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Adolescents' Development of Skills for Agency in Youth Programs: Learning to Think Strategically

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This research examines how youth in arts and leadership programs develop skills for organizing actions over time to achieve goals. Ethnically diverse youth (ages 13–21) in 11 high-quality urban and rural programs were interviewed as they carried out projects. Qualitative analyses of 712 interviews with 108 youth yielded preliminary grounded theory about youth's development of *strategic thinking*, defined as use of dynamic systems reasoning to anticipate real-word scenarios and plan work. Strategic thinking appeared to develop through youth's creative engagement with tactical challenges in the work and feedback from the work's outcomes. Program advisors supported this development by giving youth control and by providing nondirective assistance when needed.

The fluid, global 21st century places increased premium on adolescents' development of agency—typically defined in terms of abilities to set and achieve goals. The capacity for agency is needed for addressing important life tasks, including adapting to changing life circumstances, maintaining mental health (Cantor, 1990; Little, Snyder, & Wehmeyer, 2006), and navigating the labyrinthine transition to adulthood (Meijers, 1998). Skills for identifying and pursuing goals are also increasingly required in the labor market (jobs involving rote labor are paying less and disappearing; Levy & Murnane, 2004), and they are urgently needed in the civic arena to address pressing economic, social, and ecological problems.

Building skills related to agency is an objective of many organized youth development programs. Arts and leadership programs often aim to build adolescents' abilities to work toward goals by engaging them in large individual or group projects, such as completing a work of art, preparing a production, planning an event, or impacting their community (Ginwright, Noguera, & Cammarota, 2006; Heath, 1998). Limited research suggests that such projects can improve these abilities (Heath, 1999; Mitra, 2004). Youth programs, then, are a promising context for translational research, both as a laboratory for understanding how agency develops and as an intervention setting to facilitate its development.

This investigation examined adolescents' conscious processes of developing agency skills in this context. We focused on conscious processes because development of agency, almost by definition, requires youth to be intentional producers of their own development (Larson, 2000). By ''agency skills'' we refer to cognitive tools, including insights, precepts, knowledge, and action schemas that youth might employ to help them achieve goals. Adolescence is a particularly important period to study development of agency skills because of teenagers' new potentials for higher order reasoning, including reasoning about the dynamics of complex systems and executive control of one's own thought processes (Fischer & Bidell, 2006; Habermas & Bluck, 2000; Kuhn, 2009). Youth's development of agency skills that incorporate these advanced capabilities could be expected to provide them with more powerful, flexible, and dynamic tools for realizing goals.

In this research, we first ask: What types of agency skills do adolescents learn in youth programs? In an initial case study of a civic activism program youth reported learning a range of skills for agency, including a set of skills that appeared to incorporate adolescent potentials for higher order reasoning (Larson & Hansen, 2005). This skill set

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included learning to think strategically about how to influence human systems (in this case, a school board, teachers, students) and to think about dynamic sequences and contingencies in their work. Although we gave this skill set a provisional label, ''strategic thinking,'' information from only one program provided a limited database to conceptualize it, distinguish it from other agency skills, and understand how it develops.

Our second question concerned these developmental processes: How do agency skills develop? Very little research has been done on developmental processes (or mediating mechanisms) occurring in youth programs (Eccles, 2005), or more generally on how skills for agency develop (Brandstädter, 2006). The third question was: What contribution do adult program advisors make to these process? If youth are the producers of their own development, what role can adult professionals play in supporting these processes?

Given limited prior research, we addressed these questions using methods of qualitative discovery research. Our goal was to build preliminary grounded theory about processes in context based on accounts of the participants (NIMH Consortium of Editors on Development and Psychopathology, 1999). This article presents systematic analyses of longitudinal accounts from diverse youth in 11 high-quality programs.

Literature Review

Features of Youth Programs Thought to Facilitate Development of Agency Skills

Several structural features of arts, leadership, and related programs are believed to provide conditions for youth's development of agency skills (including strategic thinking). First, youth's projects involve an ''arc of work'' that includes planning, monitoring, adjusting plans, and receiving authentic evaluation of the project's results (e.g., a final public event or outcome). This arc is often seen as the medium through which learning occurs (Heath, 1998). Projects are executed over a span of weeks or months, thus potentially demanding a scale of mean-ends thinking beyond what adolescents typically experience in school or other contexts of daily life. Yet, although evidence suggests that project-oriented programs facilitate development of general social and emotional skills (Granger, 2008), little systematic research has examined how youth's experiences over this arc of work get transformed into agency skills.

A second important feature of many programs is that this arc occurs within ''real-world'' contexts, confronting youth with the complex types of demands and challenges these present (Halpern, 2009; Youniss, McLellan, & Yates, 1997). Achieving goals in real-world contexts (as compared to in schoolwork or in the structured tasks typically studied in lab research on decision making and planning) often entails ill-structured problems, competing goals, and unintended consequences (Okagaki & Sternberg, 1990; Rogoff, Gauvain, & Gardner, 1987). Actions need to be adapted to the irregular structure and dynamics of these contexts, which are not logical but ecological (Gigerenzer, 2008). Real-world human contexts are shaped by nested microsystem, mesosystem, and macrosystem; entail heterogeneous considerations; and contain ambiguities, paradoxes, and Catch 22s. Thus, rather than requiring formal planning and reasoning skills, achieving goals in real-world settings require ecological thinking (or ''ecological rationality''), adapted to the complexities of ecological systems (Gigerenzer, 2008). In youth programs, these complexities may entail, for example, the challenges of organizing steps in creative work or understanding the realities of how government decisions are actually made (as opposed to how they are taught in school; cf. Torney-Purta, Lehmann, Oswald, & Schultz, 2001).

A third significant feature of many programs is that they encourage youth to experience personal ownership over and engagement in their projects (Heath, 1999), and indeed, youth report experiencing higher average levels of attention, investment, and intrinsic motivation in youth programs than in other daily activities, like schoolwork and leisure with friends (Larson, 2000; Vandell et al., 2006). It has been argued that this high degree of engagement is necessary for learning higher order volitional skills (Blumenfeld, Kempler, & Krajcik, 2006). Halpern (2006) proposes that youth learn skills related to agency through internal conversations (with themselves and others) as they think through steps in their work. This suggests that, to understand their development processes, research needs to follow youth as they plan, act, confront problems, and assess what their experiences show them about achieving goals.

The Role of Program Advisors in Supporting Development of Agency Skills

In addition to these structural features, program advisors may contribute to youth's learning.

