

Increasing the value of peer information in risky decision-making

B. King-Casas, M.A. Orloff, D. Chung, and P.H. Chiu

Social processes have emerged as important determinants of the development and maintenance of substance use and other health-risk behaviors initiated during adolescence. Recent advances in decision neuroscience approach decision-making in social contexts as computational processes by which social factors, such as social information from peers, modulate the valuation of behavioral options within normative models of choice. In the current work we sought to examine how social information about peer choices influences the risky decisions of adolescents, and examine whether agency in viewing social information can modulate the magnitude of social valuation.

Methods: In study one, 46 substance-naïve and 32 substance-exposed adolescents performed a risk elicitation task after observing, or not, the risky and/or safe choices of two peers while undergoing functional magnetic resonance imaging. Participant choices were fit to a choice model that included both a risk preference parameter and a valuation parameter associated with social information, and parameter estimates were compared between groups. In study two, 49 unselected participants performed the identical task, as well as second condition in which participants were given the choice to view or not the social information. The valuation parameter associated with social information was compared between conditions.

Results: In study one, we identify behavioral and neural evidence that observing peer safe choices increases the subjective value and selection of safe options for substance-naïve relative to substance-exposed adolescents. Further, the effects of observing peer risky choices did not vary by substance exposure. In study two, we found that choosing to observe peers' choices increased the valuation of social information four-fold relative to the passive observation of social peer choices.

Discussion: These results illustrate the use of quantitative model-based approaches to examine behavioral and neural mechanisms underlying social contributors to substance use and health-risk behaviors in adolescence, and suggest ways in which valuation of social information may be augmented or reduced.

Funding was provided by NIH grants DA051573 to P.H.C. and B.K.-C.; DA036017, MH122948 to B.K.-C.; DA042274 to P.H.C. and D.C.