



## Metacognition in addictive behaviors



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### HIGHLIGHTS

- An overview of the metacognitive model of psychopathology.
- An examination of its relevance to addictive behaviours.
- A discussion of the application of metacognitive therapy to addictive behaviors.

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### ABSTRACT

**Background:** Over the last twenty years metacognitive theory has provided a novel framework, in the form of the Self-Regulatory Executive Function (S-REF) model, for conceptualizing psychological distress (Wells & Matthews, 1994, 1996). The S-REF model proposes that psychological distress persists because of unhelpful coping styles (e.g. extended thinking and thought suppression) which are activated and maintained as a result of metacognitive beliefs.

**Objective:** This paper describes the S-REF model and its application to addictive behaviors using a triphasic metacognitive formulation.

**Discussion:** Evidence on the components of the triphasic metacognitive formulation is reviewed and the clinical implications for applying metacognitive therapy to addictive behaviors outlined.

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### 1. Metacognition in psychopathology: the Self-Regulatory Executive Function model

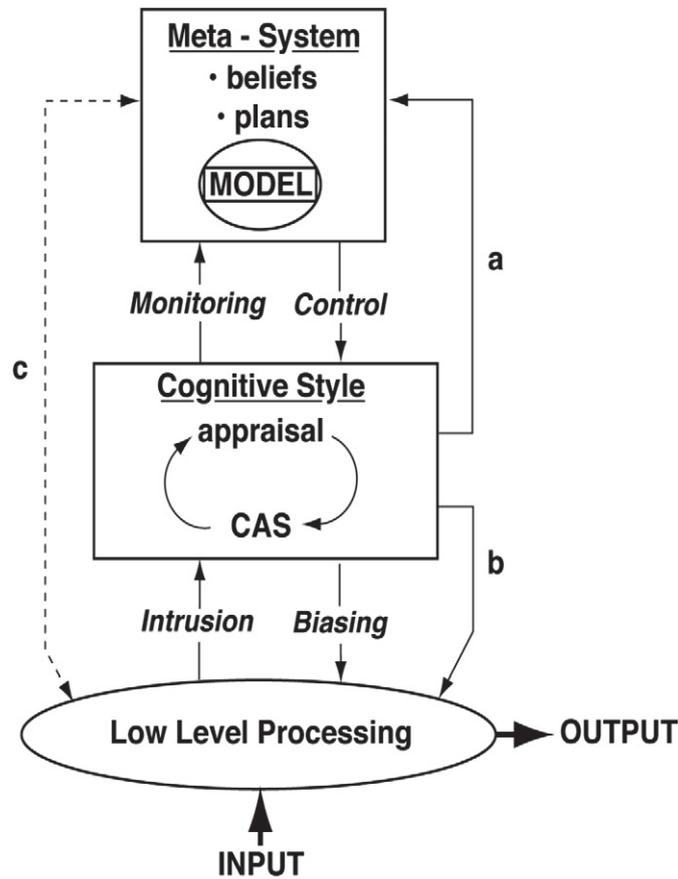
The term ‘metacognition’, which is most often associated with the work of John Flavell (1979, 1987), can be broadly defined as knowledge and cognitive processes that are involved in the appraisal, control, or monitoring of thinking. Theory and research in metacognition emerged in developmental psychology and has, over the last forty years, been applied across various domains including aging, education, forensic psychology, memory, and neuropsychology (Dunlosky & Metcalfe, 2009; Nelson & Narens, 1990; Pintrich, 2000).

More recently, as a result of the work of Adrian Wells and his colleagues, metacognition has been applied to conceptualizing and treating psychological distress. Wells and Matthews (1994, 1996) have proposed a multi-process model, the Self-Regulatory Executive Function (S-REF) model (presented in Fig. 1), to represent dysfunctional cognition in

psychological distress. The novel features of this model are: (1) the identification of a common or transdiagnostic set of processes and structures; (2) the modeling of cognition within an explicit cognitive architecture; (3) emphasis on top-down or strategic influences on processing bias; and (4) an explicit role assigned to metacognitive beliefs in the underpinning of coping styles that lead to psychological distress.