The youth development literature, however, diverges on how to best do this. Some scholars and expert practitioners endorse a *directive* approach to leadership in which staff structure and provide directive assistance for youth's work. In this approach, youth are often encouraged to experience ownership and engagement but within a delimited framework (Durlak & Weissberg, 2007; Roberts & Treasure, 1992). The rationale is that adults' greater knowledge allows them to craft proven learning experiences for youth. Support for this directive approach is provided by a meta-analysis of after-school programs by Durlak and Weissberg (2007). They found youth were most likely to show gains on measures of general personal and social skill in programs in which youth had active roles but within adult-structured activities.

Other scholars and expert practitioners, however, endorse an approach in which youth have principal control over their projects, and advisors play a *facilitative* rather than a directive role. The argument is that youth's learning (especially for skills related to agency) depends on their dealing with the demands and problems that arise in their projects (Delgado & Staples, 2008; Heath & Smyth, 2000). But apart from case studies of individual programs (e.g., Denner, Meyer, & Bean, 2005; Kirshner, 2008), there is little evidence on whether and how this facilitative model of leadership is associated with development of agency skills.

This Research

Our strategy for this research was to work backward, first identifying categories of agency skills in youth's reported learning (Question 1), then analyzing how youth described developing these skills (Question 2) and how advisors supported youth's learning process (Question 3). By conducting analyses on data from 11 programs (including the youth activism program in the case study), our objective was to formulate robust grounded theory about development of agency skills, particularly higher order skills, across diverse program contexts. A contribution of this research is its systematic analyses of these questions from the perspective of youth, as they plan, steer, and obtain assistance with their projects. By following youth's experiences as actors and learners, we hoped to obtain grounded theory that is directly helpful to practitioners attempting to support youth's learning process (Valach, Young, & Lynam, 2002).

Method

Sample

Youth from 11 urban and rural programs were interviewed over the course of their work on projects. Six were leadership programs in which projects involved planning community activities and lobbying governmental agencies. Five were arts and media arts programs in which youth created individual artwork or joint productions that were shared with the community. All programs were aimed at high-school-aged youth, although several included one to two older youth (see the Appendix).

To maximize data to study developmental processes, these programs were selected following procedures for identifying high-quality programs formulated by McLaughlin, Irby, and Langman (1994). We asked local youth development professionals about good programs in their communities, then visited frequently named programs to observe meetings and talk with staff. Programs were selected in which youth appeared to be highly engaged in program activities and the program had other features associated with high quality (Eccles & Gootman, 2002). In all but one program, the principal advisors were paid professionals.

The sample for the interviews included 108 youth. At each program, the advisors assisted researchers in selecting 8–12 youth who were approximately representative of their participants in gender, age, ethnicity, length of participation, and other characteristics. The sample included 59 girls and 49 boys, with a mean age of 16.5 (SD = 1.7, range = 13–21), and approximately equal numbers of youth who identified themselves as European American (N = 36), African American (N = 32), and Latino (N = 32) youth, as well as 6 biracial and 2 Asian American youth. Youth came from neighborhoods that ranged from low socioeconomic status to middle class. All names of programs, youth, and adult advisors are pseudonyms.

Procedures

Each program was studied over a period during which youth carried out one or more projects. For most programs this study period was 3–4 months (range = 2–9 months). Over this time, each youth was interviewed by the same interviewer approximately every 2 weeks (every month in two programs studied for 9 months). Longer face-to-face interviews (lasting 45–70 min) were conducted at the beginning, middle, and end of the study period.

Shorter phone interviews (10–20 min) were conducted during the intervening periods. In total, 648 of these youth interviews were completed. In addition, we were able to contact 64 youth 2–3 years later and conduct a follow-up interview. All were taped and transcribed. Interviews with the principal advisors and site observations were also conducted at each program, but these data were used here only to provide context for interpreting youth's interviews.

Interview Protocols

Interviews followed open-ended protocols aimed at obtaining youth's accounts of their experiences and how these influenced their development in different domains (e.g., emotional, motivational, interpersonal). Interviewers used a structured sequence of questions, but were also encouraged to vary wording, probe, and follow youth's lead, when appropriate, to obtain accounts of youth's salient experiences from their point of view (Auerbach & Silverstein, 2003).

To understand youth's development of agency skills, at each interview they were asked ongoing questions about their experiences with their projects. Much of the data analyzed here came from repeated questions about their work on their projects: ''What challenge or obstacles have you (or the group) been dealing with in the last 2 weeks?'' ''What did [the adult advisor] or other adults do to help?'' and ''What have you learned?'' When youth reported having learned something, interviewers were instructed to ask ''What happened in the program that helped you learn this?'' and ''Has this carried over to other areas of your life? How are you using it?'' Questions in the follow-up interview focused on what they had learned in the program, how this happened, and whether their learning had transferred to other contexts.

Analyses

Our goal in addressing the three research questions was to identify robust categories of responses across multiple youth and programs. We employed procedures of qualitative analysis designed for systematic identification of repeated themes, structure, and process in narrative data (Auerbach & Silverstein, 2003; Strauss & Corbin, 1998). Analysis involved iterative cycles of: (a) close examination of interview passages, (b) methodical comparison between passages, (c) progressive formulation of theoretical concepts and corresponding operational definitions, and (d) coding. Our goal was to develop grounded theory based on youth's accounts, nonetheless formulation of concepts was partly informed by existing theory and research (Strauss & Corbin, 1998). Given limited space, we focus here on the individual youth's experiences (rather than the program level; see Larson & Angus, 2011), although we note differences between the arts and leadership programs when salient.

The first two steps of analysis involved preliminary coding to identify pertinent youth interview data. First, we identified all passages related to the exercise or development of agency. This was defined as data ''dealing with completing a project or working toward goals within the program.'' Following recommendations to delimit the focus of a qualitative inquiry (Strauss & Corbin, 1998), we decided to restrict analysis to passages dealing with *instrumental* knowledge and skills, excluding data on managing emotions, motivational change, and managing peer relations (each correspond to a large separate literature and would have greatly complicated the task of theory building). Next, we identified all passages dealing with the three research questions. Much of the material for each came in response to interviewers questions directed at that issue, but much also came from other parts of the interview.

The analyses of what youth learned (Question 1) began with several ''starter categories'' based on preliminary analyses (Miles & Huberman, 1994), including our initial concept of strategic thinking. The iterative analytic process of coding the data, then, led to differentiation, integration, and refinement of category definitions. These analyses identified three categories of agency skills: mobilizing effort, concrete organizing skills, and a refined category of strategic thinking. The integrity of these categories was indicated by high interrater agreement ($\kappa = .83$). Note that we do not view these categories as representing underlying (Piaget-like) structures but rather as groupings of theoretically similar and functionally related elements of each youth's constructive web of knowledge and skills (Fischer & Bidell, 2006).We next carried out descriptive analyses of the data in each category to identify salient theoretical dimensions (Strauss & Corbin, 1998). In addition, we analyzed youth's reports on their transfer of learning to other arenas of life.

