



## Individual differences and self-regulatory fatigue: optimism, conscientiousness, and self-consciousness

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### ABSTRACT

Ability to self-regulate varies and self-regulatory strength is a limited source that can be depleted or fatigued. Research on the impact of individual differences on self-regulatory capacity is still scarce, and this study aimed to examine whether personality factors such as dispositional optimism, conscientiousness, and self-consciousness can impact or buffer self-regulatory fatigue. Participants were patients diagnosed with chronic multi-symptom illnesses ( $N = 50$ ), or pain free matched controls ( $N = 50$ ), randomly assigned to either a high or low self-regulation task, followed by a persistence task. Higher optimism predicted longer persistence ( $p = .04$ ), and there was a trend towards the same effect for conscientiousness ( $p = .08$ ). The optimism by self-regulation interaction was significant ( $p = .01$ ), but rather than persisting despite self-regulatory effort, optimists persisted longer only when not experiencing self-regulatory fatigue. The effects of optimism were stronger for controls than patients. There was also a trend towards a similar conscientiousness by self-regulation interaction ( $p = .06$ ). These results suggest that the well-established positive impact of optimism and conscientiousness on engagement and persistence may be diminished or reversed in the presence of self-regulatory effort or fatigue, adding an important new chapter to the self-regulation, personality, and pain literature.

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## 1. Introduction

People vary in the way they approach and cope with difficult and challenging situations, and individual differences could potentially impact ability to self-regulate (Hagger, Wood, Stiff, & Chatzisarantis, 2010; Hoyle, 2006). Research on the impact of individual differences on self-regulatory capacity is in its infancy, and the current study sought to examine whether personality factors such as optimism, conscientiousness, and self-consciousness can influence, perhaps even buffer, impact of self-regulatory effort. Self-regulatory capacity may also play a role in chronic multi-symptom illnesses (CMI; Solberg Nes, Carlson, Crofford, de Leeuw, & Segerstrom, 2010; Solberg Nes, Roach, & Segerstrom, 2009), and the current study also sought to examine the role of individual differences, in the face of self-regulatory effort, for patients with CMI compared with pain free controls.

### 1.1. Self-regulation and individual differences

Self-regulation involves any effort to control internal or external, mental or physical, activities (Carver & Scheier, 1998). Ability to self-regulate varies, however, and research has shown self-regulatory efforts such as having to control thoughts, impulses, and emotions to be associated with decreased persistence on subsequent tasks, an effect known as ego depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998) or self-regulatory fatigue (SRF). The strength model hypothesis proposes that exercising self-control depends on a common resource, which again is limited and may become depleted or fatigued, almost like a muscle (Baumeister, Vohs, & Tice, 2007; Baumeister et al., 1998). Examining the effect of depletion on task performance and outcomes in 82 separate studies, a recent meta analysis found support for the depletion effect and strength model hypothesis, but suggested that alternative explanations such as lack of motivation, fatigue, and negative affect may also play a role (Hagger et al., 2010). This indicates a need for further explorations of the potential underlying mechanisms of the SRF effect.

Fatigue of self-regulatory resources may moderate trait effects on behavior (Baumeister, Gailliot, DeWall, & Oaten, 2006), and individual differences such as personality could potentially

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influence self-regulatory effort or capacity (Hoyle, 2006). In fact, personality traits such as optimism, conscientiousness, and self-consciousness often impact how people deal with challenges, approach tasks, goals, and stressors (Carver & Scheier, 1998; Costa & McCrae, 1992), and could also play an important role in the mechanisms of self-regulation.

#### 1.1.1. Dispositional optimism

Optimism has been positively associated with approach coping strategies aiming to manage stressors, and negatively associated with avoidance coping strategies aiming to avoid stressors (Solberg Nes & Segerstrom, 2006). Optimists see positive outcomes as attainable, and are subsequently more likely to invest continued effort in order to achieve their goals (Carver, Blaney, & Scheier, 1979; Solberg Nes, Segerstrom, & Sephton, 2005). This type of behavior may also impact how optimists cope with self-regulatory demands. For example, in a study examining pursuit of personal goals in female patients with Fibromyalgia Syndrome (FMS), optimistic patients were less likely to decrease engagement or give up on goals, even on difficult days (Affleck et al., 2001), suggesting that optimists may persist longer in situations requiring self-regulatory effort, perhaps despite SRF.

