

**[MH18]** (Abramson, Alloy, & Metalsky, 1988; Alloy, Hartlage, & Abramson, 1988). In response to such critiques, the field saw a major shift in methodologies used to test these theories, and prospective diathesis-stress designs became the gold standard. Recent comprehensive reviews of the literature have demonstrated that although inconsistencies exist in the findings of studies, the majority have provided support for the hypothesis that a pessimistic attributional style confers vulnerability to the development of depressive symptoms following the occurrence of negative events in children (Abela & Hankin, 2008), adolescents (Abela & Hankin, in 2008), and adults (Abela, Auerbach, & Seligman, in press).

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### See also

Attributional Theories of Depression  
Cognitive Theories of Depression  
Hopelessness

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### Automatic and Controlled Processing in Depression

*John, a 37-year-old man, has suffered several depressive episodes throughout his life. After a problematical marriage, he and his wife, Anne, divorced. He worked as a receptionist when, 3 months ago, the last depressive episode took place. "I think the reason for this last episode was that I felt lonely and there were too many women working at my office. I used to see lots of women but I seemed invisible to them. Furthermore, while trying to work or to chat with any female colleague, I could not get rid of the scene of my last argument with Anne, and this happened over and over, invading my mind without my being able to do anything to avoid it." When asked about the meaning of this situation, John told us: "It reminded me over and over what I will never be able to get: I will never have a wife, no woman likes me. . . . It's just impossible. My life has been a failure and will always be a failure. . . . It's obvious, I'm not good-looking, I look so miserable . . . pathetic, it's always been that way."*

In his cognitive model of depression, Aaron Beck (1976) suggested that depressed people generate negative products such as images (e.g., “the scene of our last farewell appeared over and over”), thoughts (e.g., “I’m not good-looking”), and inferences (e.g., “I will never have a wife”) automatically. These automatic products, which are usually assessed via the verbalizations of the depressed person, would be the reflection of underlying automatic processes. Beck’s ideas regarding the processes by which automatic products are generated paralleled the definitional criteria for automatic versus controlled processing developed by cognitive theorists in the 1970s. Automatic processes are operations that (a) take place without requiring attention or conscious awareness, (b) occur in parallel without interfering with other operations or stressing the capacity limitations of the cognitive system, and (c) occur without intention or control. However, effortful processes (a) require attention and thereby take place serially, inhibit other pathways, and are influenced by cognitive capacity limitations; (b) improve with practice; and (c) can be used to produce learning (Hartlage, Alloy, Vázquez, & Dyckman, 1993).

Different lines of empirical research have consistently found that, in fact, depressed persons have difficulty planning, initializing, and monitoring complex goal-directed behaviors in the face of distracting negative information (see Hartlage et al., 1993). Thus, in a broader sense, depressed individuals seem to show a reduced executive control, which leads them, for example, to being unable to control or adequately redirect their attention when negative thoughts or images appear (e.g., “I could not get rid of the scene of my last argument with Anne”) or even to retrieve rather overgeneral negative autobiographical memories (e.g., “My life has been a failure”).

Are automatic processes also affected in depression? Although the experimental evidence is less robust in this case, there is also empirical evidence suggesting that, in depressed persons as well as in depression-prone individuals, negative cognitions are

more easily activated than in normal participants (Lau, Segal, & Williams, 2004). Although clinical observations are not a direct way to measure cognitive processes, John’s description of his own mental experiences describes many instances in which negative cognitions seem to be easily activated, and, moreover, he also seems to have difficulties to inhibit those processes once initiated (i.e., problems with controlled or effortful processes). This distinction of a dual processing mechanism has proved to be a valuable tool to understand diverse findings in the literature on various cognitive processes in depression (attention, memory, thinking, etc.).

According to the differentiation of automaticity and control, the statement that biases in depression and anxiety operate on different processing levels that correspond to different cognitive tasks has become a dominant theme. Thus, it has often been stated that anxiety states are more closely related to biases in the automatic processing of threatening material (particularly reflected in attentional tasks), whereas depressive states are characterized by biases in operations of controlled processing (especially reflected in biases of memory; e.g., Matt, Vázquez, & Campbell, 1992). However, some caution is required when establishing a division of this kind. In fact, in most cognitive tasks, there are aspects that require both controlled and automatic processing. For example, although attention has traditionally been considered an automatic process, it also implies effortful processing, such as disengagement. Actually, depressed patients as well as recovered depressed patients seem to have difficulty moving attention away from negative information once it is presented (Joorman & Gotlib, 2007). Moreover, the data about this depression-versus-anxiety dichotomy reflecting different ways of processing are not as conclusive as has often been stated.

