

# Risk and Rationality in Adolescent Decision Making

## Implications for Theory, Practice, and Public Policy

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**SUMMARY**—*Crime, smoking, drug use, alcoholism, reckless driving, and many other unhealthy patterns of behavior that play out over a lifetime often debut during adolescence. Avoiding risks or buying time can set a different lifetime pattern. Changing unhealthy behaviors in adolescence would have a broad impact on society, reducing the burdens of disease, injury, human suffering, and associated economic costs. Any program designed to prevent or change such risky behaviors should be founded on a clear idea of what is normative (what behaviors, ideally, should the program foster?), descriptive (how are adolescents making decisions in the absence of the program?), and prescriptive (which practices can realistically move adolescent decisions closer to the normative ideal?). Normatively, decision processes should be evaluated for coherence (is the thinking process nonsensical, illogical, or self-contradictory?) and correspondence (are the outcomes of the decisions positive?). Behaviors that promote positive physical and mental health outcomes in modern society can be at odds with those selected for by evolution (e.g., early procreation). Healthy behaviors may also conflict with a decision maker's goals. Adolescents' goals are more likely to maximize immediate pleasure, and strict decision analysis implies that many kinds of unhealthy behavior, such as drinking and drug use, could be deemed rational. However, based on data showing developmental changes in goals, it is important for policy to promote positive long-term outcomes rather than adolescents' short-term goals. Developmental data also suggest that greater risk aversion is generally adaptive, and that decision processes that support this aversion are more advanced than those that support risk taking.*

*A key question is whether adolescents are developmentally competent to make decisions about risks. In principle, barring temptations with high rewards and individual differences that reduce self-control (i.e., under ideal conditions), adolescents are capable of rational decision making to achieve their goals. In practice, much depends on the particular situation in which a decision is made. In the heat of passion, in the presence of peers, on the spur of the moment, in unfamiliar situations, when trading off risks and benefits favors bad long-term outcomes, and when behavioral inhibition is required for good outcomes, adolescents are likely to reason more poorly than adults do. Brain maturation in adolescence is incomplete. Impulsivity, sensation seeking, thrill seeking, depression, and other individual differences also contribute to risk taking that resists standard risk-reduction interventions, although some conditions such as depression can be effectively treated with other approaches.*

*Major explanatory models of risky decision making can be roughly divided into (a) those, including health-belief models and the theory of planned behavior, that adhere to a "rational" behavioral decision-making framework that stresses deliberate, quantitative trading off of risks and benefits; and (b) those that emphasize nondeliberative reaction to the perceived gists or prototypes in the immediate decision environment. (A gist is a fuzzy mental representation of the general meaning of information or experience; a prototype is a mental representation of a standard or typical example of a category.) Although perceived risks and especially benefits predict behavioral intentions and risk-taking behavior, behavioral willingness is an even better predictor of susceptibility to risk taking—and has unique explanatory power—because adolescents are willing to do riskier things than they either intend or expect to do. Dual-process models, such as the prototype/willingness model and fuzzy-trace theory, identify two divergent paths to risk taking: a reasoned and a reactive route. Such*

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*models explain apparent contradictions in the literature, including different causes of risk taking for different individuals. Interventions to reduce risk taking must take into account the different causes of such behavior if they are to be effective. Longitudinal and experimental research are needed to disentangle opposing causal processes—particularly, those that produce positive versus negative relations between risk perceptions and behaviors.*

*Counterintuitive findings that must be accommodated by any adequate theory of risk taking include the following: (a) Despite conventional wisdom, adolescents do not perceive themselves to be invulnerable, and perceived vulnerability declines with increasing age; (b) although the object of many interventions is to enhance the accuracy of risk perceptions, adolescents typically overestimate important risks, such as HIV and lung cancer; (c) despite increasing competence in reasoning, some biases in judgment and decision making grow with age, producing more “irrational” violations of coherence among adults than among adolescents and younger children. The latter occurs because of a known developmental increase in gist processing with age. One implication of these findings is that traditional interventions stressing accurate risk perceptions are apt to be ineffective or backfire because young people already feel vulnerable and overestimate their risk. In addition, research shows that experience is not a good teacher for children and younger adolescents, because they tend to learn little from negative outcomes (favoring the use of effective deterrents, such as monitoring and supervision), although learning from experience improves considerably with age. Experience in the absence of negative consequences may increase feelings of invulnerability and thus explain the decrease in risk perceptions from early to late adolescence, as exploration increases. Finally, novel interventions that discourage deliberate weighing of risks and benefits by adolescents may ultimately prove more effective and enduring. Mature adults apparently resist taking risks not out of any conscious deliberation or choice, but because they intuitively grasp the gists of risky situations, retrieve appropriate risk-avoidant values, and never proceed down the slippery slope of actually contemplating tradeoffs between risks and benefits.*

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## INTRODUCTION

In this monograph, we review scientific evidence concerning the causes and remediation of unhealthy risk taking in adolescence. Adolescent risk taking has economic, psychological, and health implications (e.g., Maynard, 1997). Smoking, drug use, unprotected sex, and unsafe driving take demonstrable tolls in healthcare costs and property damage, as well as less readily

measured costs in human misery and lost potential. Habits begun at this age can last a lifetime. Table 1 shows one set of prevalence measures for adolescents. Opinions about proper solutions to the problem of unhealthy adolescent risk taking are plentiful, ranging from abstinence education to higher legal drinking ages. However, the public and policymakers rarely make use of the scientific literature on risky decision making in adolescence, and, as in many areas of human behavior, prevention and intervention programs are generally not based on such evidence.

Those seeking a comprehensive view of the evidence (and not just the bits supporting one’s own favored position) need to cast a wide net. One of the barriers to more comprehensive use of the scientific literature is the fragmentation of research. Relevant studies are scattered across disciplines (e.g., psychology, sociology, pediatrics, public health) and problem-specific professional communities (e.g., smoking, AIDS prevention, alcohol and substance abuse) whose members attend specialized conferences and read specialized journals, and who are sometimes isolated further by adherence to specific research paradigms or treatment modalities. To be sure, specialization is necessary if scholars are to apprehend the vast amount of research within particular problem domains. For example, the biochemistry of smoking and alcohol are each complex enough to justify separate expertise. The effects of alcohol on brain development and on psychomotor skills (e.g., driving) are themselves different enough to direct scholars and practitioners to separate conferences and publications.

However, fragmentation exacts a price. Relevant work is published that escapes notice in closely related domains (e.g., smoking versus alcohol use) and explanatory models found useful in one domain are not necessarily considered in other domains. There is also the problem of reinventing the wheel. For example, Dawes and Corrigan (1974; Dawes, 1979) found that many competing models of decision-making processes were inherently indistinguishable because of their shared statistical properties.<sup>1</sup> Additionally, the commonalities among laboratory and “real world” tasks argued to reflect risk taking need to be identified and limits of commonality or generalizability established. Risk taking in a laboratory task involving minor symbolic risks may have little to do with the risk taking of a carload of drunk adolescents on the interstate on a Friday night (Farley, 1996). Hence, a cross-cutting analysis is urgently needed to identify the findings and explanatory models that generalize across domains, as well as the domain-specific limits to generalization.

To address this need, we examine one topic that generalizes across domains: the optimality of adolescents’ decisions about

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<sup>1</sup> Attempts to reconcile the weights afforded to various factors in different studies were doomed to failure, because they reflected uninteresting measurement issues. In fact, Dawes’s conclusion was an inductive rediscovery of principles derived deductively by Wilks (1937), in an even more general look at the properties of linear models.