The analyses addressing youth's learning process (Question 2) identified two central components in youth's accounts (the demands and outcomes of their work). It also identified two mutually

exclusive subcategories within each component that were associated with distinct learning processes. We also conducted comparative qualitative analyses to evaluate whether these subcategories were associated with learning different skills. The pool of data for these analyses included substantially fewer passages than for Question 1, because youth often did not respond to or provided little usable information when asked how they learned a skill (they often just said they learned from doing the project).

Separate data, however, permitted us to conduct rudimentary quantitative analysis as a check on the associations between these categories and youth's learning different agency skills. In each interview, youth were asked about the demands and challenges they were facing in their projects; hence, we were able to code and then count the number of times each youth reported each of the categories of demands. Similar coding and counting was done for youth's reports of outcomes from their work (because we did not have follow-up interviews for all youth, data from these were excluded from computation of all statistics in this article). Partial correlations were then computed between these counts and each youth's rate of reporting each category of learning. Each youth's number of interviews and dummy variables identifying 10 of the 11 programs were controlled in the partial correlations. The specifics of these analyses are described next, and we provide cautions about the limits of these tests. Given these limits, we do not judge these quantitative tests to be more definitive than the qualitative findings.

To analyze the role of advisors in youth's learning (Question 3), we began with rudimentary tests of how learning related to their advisors providing directive and facilitative assistance. We evaluated the correlation between youth's reports of experiencing these two type of assistance and their rates of learning each type of agency skill. We then used these findings to focus a set of qualitative analysis aimed at identifying the specific forms of adult assistance associated with youth learning the different skills.

Because the objective was to develop grounded theory, our work progressed from empirical to theoretical analyses (Strauss & Corbin, 1998). Conclusions from the theoretical analyses are presented in ''Theoretical Integration'' sections following presentation of results for each question. Because we were most interested in youth's development of higher order cognitive skills, we give primary attention to strategic thinking, although the other categories were retained in analyses for purposes of comparison. Readers are reminded that conclusions are based on youth's accounts of their experiences, and are thus limited to what youth were able and willing to report. We believe, nonetheless, that this source provides a useful beginning picture, particularly for understanding youth as conscious producers of their development.

Results and Discussion

Question 1: What Youth Reported Learning About Working Toward Goals

Mobilizing Effort

The first category of agency skills entailed youth learning to devote the needed energy and time to their work. Accounts coded into this category were concrete rules and precepts: Youth had learned an association between an action and outcome. The common theme was that successful work requires effort and they had gained abilities to deliberately mobilize and regulate that effort. Some reports in this category were stated as axioms. Youth had learned: ''It takes a lot of work,'' ''It takes longer than you think,'' ''It depends on effort.'' Others were stated as maxims: ''start early,'' ''keep determination,'' ''you've got to keep going despite anything.'' In some cases, the focus was on regulating their energy and attention. Tavares, from Faith in Motion, said he learned, ''You have to keep on trying, 'cause it's not gonna come the first time.'' In other reports, the focus was on learning to manage time: ''don't procrastinate,'' and manage outside activities (e.g., homework, peers) to make time for the program work. A majority of youth (69%, $N = 75$) provided at least one statement in this category ($M = 1.27$, $SD = 1.35$, range = 0–6). The number of statements per youth did not differ significantly among the 11 programs, $F(10, 97) = 1.68$, $p = .097$.

Concrete Organizing Skills

Youth's accounts in the second category involved learning rules to organize the tasks or elements of their projects. They learned the steps to reach a goal, what steps to do first, and ''how to put things in order.'' In some cases, youth simply reported they had learned ''how to plan'' or ''to be more organized'' without elaboration. We identified responses in this category as concrete because they did not articulate dynamic relations among elements. Some of this learning was related to specific

program tasks and some involved more general skills. For example, K'sea at SisterHood, who had worked on a fundraising project, said she had learned, ''figuring out how much it costs for the event, how much you need to raise per person.'' Andrés at El Concilio described learning more general organizational skills, which transferred to his schoolwork:

> This program has helped me be more organized and happier about myself. Like your school, oh man, I couldn't find my homework. Now everything is in a very organized pattern. I know where everything is.

One fourth, 27%, of youth provided at least one report of this type of learning ($N = 29$; $M = 0.39$, $SD = 0.73$, range = 0–3). Rates differed significantly between programs, $F(10, 97) = 1.97$, $p = .045$, and appeared to be lower in the arts ($M = 0.27$) than leadership programs ($M = 0.47$). Given the low base rate (and the unelaborated and ambiguous nature of some of these reports), we gave limited attention to this category in subsequent analyses.

Strategic Thinking

The final category of agency skills was strategic thinking, and our iterative analysis yielded this operational definition:

> Thinking that involves the inference of system processes as a means to anticipate events and formulate courses of action to achieve goals in the program. Thinking entails ''system processes'' when a person describes or directly implies fluid part–whole or part–part relations within the behavior of a system or the interactions of multiple systems or levels of analysis (e.g., relations between the present and future or thoughts and behavior). Includes nonlogical real-world systems processes.

The types of system processes represented in the youth's descriptions of what they learned included the dynamics of unfolding events and plans, their own psychological processes, and how the people whom they were trying to influence (e.g., city officials) could be expected to respond to their possible actions. Forty youth (37%) provided at least one report of learning in this category ($M = 0.57$, $SD = 0.90$, range = 0–5). The rate of these reports differed significantly between programs, $F(10, 97) = 3.21$, $p < .001$, and appeared to be higher in leadership ($M = 0.73$) than arts programs ($M = 0.39$). Our descriptive analysis suggested three overlapping dimensions within strategic thinking.

Active anticipation. First, youth reported learning to think ahead and anticipate how dynamic events might unfold in their projects. How would a mural they were painting or a plan they were implementing be likely to develop? Dawn, who was stage manager for a production of Les Miserables, had learned to ''try to stay on top of things and trying to anticipate things that are gonna need to be done.'' She also reported that this learning transferred to her work at a summer camp, ''As a counselor you're kind of like the parent to these campers; and so, you need to take the initiative to be watching for things, like looking for signs.'' These quotes suggest that Dawn learned to conceptualize underlying dynamic processes in the production (and later in the campers) that she had to watch for and anticipate. Similarly, the young women at SisterHood were conducting a fundraising campaign and, when asked what she learned, Michelle described learning to anticipate and preempt their tendency to procrastinate:

> We just set like a timeline of when things are going to occur, and we set consequences for ourselves of like, ''What is going to happen if we don't do these things?'' Because we know how we are.