### ***Vulnerability and Automatic and Controlled Processing***

Frequently, the onset of a depressive episode is found to be associated with a stressful

event; then again, people who have suffered depressive episodes in the past seem to be more sensitized to the appearance of stressors, so that minor events, of apparently little consequence, can be responsible for triggering a depressive episode. In the case of John, seeing women triggers a series of automatic thoughts about himself and his life, facilitating a depressive mood, which in turn fuels those negative cognitions in a perpetuating way. Segal, Williams, Teasdale, and Gemar (1996) invoked the concepts of kindling and sensitization to explain this heightened susceptibility to recurrence of previously depressed individuals. In the process of kindling, the continued reactivation of negative memory structures would produce dense interconnections, so that activation of one element in the array is likely to activate the entire structure; this means that only minimal cues are needed to activate the array of depressive constructs. In the process of sensitization, the repeated activation of depressotypic constructs during previous depressive experiences produces the lowering of the activation threshold for these structures. Hence, the phenomena of sensitization and kindling (see Monroe & Harkness, 2005) can be interpreted in terms of a decrease in the threshold of automatic activation of cognitive processes and, in parallel, a greater difficulty for the executive processes to counteract them, which can create escalating spiraling cycles of negative cognition-emotion.

Finally, although more investigation is needed about the precise role of the cognitive mechanisms in the onset and relapse of depression and its relation with the processes of kindling and sensitization, the distinction between controlled and automatic processes is probably a way to fruitful analysis. The results of some recent high-risk prospective studies show that the onset of depression is more likely when there is a confluence of negative cognitive schemas (about oneself, the world, and the future) together with a tendency to process information ruminatively (i.e., Alloy et al., 2006). Thus, more spontaneity in generating negative thoughts and more difficulty in controlling them and redirecting processes

toward specific contents seem to be powerful candidates to explain the risk of onset, relapse, and recurrence of depression.

### *Implications for Therapy*

The importance of working with automatic thoughts was emphasized by cognitive depression therapy from the beginning. The goal is, firstly, to make clients aware of the automatic thoughts that come into their minds and of the underlying dysfunctional beliefs. A common way of achieving this is to record automatic negative thoughts. Secondly, such thoughts are challenged with alternative, more adaptive and functional thoughts. The idea is to get clients to have “second thoughts” about thoughts that automatically come to their minds and that, following repeated and disciplined practice, these automatic thoughts will be countered. However, there are few data about the cognitive mechanisms involved in effective therapeutic interventions and, especially, whether there are real changes in the *ways* of processing (Beevers, 2005). Future research will have to show whether the efficacy of cognitive interventions in depression is based on the direct reduction of the automaticity of the negative cognitive processes, or on the teaching of metacognitive skills that serve to render this type of automatic processing more accessible to effortful reflection. Approaches such as mindfulness-based cognitive therapy for depression, or acceptance and commitment therapy help patients to deliberately monitor and observe their thinking patterns when they feel sad and to respond to these thoughts and feelings in a way that allows them to disengage from the cognitive consequences of automatically activated mood-related rumination (Segal, Williams, & Teasdale, 2002). Given that these automatic processes seem to be related to depressive relapse, effective prophylactic interventions should involve attempts to deautomatize such processes. Future investigation must attend to the cognitive mechanisms that underlie therapeutic improvement and determine the most feasible and effective ways (i.e., reducing automaticity vs. increasing executive

control) to improve interventions and reduce the likelihood of relapse.

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### See also

Attention  
Memory Processes  
Mindfulness-Based Cognitive  
Therapy

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### Automatic Thoughts

Automatic thoughts are an important part of Beck's cognitive model of depression. Automatic thoughts, called self-talk by some theorists, reflect the subconscious mono-

logue in which individuals are constantly engaged. In addition to self-talk, automatic thoughts can also consist of images. The idea that these thoughts are subconscious suggests that individuals have little ongoing awareness of these thoughts, but that they easily can be brought into conscious awareness. In depression, automatic thoughts are negative in nature and reflect deeper levels of cognitive activity, such as the operation of cognitive self-schemas. Early in the process of cognitive therapy, individuals are taught to monitor these thoughts, and once they can be monitored, the therapist teaches the depressed patient to challenge, and presumably alter, automatic thoughts. Modifying such thoughts has therapeutic value in its own right, but another reason for focusing on such thoughts is to gain access to the negative cognitive schemas of the depressed patient, with the idea that these schemas can be modified in a more adaptive manner.

As a cognitive variable comprising self-statements, the assessment of automatic thoughts must rely on self-report questionnaires. The Automatic Thoughts Questionnaire (ATQ-N) was developed by Hollon and Kendall (1980) as a way to measure these thoughts. Examples of items include statements such as “I feel like I am up against the world” and “I've let people down.” Individuals are asked not whether they believe these statements to be true or not, but rather to rate the frequency that these, and similar thoughts, occur over a period of time. The ATQ-N includes 30 such statements, with each statement rated on a 1 (never) to 5 (all time) scale, with scores ranging from 30 to 150. A variety of studies have shown that the ATQ-N is a valid and reliable measure.

The ATQ-P was developed by Ingram and Wisnicki (1988) as a counterpart to the ATQ-N, with a focus on the frequency of positive thoughts. Like the ATQ-N, the ATQ-P includes 30 statements (e.g., “My future looks bright”) to which respondents rate the frequency of occurrence on a scale of 1 to 5. The ATQ-Revised (ATQ-R) was developed by Kendall, Howard, and Hays (1989), also