

#### 40 Social Support Moderates the Relationship Between Pain and Sleep Quality in Multiple Sclerosis

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**Objective:** Lower levels of social support in persons with Multiple Sclerosis (PwMS) are associated with myriad poor outcomes including worse mental health, lower quality of life, and reduced motor function (Kever et al., 2021). Social support has also been associated with physical pain (Alphonsus et al., 2021) and sleep disturbance (Harris et al., 2020) in PwMS. Pain is one of the most common symptoms of MS (Valentine et al., 2022) and is also known to be related to sleep disturbance (Neau et al., 2012). With these considerations in mind, the goal of the current study was to examine social support as a possible moderator in the relationship between pain and sleep quality in PwMS.

**Participants and Methods:** This cross-sectional study included 91 PwMS (females = 76). A neuropsychological battery and psychosocial questionnaires were administered. For sleep quality a composite was created from the sleep and rest scale of the Sickness Impact Profile (SIP), sleep-related items on the Multiple Sclerosis-Symptom Severity Scale (MS-SSS) (i.e., sleeping too much or sleep disturbance, fatigue or tiredness, and not sleeping enough), and an item from the Sleep Habits Questionnaire (SHQ) ("How many nights on average are you troubled by disturbed sleep?"). This composite ( $\alpha = .76$ ) has been used in prior research. Lower scores were indicative of worse sleep quality. Pain intensity and pain interference were measured using the Brief Pain Inventory (BPI). Pain intensity was calculated from four pain indices (i.e., pain at its worst in the last 24 hours, at its least in the last 24 hours, on average, and current pain at the time of the assessment) and pain interference was calculated from seven indices (i.e., general activity, mood, walking ability, normal work, relationships with others, sleep, and enjoyment of life). The Social Support Questionnaire (SSQ) measured average satisfaction with supports. A series of hierarchical linear regressions were conducted with the sleep quality index as the outcome variable and satisfaction with social

supports, both indices of pain (intensity and interference), and their interactions as predictors. Then, simple effects tests were used to clarify the pattern of any significant interactions.

**Results:** Regression analysis revealed that the interaction between pain interference and satisfaction with social support was significant ( $p = .034$ ). Simple effects tests revealed that when satisfaction with social support was high, pain interference was associated with better sleep quality ( $p < .001$ ). The interaction between pain intensity and satisfaction with social supports was also significant ( $p = .014$ ). Simple effects test revealed that at high levels of satisfaction with social supports, pain intensity was associated with better sleep quality ( $p < .001$ ).

**Conclusions:** Satisfaction with social support moderated the relationship between pain interference and pain intensity on sleep quality in PwMS. Specifically, high satisfaction with social support buffers against the negative effects of pain interference and pain intensity on sleep quality in PwMS. This provides evidence that interventions aimed at increasing social supports in PwMS may lead improvements in sleep quality and reduce the impact of pain on sleep quality.

**Categories:** Multiple Sclerosis/ALS/Demyelinating Disorders

**Keyword 1:** multiple sclerosis

**Keyword 2:** sleep

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#### 41 High Stress and Negative Attributional Style is Associated with Depression Symptoms in Multiple Sclerosis

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**Objective:** Depression is highly prevalent in persons with multiple sclerosis (pwMS). A reformulated version of the learned helplessness theory posits that individuals who attribute the cause of negative events to personal factors (internal), perceive that the cause persists for a long period of time (stable), and believe it is present in all situations (global) are at an increased risk for depression. As such, it is critical to examine possible modifiable factors that buffer against the deleterious effects of negative attributional style. Therefore, the current study investigated whether stress moderates the relationship between negative attributional style and depression symptoms in an MS sample.

**Participants and Methods:** Thirty-six pwMS (30 Female, 6 Male) completed a comprehensive neuropsychological test battery and psychosocial questionnaires that assessed cognitive attributional style, daily stressors, and depression symptoms. The Attributional Style Questionnaire (ASQ) was used to create internal, stable, and global attribution dimension scores, as well as an overall attributional style score combining the three dimensions. Stress was quantified as the total score of perceived hassles from the Hassles and Uplifts Scale (HUS). Depression symptoms were measured using the Beck Depression Inventory-Fast Screen (BDI-FS). Hierarchical linear regressions were conducted with depression symptoms as the outcome variable. Each dimension of attributional style (internal, stable, global, or overall ASQ), stress, and their interactions were included as predictors. Simple effects tests were used to clarify the pattern of any significant interaction.

**Results:** Regression analyses revealed that the interaction between overall attributional style and stress was significant ( $p = .025$ ). Simple effects tests revealed that overall attributional style was associated with depression symptoms only in pwMS with high levels of stress ( $p = .015$ ). For the individual dimensions of the ASQ, several interactions were also significant. The interaction between the internal dimension and stress was significant ( $p = .009$ ), such that internal attributions were associated with depression symptoms only in pwMS with high levels of stress ( $p = .002$ ). The interaction between the stable dimension and stress was also significant ( $p = .01$ ); stable attributional style was associated with depression symptoms only in pwMS with high levels of stress ( $p = .009$ ).

The interaction between the global dimension and stress was not significant.

**Conclusions:** Stress moderated the relationship between negative attributional style and depression symptoms in pwMS. Specifically, the internal and stable dimensions and overall attributional style were associated with increased depression symptoms only in pwMS who reported high levels of stress, but not in those with low levels of stress. Interventions aimed at reducing and managing stress may help protect against the effects of negative cognitive schemas on depression symptoms in MS. Additionally, previous research demonstrates that attributional style may be a malleable target of evidence-based psychotherapy (Seligman et al., 1988; Proudfoot et al., 2009). Our findings suggest that cognitive therapy specifically targeting the internal and stable dimensions of attributional style may be effective in modifying attributional style, perceptions of stress and, subsequently, improve depression outcomes in MS.

**Categories:** Multiple

Sclerosis/ALS/Demyelinating Disorders

**Keyword 1:** multiple sclerosis

**Keyword 2:** depression

**Keyword 3:** emotional processes

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## 42 Real-time Associations Among MS Symptoms and Cognitive Dysfunction Using Ecological Momentary Assessment

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**Objective:** The current study aimed to examine real-time associations between non-cognitive symptoms and cognitive dysfunction (latter measured both objectively and subjectively in