She was thinking of the group as a predictable dynamic system. Across programs, youth reported learning to imagine a variety of scenarios that could occur, and to be prepared for them: ''always have extra,'' ''allow extra time,'' and ''always have a backup plan.'' Youth were learning to proactively predict different dynamics that could unfold, including things that could go wrong.

Using knowledge of how people think and act. This skill for anticipating unfolding events often involved understanding not just one's own processes but how different groups of people (i.e., human systems) thought and functioned. In the leadership programs, youth reported learning to craft plans based on knowledge of the people whom they wanted to influence, such as children and public officials. Youth in the Prairie County 4-H Federation planned special events for younger children, and several reported learning to think strategically about how to engage this age group. Becky described learning enough about how children think and act (including ''children of different age groups and cultures'') to plan successful

activities for them. ''I've been able to come up with more child-like ideas,'' she reported. When Becky started a new job at a day-care center, she realized that her Federation experience had taught her to ''visualize being a kid and what they would like.'' She had learned to extrapolate from her prior experiences to make predictions about how different groups of children would respond to an activity. Youth at Clarkston FFA reported learning how state legislators thought, which helped them plan lobbying efforts, and youth at El Concilio reported learning how business owners thought, which helped them plan strategies to obtain contributions from them. Sara at El Concilio reported learning to try to get business owners to give money on the spot, because ''They tell you 'yes' and later they tell you 'no.''' Youth were learning to adapt actions to the predicted dynamics of people's real-world behavior.

Flexible planning adapted to anticipated scenarios. Across programs youth described learning to plan their actions to fit anticipated scenarios and contingencies: to develop flexible plans that allowed them to make adjustments as steps of their work unfolded. Youth at The Studio were designing graphic art on the computer, and Manuela reported learning a flexible strategy that began with a ''rough draft'' of her initial concept: ''Start with one idea and stem out from there; add things, take away things.'' This strategy resembles an approach used by skilled artists that allows them to progressively refine and sharpen the concept or problem they are addressing (Getzels & Csikszentmihalyi, 1976). In the leadership programs, youth reported learning flexible schema for planning successful events and political action campaigns. Members of Youth Action were involved in campaigns to improve school policies, and Rosa described learning to prepare the groundwork with school officials before staging a protest:

> We send 4 or 5 letters [to school officials] before we rally saying, ''Let's meet with you.'' We know they're not going to meet with us, so we're always prepared for the rally. We're always like ''Yep, we're going to have the rally 'cause you know they're not going to meet with us.'' . . . Eventually after the rallies we usually get what we want.

Rosa was learning an effective two-track strategic approach for influencing officials that combines public pressure with private communications (Kwon, 2008). She also described learning strategies for using press coverage of a rally to help sympathetic officials justify acting on youth's behalf.

Transfer of Learning

An important issue is whether the agency skills youth described learning were context-specific or had more general application. Did youth use these skills in other contexts and to address goals pertinent to their well being? Although this discovery research was not designed to test this question, the youth's accounts provide preliminary evidence. When asked whether these skills transferred to other contexts, the majority of youth said they did. Youth who reported learning mobilization of effort and concrete organizing skills described using them in school and elsewhere. They now started early and were more perseverant with homework; they managed their time better or were more organized in a range of activities. Michelle reported that as a result of developing organization skills at Sisterhood, she now made ''to do lists'' for things she wanted to accomplish in other parts of her life.

Youth who learned strategic thinking reported transfer of learning. In some cases, their strategic skills transferred to similar contexts (see Dawn and Becky above). In other cases, these skills were used for addressing general life problems and navigating transitions to adult roles. In her follow-up interview, Elena, now in college, was asked how the strategic skills she described learning at Youth Action influenced other areas of her life:

> It's definitely helped me be, ''Okay, what steps do I need to take to change that or address this issue that I have. . . . It helps you to be more critical and to really understand your situation and be like, ''Well this can work, this might not.'' It just gives you options.

Mateo from Youth Action described similar transfer in his follow-up interview, ''Life is nothing but choices. It helped me make better decisions.'' Although he came from an immigrant family, and lived in a poor urban neighborhood, Mateo credited these skills with helping him steer clear of gangs and get into college, where he was preparing to become a fifth grade teacher.

Theoretical Integration: Conceptualizing Strategic Thinking

These analyses suggest a more distinct and robust conception of strategic thinking than was

provided by our prior analysis of a single program (Larson & Hansen, 2005). Building on data from 11 diverse programs, we propose defining it in terms of use of proactive anticipation to plan and regulate actions to achieve goals. Whereas learning to mobilize effort involves use of precepts to dictate actions (e.g., ''do a little every day''), strategic thinking involves use of predictions to formulate flexible courses of action. These predictions, we further propose, employ higher order executive skills. The 40 youth who reported learning strategic thinking appeared to be drawing on their new cognitive potentials (for hypothetical reasoning, for thinking about processes in dynamic systems) as a means to rationally anticipate the unfolding of different scenarios in their work and to plan accordingly. Prior research finds that adolescents' decision making typically involves ''narrowly focused'' evaluation of a single course of action with little formulation of new options (Fischhoff, 2008, p. 21), but this subset of youth described learning to generate alternative courses of action based on anticipated dynamics.

The concept of strategic thinking derived from these analyses includes rational anticipation of dynamics in the external world. Whereas most research on agency is inwardly focused, emphasizing regulation of the self (Bandura, 2006; Little et al., 2006), the strategic skill set our youth described included learning to predict and influence the environment. Youth in these programs reported gaining skills to shape their actions based on predictions of how public officials, young children, and other ''human systems'' might respond. This included anticipating nonlogical (but ecologically rational) dynamics of human behavior (e.g., ''they tell you 'yes' and later they tell you 'no'''), which are not covered by research on the development of planning (Goodnow, 1987; Rogoff, Baker-Sennett, & Matusov, 1994). Thus, strategic thinking drew not only on adolescents' potential to develop formal reasoning skills, it also drew on their potentials to develop skills for pragmatic, ecological reasoning. Strategic thinking, we propose, involves the formulation of flexible courses of action based on a calculus of how different real-world scenarios might unfold.

Question 2: How Youth Learned: Developmental Processes

Abundant evidence indicates that although brain maturation plays a role, children's and adolescents' development of cognitive potentials depends on experience (Kuhn, 2009; Shonkoff & Phillips, 2000). Our second research question was: What experiences or experiential processes were related to youth learning these agency skills? The analyses suggested two principal components in youth's accounts of how they learned agency skills—the demands of their work and the work's outcomes.