In Fig. 1 the cognitive architecture of the S-REF model is represented as three interacting levels. The first level consists of a stimulus-driven processing network which operates outside conscious awareness and gives rise to products which intrude into consciousness. Examples of these products include affective (e.g. anxious feeling), cognitive (e.g. negative thoughts) and somatic (e.g. pain) intrusions. The second level consists of the S-REF, an online, voluntary and conscious processing system aimed at maintaining cognitive self-regulation in response to intrusions. The goal of S-REF processing is to reduce discrepancies between desired and current states of the self. Under adaptive conditions, S-REF activity is of short duration in that the individual selects coping styles that deal effectively with the discrepancy. However, in psychological distress the individual is unable to resolve the discrepancy due to unhelpful

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Fig. 1. The S-REF model of psychological disorder.

copied styles that lead to the perseveration of S-REF activity. The initiation and cessation of S-REF activity are influenced by first level automatic processing (e.g. an intrusion related to body symptoms) and by the third level in the model: metacognitive knowledge. Metacognitive knowledge is conceptualized as information and beliefs about cognition that are positive and negative in content (e.g. "Worrying will help me cope" and "Some thoughts are dangerous") and generic plans for guiding cognition. Wells and Matthews (1994) argue that a particular thinking style is central to psychological disorder; the Cognitive Attentional Syndrome (CAS). The CAS consists of a variety of coping styles including extended thinking (e.g. desire thinking, rumination and worry), monitoring for threat, thought suppression and avoidance, that have paradoxical effects on self-regulation and discrepancy reduction. According to the S-REF model, the CAS is problematic because it causes negative thoughts and emotions to persist, leading to failures to modify dysfunctional metacognitive beliefs and stably resolve self-discrepancies.

The S-REF model emphasizes the importance of the processes which generate, monitor and maintain intrusive experiences, rather than focusing upon the content of such experiences (Wells, 2009). In psychological distress the selection and implementation of coping styles based on metacognitive beliefs focus attention towards distress congruent information (e.g. environmental threats). This will typically establish a vicious cycle where a faulty blueprint (the CAS) is consistently applied to alleviate processes appraised as distressing but a successful resolution fails to be achieved. Over time the combination of applying the same blueprint leads to the development of an internal dissonance characterized by negative appraisals towards the selected coping styles and internal experiences more generally.

The S-REF model has led to the development of disorder-specific formulations and treatments for depression (Wells, 2009), generalized anxiety disorder (Wells, 1995), obsessive-compulsive disorder (Wells, 2000; Wells & Matthews, 1994), post-traumatic stress disorder (Wells, 2000; Wells & Sembi, 2004), and social anxiety disorder (Clark & Wells, 1995). Metacognitive therapy (MCT), the psychological treatment based on the S-REF model, has been evaluated across a series of studies for each of these disorders, with preliminary results indicating superior outcomes to cognitive behavioral therapy (Normann, van Emmerik, & Nexhmedin, 2014; Wells, 2013).

## 2. Applying the S-REF model to addictive behaviors

Spada and Wells (2009) and Spada, Caselli, and Wells (2013) have applied the S-REF model to addictive behaviors (see Fig. 2). In their formulation the CAS and metacognitive beliefs are conceptualized across three temporal phases of the addictive behavior episode: pre-engagement, engagement, and post engagement. What follows is an exposition of these different phases in nicotine use.

In the pre-engagement phase triggers in the form of urges, images, memories or thoughts activate the S-REF and associated metacognitive beliefs to guide appraisal and coping style. Positive metacognitive beliefs such as "Thinking about having a cigarette will make me feel better" and negative metacognitive beliefs such as "I cannot control my thoughts of smoking" activate the perseverative processing of intrusions and attempts at their suppression (the CAS) leading to an escalation of negative affect and craving. As a consequence the smoker

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