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Annotated Bibliography for "Breaking Down the Science"

The following are brief summaries of several journal articles highlighting how developments in adolescents' psychosocial functioning impacts adolescents' risky behavior and risky decision-making. Psychosocial functioning is related to how one's internal psychological processes are influenced by and interact with social/environmental cues (e.g. peer influences, sensation-seeking, future orientation). Two articles focus on adolescents cognitive functioning (more specifically logical reasoning skills) and how cognitive functioning matures along a different timetable from psychosocial functioning. Note that although age ranges are specified in each study, individual adolescents are likely to vary in their development of different capacities.

Psychosocial Functioning: Peer Influences on Risk Taking

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology, 41,* 625-635.

Purpose:

- To investigate the influence of peers on risk taking and risky decision making in adolescents and adults.

Methodology

- An experimental study conducted in a laboratory setting with a sample of 306 individuals recruited from both the community and from an undergraduate university. Participants consisted of 3 groups: a) adolescents ages 13 to 16 years old, b) youths ages 18 to 22 years old, and c) adults ages 24 and older.
- Researchers used self-report questionnaires and a behavioral task to assess risky decision-making and risk taking.

Results:

- Individuals in middle and late adolescence were much more likely than adults to take more risks and engage in riskier decision-making when tested in groups than when tested alone.

Relevance:

- Highlights the influence that peers have on adolescents' risky behaviors and decision-making.
- Directly related to evidence that adolescents, more so than adults, commit crimes in groups.
- Demonstrates that adolescents, more so than adults, have a more difficult time resisting the influence of peers when engaging in risky behavior and risky decision-making.

Psychosocial Functioning: Sensation-Seeking and Impulsivity

Steinberg, L., Albert, D., Cauffman, E., Banich, M., Graham, S., Woolard, J. (2008). Age differences in sensation-seeking and impulsivity as indexed by behavior and self-report: Evidence for a dual systems model. *Developmental Psychology, 44,* 1764-1778.

Purpose:

- To explore age differences in sensation seeking (tendency to seek stimulating and novel experiences) and impulsivity (lack of self-control).
- Researchers predicted that sensation seeking and impulsivity:
    - Occur along different timetables
    - Are connected to the increased vulnerability to risk taking found in adolescence.

Methodology

- An experimental study conducted in a laboratory setting with a sample of 935 individuals, ages 10 to 30 years. Participants were recruited from the community in several cities across the United States.
- Used both self-report questionnaires and behavioral tasks to assess sensation-seeking and impulsivity.

Results:

- Age differences were found for both impulsivity and sensation seeking, but they developed along different timetables.
    - Sensation seeking behaviors increased between the ages of 12 to 15, (initiating around the beginning of puberty) and then steadily declined.
    - Impulsivity was found to steadily decline from age 10 through adolescence, and well into early adulthood.

Relevance:

- After age 15, adolescent vulnerability to risky behavior steadily decreases as sensation seeking decreases and impulse control continues to increase into early adulthood.
- Authors conclude that adolescents' vulnerability to risk taking in mid- adolescence is likely to be normative as demonstrated by their tendencies towards sensation-seeking and their lower impulse control.
- Evidence from this study is consistent with adolescent brain research which demonstrates that the brain systems (cognitive control system) linked to impulse control and self-regulation doesn't fully develop until early adulthood. In contrast, the brain systems (socioemotional system) linked with sensation-seeking becomes more highly aroused in early adolescence.

<u>Psychosocial Functioning: Future Orientation and Delaying Rewards</u>

Steinberg, L., Graham, S., O'Brien, L., Woolard, J., Cauffman, E., & Banich, M. (2009). Age differences in future orientation and delay discounting. *Child Development, 80,* 28-44.

Purpose:

- To investigate age differences in future orientation and the ability to delay rewards.

Methodology

- An experimental study conducted in a laboratory setting with a sample of 935 individuals, ages 10 to 30 years. Participants were recruited from the community in several cities across the United States.
- Used both self-report questionnaires and behavioral tasks to assess future orientation and preference for delayed versus immediate rewards.
    - Self-report questionnaire assessed participants' abilities to think about the future, plan ahead and anticipation of future consequences.
    - Behavioral task was a "delay-discounting" task, a standardized measure designed to assess participants' tendencies to choose immediate versus delayed rewards.

Results:

- Researchers did find age differences in future orientation as measured by the self-report questionnaire and the behavioral task.
    - Younger adolescents, more so than individuals age 16 and older, demonstrated a weaker orientation toward the future.
        - Younger adolescents were less likely to think about the future and anticipate future consequences of decisions.
        - Planning ahead continued to develop into young adulthood.
    - In the "delay-discounting" task younger adolescents, more so than individuals age 16 and older, preferred smaller immediate rewards than larger delayed rewards.