Learning From the Demands of the Work

Youth often reported that their learning was impelled by the demands, requirements, and problems they experienced in their projects. They explained the learning process with phrases like ''I needed to,'' ''we had to,'' ''you got to,'' phrases indicating that their learning was driven by imperatives of their situation (youth sometimes employed ''we'' in these accounts, suggesting collaborative learning). Our analyses identified distinct processes associated with two different types of demands.

Complying with a priori requirements. The first type of demand involved fixed explicit requirements set in advance. These included deadlines, standards, and rules that created imperatives, such as dates set for presenting their work and requirements that public murals conform to certain standards. Youth reported that their desire to comply with these demands impelled learning skills to do so. For example, Paco credited Media Masters with helping him learn to ''really push myself.'' Asked how he learned this, he said, ''Because of how we *had to* finish our work, and always finish it. Never leave it undone or leave it half done.'' (Italics added to highlight the imperative here and next.) Similarly, across interviews Manuela reported that designing the cover for a CD at The Studio taught her ''how to not wait until the last minute,'' ''spread the work out over a period of time,'' and ''not procrastinate.'' Her explanation for how she learned was: ''Here, I really *have to* do it and I don't really have an option.'' As with Paco and Manuela, youth most often described a priori requirements as an impetus for learning to mobilize effort.

Engagement with tactical challenges. The second category of demands that elicited youth's learning were challenges that emerged *within the work* of their projects. These involved tactical challenges, problems dealing with how to be successful. They typically entailed ecologically embedded, interpersonal or situational demands, such as getting people to show up, finding a venue for an event below a certain price, and getting the lighting right. As with learning from a priori requirements, youth

used phrases like ''we had to'' or ''you must,'' indicating that imperatives compelled their learning. But here youth were referring not to fixed requirements like deadlines, but to imperatives within the work itself: problems they had to solve, steps they needed to take, and interpersonal transactions they wanted to optimize to achieve a desired end.

Tactical challenges were described most often as the impetus for a learning process leading to strategic thinking. Members of El Concilio planned events for neighborhood youth, and as Maria worked on these events she reported facing numerous tactical challenges, ranging from trying to get restaurants to donate food to dealing with an official who withdrew permission to use a space an hour before the event. Maria's strategic learning involved gaining skills for solving multipart problems in planning an event. (We can't do this; we have this, this and this; so we have to find other ways to solve the problem.) Asked how she learned this, she said, ''Like in everything that we have planned or every event you plan, you can have like an obstacle that *you need to* find a way around to finally make the event come true.'' The process of struggling ''to find a way around'' numerous obstacles appeared to be how Maria learned.

Similarly, Miguel at Youth Action attributed his development of strategic thinking to the challenges they faced in preparing for meetings to lobby the school board: ''With the board of education, *we had to* analyze what was going on at the time, 'What do *you have to* do?''' Miguel's full account suggested that he learned through brainstorming sessions in which they evaluated options for achieving their goals in these meetings. Youth's reports suggested that they learned from devoting time to asking themselves: what are the challenges, how do we get around or avoid potential obstacles, and what are the keys to achieving our goals in this situation?

Youth described this as an active learning process. It involved creative insight and discovery. Youth explained learning from tactical challenges with phrases like: ''I figured out that . . . ,'' ''I realized that . . . ,'' and ''I just thought about it and. . . . '' This active discovery process is illustrated by Rhonda's explanation for her development of strategic skills through planning activities for 4-H children at the Prairie County Federation:

> With this one [activity], like it's geared towards younger kids, so *you have* to—it's kind of difficult to think of topics and stuff. And *you don't wanna feel* like you're repeating yourself with the same workshops and everything, but *you have to* sometimes, because there's always younger kids who don't know how to ride a bike, how to do their 4-H records, and stuff like that.

Rhonda's account suggests a process of creatively thinking through activities for young children from their point of view. She identified tactical challenges and then generated ideas that addressed them. In a separate interview, Rhonda also reported learning to call other program members to help brainstorm and narrow down her ideas.

In sum, youth reported learning strategic thinking from a *thought process* involving creative and analytic cognitive engagement with the tactical challenges in their projects. They appeared to learn by devoting time and mental activity to thinking (and talking) through the demands in the situations they faced and reasoning about how to solve them. Harris (2000) has argued that imagination plays a vital role in children's development of many adult competencies. They learn in part from reasoned speculation about hypothetical and counterfactual possibilities. These youth, we suggest, were using imagination as a tool to analyze, figure out, and think through the multisided demands of complex ecological situations (tactical challenges, obstacles, potentialities) and generate plausible hypotheses about different plans for addressing them. They appeared to learn from cognitive engagement in developing reasoned conjectures about possible scenarios related to their goals, conjectures that would be later confirmed or disconfirmed by the outcomes (as suggested next).

Testing the relations between demands and learning. These qualitative analyses suggest distinct learning processes stimulated by two types of demands. Attempts to meet a priori demands appeared more often to be the impetus for learning to mobilize effort, and cognitive engagement with tactical demands for learning strategic thinking. The interview data provided a rudimentary means to test these suggested relations, using the individual youth as the unit of analysis. We created operational definitions for the two types of demands, and coded all instances of each in the data ($\kappa = .77$). We then counted the frequency with which individual youth reported demands in each category across his or her interviews. The assumption was that more frequent reports of a given type of demand would reflect the salience or amount of cognitive engagement with it. Finally, partial correlations were computed between these frequencies and the rates with which youth reported each of the three types of learning (Table 1).

Table 1
Partial Correlations Between Experiences Youth Reported During Their Projects and Their Leaning of Different Types of Agency Skills

			Agency skills		
Youth's experiences during projects	*M*	*SD*	Mobilizing effort	Organizing work	Strategic thinking
Types of demands					
A priori requirements	1.86	0.15	.11	−.07	.13
Tactical challenges	2.62	0.25	.11	.14	.22*
Youth reported outcomes					
Successes	3.60	0.33	.04	.02	.31**
Negative experiences	1.17	0.21	−.05	−.07	.10
Types of leader facilitation					
Directive	2.56	0.26	.22**	.06	−.03
Facilitative	0.94	0.12	.17	−.01	.24*

Note. Partial correlations, with controls for the program a youth was in and the youth's number of interviews ($N = 108$).
*$p < .05$. **$p < .01$.

The findings of these rudimentary tests did not show the expected relation between a priori requirements and learning to mobilize effort. However, they did confirm the expected relation between youth's rate of experiencing tactical challenges and learning strategic thinking. It should be cautioned that these tests were correlational, did not directly test the theorized process of imaginative cognitive engagement, and did not control for possibly confounding contextual and experiential factors (such as a youth's motivation to address the demands and self-selection factors).

