

Gray's model of personality and Signal Detection Theory: Uncovering new relationships of impulsivity and anxiety with learning and performance criteria

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Research in learning and performance using Gray's (1971, 2001) theory of personality has increased substantially in the last decade. Gray's key postulations, that impulsive individuals are most sensitive to reward while anxious people are most sensitive to punishment, have been investigated using a number of learning and performance paradigms. A potential problem this research faces is ambiguity regarding the kind of learning or performance which is related to impulsivity and anxiety, and the consequent difficulty in specifying appropriate measurement criteria. This paper introduces a program of research in progress using Signal Detection Theory (SDT) to examine learning and performance relationships with Gray's model. Analyses to date have revealed unique findings: One of the ways in which learning in impulsive and anxious individuals differs, under punishment and reward is their success in identifying a functional dominant response. In conditions of reward, impulsivity was not related to increased ability to make more accurate decisions, but to the tendency to favour the response more likely to bring reward. Similarly, under punishing conditions anxious individuals developed a tendency against the response more likely to bring punishment. Consistent with Gray's theory, reward did not moderate the relationship between anxiety and performance criteria, and punishment did not moderate the relationship between impulsivity and performance criteria. These observations have important implications for the use of personality to explain individual differences in learning and performance.