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The Importance of Processes of Mental Model Construction for Better Conceptualization of Cognitive Aspects of Change in Psychotherapy

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Abstract:	We challenge the idea that a cognitive perspective on therapeutic change concerns only memory processes. We argue that inclusion of impairments in more generative cognitive processes is necessary for complete understanding of cases such as depression. In such cases what is identified in the target article as an "integrative memory structure" is crucially supported by processes of mental model construction.

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The Importance of Processes of Mental Model Construction for Better Conceptualization of Cognitive Aspects of Change in Psychotherapy

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ABSTRACT

We challenge the idea that a cognitive perspective on therapeutic change concerns only memory processes. We argue that inclusion of impairments in more generative cognitive processes is necessary for complete understanding of cases such as depression. In such cases what is identified in the target article as an "integrative memory structure" is crucially supported by processes of mental model construction.

MAIN TEXT

We support the approach of Lane and colleagues in focusing on cognitive processes in understanding psychopathology and how to treat it. However, we believe a broader range of processes are necessary to address in particular cases. In our papers (McIntosh et al., 2005; Sedek & von Hecker, 2004; Sedek, Brzezicka, & von Hecker, 2010; von Hecker & Sedek, 1999; von Hecker, Sedek, & Brzezicka, 2013) and edited monographs (Engle, Sedek, von Hecker, & McIntosh, 2004; von Hecker, Dutke, & Sedek, 2000) we stress the specific role of limitations in mental model construction in cognitive psychopathology, especially in subclinical depression.

There are close parallels between aspects of cognitive functioning in depression and the state resulting from pre-exposure to uncontrollability. In line with the cognitive exhaustion model (Sedek & Kofta, 1980; von Hecker & Sedek, 1999) we assume that some of the cognitive impairments observed in depression can be explained in terms of experiences of unsolvable situations, leading to uncertainty. Such experiences may stem from past, irreversible life events, from subsequent rumination, or from counterfactual thinking. It is hypothesized that uncontrollability and, in particular, ruminating thoughts about uncontrollable conditions, can lead to a depletion of those cognitive resources that support flexible, constructive thinking. Extended rumination by a victim of trauma, for example, may lead to cognitive states that impair building

new cognitive models necessary for optimal functioning. Although constructive thinking may be initiated by depressive individuals, this cognitive limitation will impair the quality of new, integrative constructions or mental models related to a particular episode, a class of situations, or in more severe cases, about numerous aspects of life. Further, this may cause broader deficits given the central role of mental model construction for cognition in general (see Brewer, 1987; Garnham, 1997; Greeno, 1989; Holland, Holyoak, Nisbett, & Thagard, 1986; Johnson-Laird, 1996).

Considering only memory processes provides an incomplete picture of cognitive targets for therapeutic change as there is compelling evidence for the existence of the above cognitive limitations in depression (Sedek et al., 2010; von Hecker & Sedek, 1999; von Hecker et al., 2013). Depressed participants demonstrate these limitations across various paradigms tapping mental model construction: (a) mental models of interpersonal sentiment relations (social cliques models); (b) linear order reasoning (mental arrays); (c) evaluation of categorical syllogisms (mental models of logical relations); (d) situation models (inferences about the meaning of written text). Of these, we shall discuss (a) and (b) in greater detail.

Regarding (a), depressed individuals often exhibit compromised interpersonal behavior (e.g., Gotlib & Hammen, 1992). Thus, we (von Hecker & Sedek, 1999) studied how mental models of sentiment patterns are constructed, a crucial component of understanding one's social environment that might be affected by depression. (Participants were presented with series of pairwise sentiment relations (e.g., ''Tom and Bill like each other,'' ''Tom and Joe dislike each other'') such that the complete set of relations formed subsets of people who like each other within cliques whilst disliking people in other cliques. Amongst all relations, a few diagnostic ones would always determine the actual number of cliques. Although depressed individuals did notice the diagnostic value of these particular relations, they were less accurate than non-

depressed individuals in determining the number of cliques involved. We interpret this as a demonstration of the difficulties depressed people have with the construction of adequate social mental models (von Hecker & Sedek, 1999, Experiments 2 and 3). They remembered the key elements, but they could not generate a mental model based on that information.

Regarding (b), we studied the *symbolic distance effect* (SDE, see Leth-Steensen & Marley, 2000), the phenomenon that if people learn bits of information such as "Tom is older than Harry," "Harry is older than Jack," "Jack is older than Bill", they respond quicker and more accurately when later asked about the older one in pairs of persons wider apart in the ordered sequence (e.g., Tom and Bill) as compared to narrower pairs (e.g., Tom and Harry). We (Sedek & von Hecker 2004) found this effect reversed in depressed participants. Given that the SDE follows on the basis of discriminability assumptions (Holyoak & Patterson, 1981) when people construct an integrated linear model of the order information (e.g., Tom > Harry > Jack > Bill), we think that depressed individuals may not readily construct such models but rather rely on the original piecemeal information when responding. Overall, mental models are a prime vehicle for individuals to determine their perspective in the world and in social contexts (Garnham, 1997; Holland, Holyoak, Nisbett, & Thagard, 1986; Johnson-Laird, 1996; von Hecker, Crockett, Hummert, & Kemper, 1996) such that therapeutic intervention at this point seems essential.

Based on the above perspective and findings, we suggest that a crucial aspect of therapeutic change when dealing with depression (related to traumatic stress and other forms of emotional disturbances) may be to re-strengthen the ability to construct mental models, especially in the social domain. Concerning the therapeutic approaches to the above disturbances we also think that Lane and associates' term "integrative memory structure" should be complemented by "construction of mental models." Focusing on the creation of new mental models, especially for disorders such as depression, may be more consistent with the benefits seen from approaches

such as Cognitive Behavioural Therapy that deal with developing functional understandings and responses to current events in contrast to adjusting or understanding prior events.

Finally, we concur with Lane and colleagues on the importance of looking at cognitive processes as leverage points for therapeutic intervention. Cognitive processes are critical to how the internal and external world interact. We believe that as much as Lane et al. are right in stressing the importance of interactions between emotion and memory content as a vantage point for therapeutic intervention, considering interactions between emotions and cognitive procedures is another useful vantage point. Moreover, our specific findings in depression underscore the importance of considering how there may be different foci for different disorders. This broader cognitive approach may have major relevance for future directions in developing therapeutic strategies.

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