Learning From Outcomes of Work

In addition to learning from demands of their work, youth reported learning from it's outcomes, from observing the short- and long-term results of their actions. Youth described learning from successes and negative outcomes, with neither category more prevalent for accounts of learning effort, concrete organizing skills, or strategic thinking.

Learning from successes. Youth often described the success of a project or step in a project as an affirmation of the actions they had taken. Michelle explained that reaching their goals for a candy sale at SisterHood helped her learn about effort ''that if you work hard, you can get it, because you know we finally worked for it and we have reached it.'' Hussein at Harambee learned from the success of their lobbying campaign to restore neighborhood transit service: ''Man, look at what the little things you can do and the impact it will put on people.'' Positive feedback reinforces new patterns of behavior (Hattie & Timperley, 2007).

Youth's descriptions of how success helped them learn often took the form of narratives, suggesting that their learning was represented within episodic memories (Overton, 1990). In cases when youth learned strategic thinking, these narratives often contained causal inferences about how actions they took in specific situations (and in response to specific challenges) led to their success. For example, Tien at Art First, who said she previously had difficulties with getting bogged down in the details of her paintings, described how she had learned the effectiveness of a new strategic approach by trying it out:

> I started early . . . I sort of went through the hard part, and I left it for a day or two and I came back to it, and it was a lot easier to finish. I sort of developed a new way to conquer your adversaries or something.

This narrative appears to document the role that 1–2 days of clearing one's mind can play in counteracting the processes that got her bogged down, making it easier to finish.

Learning from negative outcomes. Youth also attributed their learning to negative outcomes of their work. Some youth reported that they had learned about mobilizing effort because they had fallen short of their goals. Other youth described how negative outcomes provided them with corrective information regarding actions they had or had not taken. For example, they had learned to ''make sure there are restrooms'' and ''you gotta do a little bit more to get something done.'' Jack in Les Miserable described learning strategic thinking from

occasions when ''something would get mixed up, and you had to recover from it. It definitely teaches you how to plan ahead and how to time things.'' As with successes, youth often described their learning processes by recounting a narrative of their experiences.

Some youth indicated that it was not just a single experience but repeated experiences of negative (and positive) outcomes that helped them learn. Variations in the situations youth faced and the strategies they tried appeared to provide a fund of experiences for comparison. In the 2-year follow-up interviews, Dawn from Les Miz, described her learning process across multiple theater productions as one of ''trial and error . . . falling short so many times, or just flat out failing, taught me more than you know.''

Testing the relation between outcomes and learning. As a rudimentary test of these qualitative findings, we evaluated whether there was a quantitative relation between the numbers of positive and negative outcomes youth reported and their development of agency skills. We went through all interviews and coded every instance in which youth described a positive or negative outcome ($\kappa = .88$), then counted instances for each person.

Results showed a significant partial correlation between the number of successes a youth reported and her or his learning strategic thinking (Table 1). But number of successes was not correlated with mobilizing effort, and negative outcomes were not related with learning any of the three categories of agency skills. Again, limits of these rudimentary tests should be noted. Youth were not specifically asked to enumerate their experiences of success and failure; relying on their spontaneous reports may have made for weak measures of these experiences.

Theoretical Integration: Limits and Strengths of Experiential Learning

The youth's accounts, then, describe a process of learning from experiences. From a scientific viewpoint, experience is a flawed means for gaining knowledge. Byrnes (2005) points out that real-life contexts are ''rife with uncertainty'' (p. 8). Conditions and trials are not controlled; causal variables are often obscured or confounded. Even for educated adults, interpretation of evidence is readily distorted by recency, saliency, and other biases, and people often fail to seek disconfirmatory evidence. Kuhn (2005) questions whether adolescents often see experiences as *illustration* of a theory, rather than as *evidence* to be evaluated.

But strategic thinking, we propose, may be a skill set that depends (at least partly) on experiential learning. What these youth were gaining was not logic or formal principles. They were learning to navigate the irregular ecological dynamics of real-world systems in which uncertainty is part of the game, numerous situational contingencies may be at play, and one's success may hinge on abilities to predict the actions and reactions of different groups of people. It is notable that even professionals identified as experts in applied fields (e.g., design engineers, military commanders) often draw on narrative memories of prior experiences to make decisions (Ericsson, 2006; Ross, Shafer, & Klein, 2006). A merit of experiential learning may be that knowledge encoded in narrative form preserves some of the situational contingencies associated with the success or failure of a given course of action. For this reason, although flawed, some degree of learning from direct experiences may be essential for developing strategic thinking.

It is also important that youth described their thought processes as a central to how they learned. Their learning was not random trial and error. They described learning through analyzing, brainstorming, and thinking about the causal processes at work in a situation: evaluating tactical challenges and anticipating scenarios. What youth then learned from outcomes, we suggest, was not just the confirmation (or disconfirmations) of the actions they took, but confirmation of the whole line of guessing, thinking, and theorizing that led up to those actions. Over multiple experiences, we propose, they progressed from basing their goal-directed actions on imaginative but reasoned conjectures, to basing these actions on more ecologically rational predictions that were informed by prior experiences. Of course, many other factors that were not salient in youth's accounts may be involved, such as youth's initial skill level, their motivation to be engaged, and input from more knowledgeable peers.

Question 3: Advisors' Roles in Supporting Youth's Development of Agency Skills

What are advisors' roles in supporting these learning processes? If strategic thinking is learned through youth's active engagement with the challenges of the work, what role (if any) might advisors play in assisting their learning?

Preliminary Quantitative Tests

We began with rudimentary quantitative tests evaluating whether directive and facilitative advisor assistance were correlated with youth's learning the three types of agency skills. *Directive* advisor assistance was operationalized as youth's reports that advisors helped structure, control, or steer work on their projects; *facilitative* advisor assistance as reports that advisors helped in ways that supported youth's control of their projects (e.g., support their decision making, provide help when asked). All youth accounts of advisors' help with their projects were coded into these two categories ($\kappa = .65$), then we computed the frequency with which individual youth reported each.

The partial correlations indicated each of the two types of assistance were related to youth's learning different agency skills (Table 1). Youth who reported more directive assistance were significantly more likely to learn mobilizing effort. Youth who reported more facilitative assistance were more likely to learn strategic thinking. Follow-up qualitative analyses were then aimed at identifying specific forms of advisor assistance (with their work or their learning) associated with each of these two significant relations.

