Intolerance to uncertainty is associated with diminished exploration

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Abstract: Across diverse cognitive and behavioral domains, humans confront a fundamental tension between exploiting current knowledge about the environment and exploring the environment in order to acquire new knowledge. Individuals differ idiosyncratically in how they balance this explore/exploit tradeoff, although the sources of these individual differences have not been systematically studied. In the current study, we sought to do so, in terms of trait-level affective phenotypes. Specifically, we investigated whether intolerance to uncertainty (IU), characterized by a negative disposition toward uncertainty, predicted both random and directed exploration in a two-armed bandit task which manipulated decision horizon. We found that greater IU was associated with diminished exploration, both random ($p<0.001$) and directed ($p<0.05$). These results suggest the importance of explicitly considering affective states and dispositions in human decision-making and also have psychiatric implications, to the extent that IU is a transdiagnostic dimension central to a range of anxiety-related disorders.