#### 1.1.2. Conscientiousness

Conscientiousness represents thoroughness and self-discipline, and is associated with striving towards achievement (Costa & McCrae, 1992). Conscientiousness has been linked with use of problem focused coping (Bartley & Roesch, 2011), and facets of conscientiousness (i.e., competence/self-efficacy, orderliness, dutifulness, achievement striving, self-discipline, and deliberation/cautiousness) seem to play a role in prediction of behavior (Paunonen & Ashton, 2001). These facets may also predict approach coping and persistence in the face of self-regulatory effort or fatigue.

#### 1.1.3. Self-consciousness

Self-consciousness represents an acute sense of self-awareness and preoccupation with oneself (Lipka & Brinthaup, 1992), and can be private, with focus on own feelings and self, or public, with focus on how others may see oneself (Fenigstein, Scheier, & Buss, 1975). Self-consciousness tends to focus a person on his or her goal directed behavior, may impact persistence on challenging tasks, either by itself or in interaction with expectancies (Carver & Scheier, 1998; Solberg Nes et al., 2005), and has even been seen to enhance effects of self-regulatory activities (Carver et al., 1979). Aiming to contribute to a better understanding of the underlying factors of self-regulatory capacity, the current study sought to explore the potential impact of optimism, conscientiousness, and self-consciousness on SRF.

### 1.2. Self-regulation and chronic multi-symptom illnesses

Chronic multi-symptom illnesses (CMI) such as FMS and temporomandibular disorders (TMD) present with an abundance of physical and psychological challenges (see Solberg Nes et al. (2009) for a review). Adaptation to such challenges may fatigue or exhaust self-regulatory resources, and CMI may be intertwined with SRF. For example, a large number of patients with CMI experience psychological distress, worry and ruminate about their health and future, report interpersonal distress, and often engage in passive coping strategies aiming to avoid or disengage from unpleasant activities (Solberg Nes et al., 2009). All of these behaviors and symptoms may require self-regulatory effort, or be indicators of SRF.

We recently carried out a study examining the concept of SRF in patients diagnosed with FMS or TMD (Solberg Nes et al., 2010). Participants were assigned to either a high or low self-regulation

task (i.e., a task requiring self-regulatory effort), followed by a persistence task (i.e., anagram task). High self-regulatory effort was associated with lower persistence on the subsequent task, supporting the SRF hypothesis (Baumeister et al., 1998), and patients displayed significantly less persistence than matched pain free controls. In fact, low self-regulatory effort for patients was associated with similar low persistence as patients and controls exerting high self-regulatory effort, suggesting that patients with CMI may in fact suffer from chronic SRF (Solberg Nes et al., 2010).

### 1.3. Current study

In the current investigation, we carried out additional analyses of the sample from Solberg Nes et al. (2010), seeking to examine the potential impact of dispositional optimism, conscientiousness and self-consciousness on self-regulatory capacity. It was hypothesized that individual differences in personality would predict persistence (i.e., time spent on the first, unsolvable, anagram) such that high optimism, conscientiousness, or self-consciousness would be associated with longer persistence. Patients, potentially already experiencing SRF (Solberg Nes et al., 2010), were expected to benefit less from optimism, conscientiousness and self-consciousness than pain free controls.

## 2. Method

### 2.1. Participants

Details of methods and procedures for this study have been reported elsewhere (Solberg Nes et al., 2010). Briefly, participants were female patients ( $N = 50$ ) diagnosed with FMS, TMD, or both, and healthy matched controls ( $N = 50$ ). The original study included only females in order to avoid potential confounds from gender differences (e.g., physiological measures). All participants were between the ages 25 and 56 years old (mean = 42.8; standard deviation (SD) = 8.9), majority Caucasian (90%), and received \$50 for study completion.

### 2.2. Procedure

#### 2.2.1. Self-regulation and persistence tasks

Participants were randomly assigned to either a high ( $N = 50$ ) or low ( $N = 50$ ) self-regulation condition. In the self-regulation task, all participants watched a brief video clip without sound featuring a female being interviewed by an off-camera individual (Gilbert, Krull, & Pelham, 1988; Schmeichel, Vohs, & Baumeister, 2003). Participants in the high self-regulation condition were asked not to read or look at any words that might appear on the screen. During the interview, a series of one-syllable words (e.g., *jump*) were shown for 10 s each in the bottom right corner of the screen. Participants then completed an anagram (persistence) task (Solberg Nes et al., 2005, 2010). The task contains 11 anagrams, the first of which is unsolvable (GGAWIL), and the remaining 10 are moderate to difficult but solvable.

### 2.3. Psychological measures

#### 2.3.1. Background variables

Participants reported their age, race, years of education, and annual family income.

#### 2.3.2. Current activity appraisal (manipulation check)

Following each experimental task the participants completed a form containing six Likert-type questions related to the activity they just finished (i.e., "It was difficult," "It was stressful," "It made

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