The relation of *Shared Syntactic Integration Resource Hypothesis* and *Syntactic Equivalence Hypothesis*: Some theoretical considerations

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The author's considerations are dealing with the comparison of processing music syntax and language syntax plus neural and functional correlates of them. The focus is on the processes in the Broca area, which is said to be involved in the processing of both music syntax and language syntax. There are two points of view about the processing of syntax in both domains. On the one hand, there are neuroimaging studies, which prove an overlap of brain mechanisms while processing music and language syntax. On the other hand, studies in neuropsychology propose a dissociation between music and language syntax because of single case studies in which patients suffer from amusia without aphasia and vice versa. To take both approaches into consideration, Patel developed the *Shared Syntactic Integration Hypothesis* (*SSIRH*). This hypothesis proposes that the processing of music syntax and language syntax overlap while the mental representations are independent.

However, the *SSIRH* is being further developed by Stefan Koelsch. He suggests the *Syntactic Equivalence Hypothesis,* which criticizes Patel's Hypothesis because it should solely integrate late brain processes like the ERP P600 for proving an overlap of processing music syntax and language syntax.

In his hypothesis, Koelsch includes early processes (e.g. studies dealing with the *Early Right Anterior Negativity* (ERAN) and (*Early) Left Anterior Negativity* (E)LAN)) in addition to the findings of the *SSIRH*. The core argument of his hypothesis is that there are cognitive operations (including the Broca area) that are involved in music syntactic, language syntactic, action syntactic and mathematical syntactic processing. But these cognitive operations are not required for the processing of acoustic deviance or language-semantic processing.

The relationship between *Shared Syntactic Integration Resource Hypothesis* and *Syntactic Equivalence Hypothesis* is critically evaluated, taking comparative studies between language and music research into account. In addition different aspects are investigated: Whether or not the *SSIRH* is only a "subset" of the *Syntactic Equivalence Hypothesis*, whether the *Syntactic Equivalence Hypothesis* is an expansion to the *SSIRH* and whether the naming of the *SSIRH* is still contemporary or needs to evolve.