The Relation of Directive Assistance With Learning to Mobilizing Effort

The first follow-up analysis evaluated the types of directive advisor assistance reported by the youth who learned mobilizing effort. The most frequent type of directive assistance identified by these youth involved *prodding and keeping them focused*. Advisors supported their work and learning through actions that helped sustain their effort and attention. For some youth, the advisors' main role consisted of repeatedly reminding them about the a priori demands of their work, most often deadlines. Jaing at Art First said the advisors facilitated his work because, ''They always reminded us: 'The mural's due next week. You have three more days.''' Jamar at The Studio attributed his learning to more assertive prodding by the program advisor.

> Well downstairs I would have Latisha on us. You know like, ''You gotta do it! You gotta do it!'' So, we have to do it. So it's cool. You know what I'm sayin'? 'Cause like she pushes us to do it. But outside [the program] it's like I do it for myself, because . . . I just get that little nagging voice from Latisha in my head and I can do it. It's like, ''You gotta do it. I gotta do it,'' you know?

Jamar described an often-theorized process (e.g., Vygotsky, 1978) in which external regulation, in this case Latisha's ''nagging voice,'' was internalized.

This prodding also appeared to help youth finish their projects and thus obtain the validating feedback that success provided. Miguel at Youth Action explained:

> They encouraged me to work harder and to just try my best. And I did try my best and it turned out pretty well. And it was thanks to them, it just showed me that I could actually do something like that, something that's really important.

The Relation of Facilitative Assistance With Learning Strategic Thinking

The second follow-up analysis evaluated types of facilitative advisor assistance reported by the youth who learned strategic thinking. Four interrelated dimensions of help were identified.

Giving youth freedom to experiment. Quite a number of these youth reported that advisors helped them by giving them freedom to control their projects. They said advisors facilitated their work or learning because: ''They gave me a choice to decide what I wanted to do,'' ''They really just laid back, and let us take everything in control,'' and ''They actually let me do it; they actually let me experiment and freely do it.'' Consistent with the findings for Question 2 (how youth learned), youth attributed their learning to advisors providing the opportunity for them to engage in their own process of experimentation, trial and error, and discovery.

These attributions, however, were often embedded in longer compound passages indicating that advisors' contribution was not solely that of getting out of their way.

Initial training. Youth in several programs reported that their active process of learning was facilitated by initial training from the advisors. Ron explained how he learned strategies for producing a track of music on sound equipment at The Studio:

> The way we learned how to do it [is] the first time, they tell us the basics of how the sound gets in there and how to put the sound into the

> machines. They let us tinker with it on our own until we find a good pattern and know what sound it is, then we go on from there. Basically you got to do it yourself.

Ron and other youth described acquiring strategic skills through a progression from preliminary instruction to their own ''tinkering'' and experimentation.

The two other dimensions of facilitative assistance represented ways in which advisors continued to actively support youth's learning during their work.

Contributing input to youth-driven planning. Many of the youth who learned strategic thinking reported that advisors helped them by offering nondirective suggestions on the course of their projects, including warnings about possible problems. Youth said their work benefited when: ''Janna and Gary told us their opinion about things, and they try to like help us make the best decisions'' or ''They'll say, 'Hey what about this guys?''' Lucia described how, during planning sessions, the El Concilio advisor helped them by ''just giving us more ideas . . . but he wouldn't tell us like, 'You have to do this.''' Advisors provided assistance in ways that youth perceived as keeping them in control of their projects.

A frequent contribution of advisors in these accounts was alerting youth to problems they had not anticipated. Youth said that advisors provided assistance when: ''ideas wouldn't work'' or ''something's missing.'' Adults were credited with abilities to foresee scenarios youth did not see. Karina explained how the advisors at El Concilio provided this type of help:

> We do everything, but then again, you know, they are the ones that are going to be like, ''Okay, well, if you do this, this could happen.'' So they like sort out the possibilities, and then from there, we'd just be like, ''Okay, we'll do this and this and that.''

Advisors cued them to potential obstacles and contingencies. But as with Karina, youth said the adults then left them the decisions on how to address these concerns. The advisors were helping youth learn strategic thinking, we suggest, by priming them to think more broadly and deeply about the tactical challenges and how events could potentially unfold.

Providing backup assistance. Youth who learned strategic thinking also said advisors helped them by providing assistance *when and if* they requested or needed it. The advisors' assistance was conditional. They perceived advisors as providing help: ''if we get stuck,'' ''when nobody can figure it out,'' and ''when I don't understand''—situations the youth could not handle alone. Jacob explained the assistance of an advisor at The Studio:

> He just kind of walks around the room and monitors everybody's computer and waits for somebody to ask him a question about something and he comes to their assistance and helps them with whatever they need to be done.

Similarly, Tricia said the 4-H Federation advisors ''can help arrange speakers and they get supplies; like we tell them what we need and they'll get it for us. . . . They are kind of there if we need help with anything, but they kind of let us run the show.''

By filling in for things youth could not do, the advisors, in effect, expanded the reach of youth agency. They helped youth to maintain (and regain) a sense of control in taking on novel tasks. In Vygotsky's (1978) terms, this backup assistance allowed youth to work and learn in an extended zone of proximal development.

Theoretical Integration: Support for Youth's Learning Process

Youth's accounts of the type of assistance they received from advisors appeared to be matched to the learning process associated with the agency skills they learned. Youth who reported learning skills to mobilize effort described benefiting from advisor-initiated directive assistance: Advisors helped by prodding them through their projects to a successful conclusion. This is consistent with the findings for Question 2 that skills for mobilizing effort (start early, be disciplined, work steadily) were learned from youth's experience of successfully complying with a priori demands. Advisors' prodding helped them meet a priori demands, succeed in finishing their projects, and thus obtain confirmatory feedback for the skills they had used.

In contrast, youth who learned strategic thinking described their advisors playing a less directive role, one compatible with the process we identified for that skill set. These youth reported benefiting, first, from advisors giving them freedom to make choices and experiment. We believe this was important because it supported the process for

strategic learning, which involved youth's active engagement with tactical challenges. Advisors did not tell them what to do. Youth had to analyze the situational demands, brainstorm, and figure out a plan to try to reach their goals. But youth also reported benefiting from nondirective advisor assistance that gave them ideas, provided warnings, and helped them maintain or regain a sense of control over their projects. This assistance, we propose, served the youth's learning process because it primed and broadened youth's active anticipatory thought processes, steered them away from problems, and, ultimately, helped them achieve and learn from successful outcomes.

The components of this nondirective adult support are hardly new. Priming, providing contingent assistance, and helping learners when stuck are among the larger list of techniques discussed in the literature on scaffolding and guided participation (focused mostly on young children; Rogoff, 1998). What is new is that, first, these techniques were identified from *learners*' accounts of their learning process—these adolescents were consciously aware of and reported exercising influence over this assistance. Second, this constellation of techniques supported youth's learning of higher order executive skills. This nondirective assistance allowed youth to stretch, exercise control, and learn to think strategically about complex systems, and do so in new arenas of action (e.g., planning large events, school board meetings). We propose that advisors were particularly helpful because they helped stretch youth into domains of real-world knowledge and strategy that were on the upper bounds of youth's potentialities.

