

## Abstract

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Large parts of human behaviors are oriented towards achieving a particular goal. Motivational factors in the form of approach and avoidance motivated behavior and executive functions (EFs) such as inhibition are central for goal-directed behavior. There are individual differences in the inhibition of prepotent behavior and the Behavioral Inhibition System (BIS) can be viewed as a neuropsychological system that has been proposed to be a personality trait that explains those individual differences. Inhibition is an EF that is involved in the control of impulses and enable us to choose how to react and behave. Sport is a context in which the cognitive demands can be high and there is a growing body of research trying to pinpoint the cognitive mechanisms behind superior athletic performance. Response inhibition is suggested to be one of the mechanisms that is of importance for performance in sport.

The general aim of this thesis was to explore the BIS, response inhibition and the possible implications in sports. A theoretical framework of approach and avoidance motivation, the revised RST (Gray & McNaughton, 2000; McNaughton & Corr, 2004) was combined with a paradigm for assessment of response inhibition; the stop-signal paradigm (Logan & Cowan, 1984). In addition, different instruments for assessment of the BIS was investigated and designs of the stop-signal task for assessment of response inhibition was used. Study I and III aimed to examine the relationship between response inhibition and the BIS. Study I used a sample of non-athletes and Study III used a sample of non-athletes, and athletes from two different interceptive sports, biathlon and alpine skiing. The aim of Study II was to test the factor structure of a Swedish version of the Reinforcement Sensitivity Theory of Personality Questionnaire (RST – PQ; Corr & Cooper, 2016). The results from Study I indicated that when the ability to inhibit prepotent response and behavioral precision (i.e., accuracy) is central for task performance, higher levels of BIS could be a vulnerability factor when the individual's inhibitory ability simultaneously is poor. Due to ceiling effects in the variable accuracy, this was not possible to replicate in Study III. The results in Study II suggest that the RST-PQ has considerable promise since it, for example, provides an opportunity to distinguish between the individual differences between fear and anxiety, although there were issues concerning the convergent validity. Study III showed that athletes with experience in interceptive sports do not outperform non-athletes on response inhibition. The implications of these results are that it is possible that other aspects than being an athlete or non-athlete need to be considered and that individual differences in the BIS could be one of these aspects.

Taken together, results from these three studies indicated that that it is possible to combine a theoretical framework of approach and avoidance motivation and a paradigm for the assessment of response inhibition, the stop-signal paradigm, with the purpose of exploring the BIS, response inhibition and possible implications in sport. It has also showed the complexity with using self-report instruments for assessment of neuropsychological systems that, in theory, underlies personality and the difficulties with using SSTs for assessment of an estimated measure (i.e., SSRT) of response inhibition. By exploring the BIS and response inhibition, this thesis offers an approach to view sport expertise and show the value of focusing on individual differences in the personality trait BIS since, at least theoretically, the BIS has the potential to serve as an explanation for variations in response inhibition and the possible association with behavioral precision (i.e., accuracy).