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A study of cognitive information processing bias in anxiety

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Recent study has shown that anxious individuals selectively process threat information. Researchers have found that, in an anxious state, people showed attentional bias and implicit memory bias, but not explicit memory bias. The mechanism of these cognitive biases has been explained by a schema model (Beck, 1976) or a network model (Bower, 1981). However, while these models could explain the occurrence of cognitive bias, they could not explain the tendency toward cognitive bias in anxiety (cf. anxious individuals show attentional bias and implicit memory bias, but not explicit memory bias). Other models that can explain the tendency toward cognitive bias have also been considered (e.g., Williams et al., 1997; Mogg & Bradley, 1998) but these models did not explain the mechanisms of occurrence of cognitive bias in anxiety.

In this chapter, a multi-component model (MCM) that involves each mechanism of occurrence of cognitive bias and the tendency toward cognitive bias in anxiety was proposed. MCM consisted of two units, namely, the Affect Process Unit (APU) and the Resource Allocation Unit (RAU). The basis of the APU was the network model and with linking intensity, and the APU thus explains the mechanism of occurrence of cognitive bias. The function of the RAU was the allocation of resources to external/internal information processing. Furthermore, it was expected that the APU and RAU interact with each other, and that such interaction would result in the maintenance of a mood of anxiety.

Chapter 2 examines the influence of state anxiety and trait anxiety on attentional bias and implicit memory bias. The results of an attentional bias task showed that individuals with high-trait anxiety selectively attend to threat information despite the degree of the state anxiety, whereas individuals with low-trait anxiety attend to threat information only when in high-state anxiety. The results of an implicit memory bias task showed that only high-trait anxiety showed an implicit memory bias. These results showed the validity of the APU in explaining the cognitive bias by a network model and with linking intensity.

Chapter 3 examined whether attentional biases need cognitive resources. Study 2-1 investigates whether attentional bias is a result of automatic processing with supra/subliminal presentation of stimuli. It was found that in a subliminal condition the attentional bias did not occur, whereas in a supraliminal condition it did occur. This result shows that attentional bias was not a result of automatic processing. Study 2-2 investigates whether the resources allocated to attentional bias compete with the resources allocated to explicit memory. The results showed that when the resources allocated to explicit memory were reduced, the attentional bias increased, and when the resources were increased, the attentional bias was not found. These results showed that

the relationship between the resources allocated to attentional bias and those allocated to explicit memory was one of trade-off, so that the explanation of the tendency toward cognitive bias provided by the RAU was valid.

In chapter 4, the influence of attentional bias on the maintenance of an anxious mood was investigated. According to the results of studies 3-1 and 3-2, an anxious mood was maintained by threat information that entered due to the attentional bias, but not by the occurring of attentional bias itself. From these results, it was found that the maintenance of an anxious mood could be explained by the interaction of APU and RAU.

According to the results of chapters 2 through 4, a cognitive bias in anxiety could be explained by MCM. In particular, the APU based on a network model incorporating the concept of trait anxiety explains the mechanism of occurrence of cognitive biases, and the RAU based on an allocation system of cognitive resources explains the tendency toward cognitive bias in anxiety.