and on family life, ranging from mild interruption in daily routine to complete disruption of everyday life. By virtue of the disease pattern and its long-term nature, individuals must not only make an initial adjustment to disability, but are also required to undergo a continual process of coping and adaptation [1,8,9].

The vast majority of the literature on coping with MS has been guided by the well-known stress coping model of Lazarus and Folkmann [10]. In this model [11], and in many other traditional approaches, the central role of beliefs, appraisals and cognitive content in adapting to the physical, psychosocial, economic, and environmental needs of the individual is emphasized [12].

In comparison, the volitional coping model by Kuhl [13] shows how emotions and relevant personality traits affect cognition and behavior in adjusting to stress, sickness, or critical life events. "Volition" is conceptualized as the central control instance that coordinates

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mental processes and subsystems (attention, motivation, emotion, activation, cognition, and behavior) in a way that optimizes implementation and maintenance of intentions. This interpretation of volition in terms of a *central executive* requires a modular concept of the mind: many cognitive, emotional, motivational, and temperamental (arousal) processes are simultaneously active, and each of them modulates a different behavioral tendency competing for access to an operating system that controls ongoing behavior [14].

Kuhl and Fuhrmann [14] postulated a variety of volitional competencies that are utilized by individuals to regulate and adapt to internal and external demands. They identified three main volitional coping modes that can be described as either consciously deployable strategies or unconsciously represented mechanisms: (1) a self-integrating, action-oriented mode of coping (self-regulation mode: e.g., emotional control or adaptation-calming); (2) a self-inhibiting, passive state-oriented mode of coping (volitional inhibition mode: e.g., initiating or energy control); and (3) a self-suppressive, but active and stimulus-sensitive, mode of coping (self-control mode: e.g., intention control or ruminative thinking). Example items of these volitional coping modes are provided in Table 1.

Action and *state orientation* are two opposing poles in Kuhl's approach to volitional action management: *action orientation* is associated with efficient and context-sensitive self-regulation competencies, whereas *state orientation* describes the inability to regulate negative affective states and is related to volitional components promoting the conservation of stress [16]. According to Kuhl's *affect-cognition modulation hypothesis*, positive affect facilitates self-regulation strategies and reduces volitional inhibition while negative affect increases self-access inhibition and facilitates self-control. Thus, situations that reduce positive affect or enhance negative affect (e.g., frustration, exposure to uncontrollable events, and unpredictability of aversive events) can be regarded as antecedents of goal-oriented behavior or inhibition of access to integrated self-representations (e.g., people's needs, preferences, beliefs, attitudes, and positive mood states), respectively [13].

Some studies examining Kuhl's volitional coping modes suggest that self-regulation competencies are associated with better social relationships and interpersonal skills [15] and that they are particularly necessary for patients with psychiatric or psychosomatic disorders because they promote recovery from stress and correlate with fewer reports of psychopathology [16–18].

The present study attempted to apply the concept of volitional coping competencies posed by Kuhl and Fuhrman [14] in individuals with MS. We expected to find meaningful associations between self-regulation and self-control competencies in relation to the degree of acute depressive symptoms. As the relationship between volitional competencies and depression in the MS population has been largely overlooked, we hoped that the present study could shed light on the heterogeneous concepts of depression in this chronic disease.

Methods

Participants

During a 23-month period, 121 individuals with clinically defined MS [19], who were consecutively admitted to the Neurological Rehabilitation Center "Godeshöhe," were invited to participate in this study, which took place from July 2009 to June 2011. All participants provided written informed consent, and the study protocol was approved by the Ethics Board of the Faculty of Medicine, University of Bonn, and conformed to institutional and federal guidelines for the protection of human subjects. The inclusion criteria were as follows: (1) an Expanded Disability Status Scale (EDSS) [20] score of between 0 and 8.0 (at admission), (2) no current or past life-threatening or severely-disabling physical disorder, (3) no history of psychotic disorders, (4) no history of substance abuse, (5) no evidence of severe cognitive impairment, as indicated by testing below the fifth percentile in at least three of five domains of neuropsychological functioning (i.e., visuo-spatial skills, attention, orientation, learning/memory, and executive function), (6) no current MS exacerbation, (7) no pregnancy, and (8) no inability to speak or read German.

Of the 121 participants, 60 (49.59%) had relapsing–remitting (RRMS), 19 (15.70%) had secondary progressive (SPMS), and 27 (22.31%) exhibited a primary progressive (PPMS) disease course. Fifteen (12.40%) participants suffered from a first (mono-/multifocal) neurologic

Table 1
Factors, scales, volitional components, and sample items of the Volitional Components Questionnaire, short form (VCQ-S)

Factor/scales	Components	Sample items
Self-regulation mode (factor 1)		
Self-motivation	Motivation control	"Considering positive incentives concerning the matter"
	Emotion control	"Cheering myself up to make things work"
Arousal control	Adaptation-activating	"Being fit if matters get serious"
	Adaptation-calming	"Being able to calm down if this will help"
Self-determination	Self-congruence	"Feeling at one with my decision"
	Optimism/self-efficacy beliefs	"Looking forward to overcoming unpleasant times"
Volitional inhibition mode (factor 2)		
State orientation	Initiating	"Beginning something without hesitation"
	Energy control	"Feeling dispirited and exhausted/feeling dull"
Volitional passivity	Procrastination	"Postponing the matter"
	External control	"Keep going only if someone threatens to became angry"
Self-criticism/strength of concentration	Susceptibility to intrusive thought	"Being unable to keep negative thoughts not related to a current activity from intruding into working memory"
	Impulse control	"Feeling defenseless when exposed to temptation"
Self-control mode (factor 3)		
Goal pursuit	Intention control	"Often rehearsing my decision"
	Over control	"Imposing discipline on myself"
Alienation/conformity	Informed introjection	"Feeling obliged to meet the expectations of others"
	Negative self-motivation control	"Anticipating negative consequences of not acting"
Emotional perseverance/state orientation after failure	Ruminative thinking	"Constantly asking myself how I could have done better"
	Failure control	"Losing my drive after a failure"
Daily stress situations (factor 4)		
Burdens	Stimulation of volitional inhibition	"I have to overcome a lot of trouble"
Threats	Stimulation of self-access	"There are many changes in my life to which I must adapt" or "I have to cope with a lot of instability"