Relevance:

- The evidence suggests that adolescents' (in contrast to adults) preference for immediate versus delayed rewards is more closely linked to adolescents ability to think about the future, and anticipate future consequences and not their ability to self-regulate.
- The authors also note that "future orientation" has different dimensions and adolescents ability to anticipate consequences, may occur along a different timetable than their ability to plan ahead.
    - Authors suggest that adolescents' difficulty in anticipating future consequences is more closely linked to a sensitivity to rewards which is attributed to development of a particular brain system (socioemotional system) more highly aroused in early adolescence.
- The authors note that evidence demonstrating adolescents' weakened future orientation, or inability to anticipate the consequences of their actions, is often applied to discussions of adolescents' capacity for "premeditation" or "planfulness" in the context of criminal culpability.

<u>Cognitive and Psychosocial Functioning (generally)</u>

Steinberg, L., Cauffman, E., Woolard, J., Graham, S., & Banich, M. (2009) Are adolescents less mature than adults? Minors' access to abortion, the juvenile death penalty, and the alleged APA "Flip-Flop', *American Psychologist, 64*, 583-597.

Purpose:

- Researchers compared adolescents' cognitive capacities with a composite measure of psychosocial maturity examining risk perception, sensation seeking, impulsivity, resistance to peer influence, and future orientation.

Methodology

- An experimental study conducted in a laboratory setting with a sample of 935 individuals, ages 10 to 30 years. Participants were recruited from the community in several cities across the United States.
- To assess cognitive capacity a battery of tests assessing basic cognitive skills was administered.
- To assess psychosocial maturity researchers administered a combination of self-report questionnaires designed to measure risk preference, sensation-seeking, impulsivity, resistance to peer influence, and future orientation.

Results:

- Findings support the theory that cognitive maturation and psychosocial maturation occur along different timetables.
- "By age 16, adolescents' general cognitive abilities are essentially indistinguishable from those of adults, but adolescents' psychosocial functioning, even at the age of 18, is significantly less mature than that of individuals in their mid-20 (p. 592)."

Relevance:

- Researchers highlight that adolescents' poor judgment is not necessarily a result of poor reasoning skills, but more closely linked to adolescents' psychosocial development.
    - "When it comes to decisions that permit more deliberative, reasoned decision making, where emotional and social influences on judgment are minimized or can be mitigated, and where there are consultants who can provide objective information about the costs and benefits of alternative courses of action, adolescents' are likely to be just as capable of mature decision making as adults, at least by the time they are 16…

      In contrast, in situations that elicit impulsivity, that are typically characterized by high levels of emotional arousal or social coercion, or that do not encourage or permit consultation with an expert who is more knowledgeable or they have experienced, adolescent decision making at least until they have turned 18 is likely to be less mature than adults" (p.592)."

Cognitive and Psychosocial Functioning (generally)

Grisso, T., Steinberg, L., Woolard, J., Cauffman, E., Scott, E., et al. (2003). Juveniles' competence to stand trial: A comparison of adolescents' and adults' capacities as trial defendants. Law and Human Behavior, 27, 333-363.

Purpose:

- To investigate the influence of developmental maturity on adjudicative-related capacities in adolescents.

Methodology

- The sample consisted of :
  - 927 "youths" aged 11 to 17, approximately half of who were detained in a detention facility or jail and half who resided in the community with no current justice system involvement.
  - 466 adults, aged 18 to 24, approximately half were detained in a jail and half resided in the community with no current justice system involvement.
- Interviews were conducted in detention or jail settings for the detained participants and in a laboratory setting for community participants.
  - A standardized measure, the MacCAT-CA, was used to evaluate individual's capacity to understand, reason about, and appreciate critical aspects related to capacities to serve as trial defendants.
  - A new measure, the MacJen, used responses to different vignettes to assess the influence of psychosocial characteristics on adolescents' decision-making in the adjudicative context.

Results:

- Adolescents 15 years old and younger were significantly more cognitively impaired than 16- and 17-year-old adolescents and young adults in abilities related to competence to stand trial.
  - Adolescents aged 11 to 13 years old showed the most significant impairments.
  - 33% of the 11- to 13-year olds and 20 % of the 14- to 15-year-olds were "as impaired in capacities relevant to adjudicative competence as are seriously mentally ill adults who would likely be considered incompetent to stand trial by clinicians who perform evaluations for courts (p. 356)."
- Psychosocial characteristics such as compliance with authorities, risk appraisal, and future orientation were found to influence adolescents' decision making in 3 different legal scenarios: confessing to the police, accepting a plea agreement, and disclosing to an attorney.
  - Youth 15 years old and younger were significantly more likely than older youth to make decisions that represented compliance with authorities and to choose options associated with higher risks.
  - Those youth who were aged 14 years and younger were significantly less likely to consider the long-term consequences of their choices.

Relevance:

- Not only are youth more likely to be impaired in capacities related to understanding, reasoning, and appreciation, but psychosocial immaturity may make youth particularly vulnerable to poor decisions in legal contexts. For example:
  - Youth's tendencies to be more compliant with authorities may increase their vulnerability to police coercion.
  - Youth's lack of future orientation may impede their ability to fully understand the implications of waiving their right to silence when being interrogated by police.