Conclusions

The problem addressed by this research is how to support adolescents' development of skills to exercise agency in an increasingly complex and fluid world. To provide a window on this question, we focused on youth's experiences as conscious learners in one activity context—carrying out projects in organized programs. It should be recognized that we did not measure change in agency skills over time, and our focus on youth's accounts meant findings may have been influenced by biases and blind spots of self-report data. But the methods, as we have emphasized, were those of theory discovery. The principal contribution is empirically grounded theory about how youth develop strategic thinking. We summarize this theory with a definition and four testable propositions; then we discuss implications for practice and policy.

The Development of Strategic Thinking: Grounded Theory and Future Research

Our analysis led to conceptualization of strategic thinking as: ''Use of advanced executive skills to anticipate possible scenarios in the steps to achieving goals and to formulate flexible courses of action that take these possibilities into account.'' Youth in the study, we believe, were developing improved abilities to ''model'' the active and reactive dynamics of human ecological systems, and to develop plans accordingly. These adolescents reported learning to predict how their work on a project might unfold (including what could go wrong); how children, public officials, and others might react to different courses of action; and how to use these rational predictions to formulate flexible plans. Valuable research exists on adolescents' development of executive skills for *steering away from* risk behavior (Romer, 2003). Strategic thinking directs our attention to their development of skills for *steering towards* achievement of meaningful and challenging real-world goals.

Further research is needed that critically evaluates strategic thinking as a meaningful and distinct skill set. Developmentalists have come to accept that adolescents develop multiple forms of thinking in tandem with formal reasoning (Moshman, 2005). But as with other concepts of pragmatic reasoning that combine general and contextual knowledge, substantial effort may be required to develop a skills test that measures dimensions of strategic thinking (Sternberg, Forsythe, Hedlund, & Horvath, 2000). Substantial research on expertise and expert performance, however, shows that pragmatic skill sets can be fruitful studied using peer and supervisor ratings (Ericsson, Charness, Feltovich, & Hoffman, 2006). Such measures could be a valuable starting point for quantitative longitudinal research.

Proposition A: *Project-oriented youth programs provide opportune contexts for development of strategic thinking.*

It is important to evaluate whether youth programs stand out from other contexts (e.g., youth's jobs) in affording strategic learning, and whether specific types of programs (e.g., leadership programs, as found here) are associated with greater strategic learning than others.

Proposition B: *General strategic skills learned in one context transfer to other contexts.*

Although strategic thinking includes context-specific knowledge and skills, youth's retrospective accounts in this study suggested that youth transferred strategic skills to schoolwork, navigating paths to adulthood, and addressing personal problems. We theorize that general strategic skills, such as those for brainstorming, anticipating situational dynamics, and planning for the unexpected, transfer to other contexts.

Proposition C: *Strategic thinking is learned, first, through cognitive engagement with the tactical challenges, demands, and obstacles entailed in reaching goals and, then, through feedback obtained from the outcomes of actions taken to reach these goals.*

The cognitive engagement youth reported involved devoting mental activity, imagination, and time to evaluating challenges and anticipating different scenarios in their work. We believe this engagement can be measured as a quantity (or quantities), and tested as a predictor of gains in strategic thinking. Research also needs to evaluate the role of complementary and competing explanations for individual change (e.g., the role of peers, motivation, self-selection).

Proposition D: *Youth are most likely to learn strategic thinking when they experience adults supporting their control of their work, yet also providing nondirective assistance when needed.*

Research should evaluate the contribution of adult assistance to youth's strategic learning both from youth report and observer measures of this assistance. To be helpful to practitioners, we need to understand how information from these two perspectives correspond and diverge, and need more nuanced analysis of varied forms of assistance in relation to different situations. Other important variables in understanding these youth–adult transactions include: the age and experience of youth, advisors' training, program curricula, and features of programs that have been linked to program quality (Eccles & Gootman, 2002; Granger, 2008).

Raising Healthy Children: Implications for Practice and Policy

In concluding her chapter on ''Adolescent Thinking'' in the *Handbook of Adolescent Psychology*, Kuhn (2009) describes adolescents' potential to develop a ''stronger executive that assists them in managing their cognitive resources in the face of multiple, often conflicting task demands and personal goals.'' She goes on to say that the ''emergence and strengthening of this executive is arguably the single most consequential intellectual development to occur in the second decade of life'' (p. 180). Our grounded theory highlights adolescents' potential for development of executive skills, not just for self-regulation but for navigating and influencing dynamic external environments. To become healthy adults, adolescents need the capacity to strategically manage their actions over an arc of time to alter environmental conditions that affect their own and others' well being.

The challenging issue for practitioners, one with a long history, is how to support a developmental process in which youth are the central protagonists and agents of change. Our grounded theory contributes, first, by suggesting *indicators practitioners should monitor* to see if developmental processes for strategic thinking are in motion. This theory, subject to further testing, suggests that practitioners should ask: Do youth currently experience freedom and control over their work? Are they cognitively engaged with important tactical challenges? Are there significant challenges or hazards on the horizon that youth have not seen and that might lead to extended frustration or failure?

Second, this grounded theory suggests preliminary guidelines for *practitioners' actions in response to these indicators*. If the answers to the above monitoring questions are favorable, practitioners may need to do little. (''Do no harm'' may apply.) But if not, and youth are in situations that are, or potentially will become, unmanageable for them, then practitioners' role becomes important. This grounded theory suggests that youth benefit from nondirective prompts, suggestions, warnings, and backup support that keeps their project under their control.

From the perspective of advisors, their role can be described as *leading from behind* (Grossman, Campbell, & Raley, 2007). Analysis of the advisor interviews further showed how they responded to situations in ways that helped youth have manageable experiences of engagement with tactical challenges and learning through discovery. Advisors in the programs in which youth most often learned strategic thinking reported providing more nondirective than directive assistance, with the explicit objective of sustaining youth's ''ownership'' and sense of control over their projects (Larson & Angus, 2011). Youth are most likely to learn skills for strategic thinking, we theorize, when they

experiencing freedom to make decisions and experiment, but also receive soft-touch adult support that helps them keep on track, stretch, and exercise agency in expanded domains.

We conclude with three implications for policy. First, this research suggests a need to better understand and shape program models that allow youth manageable experiences of control yet that engage them in the challenges of action in real-world contexts. Second, training of novice practitioners should include cultivation of their skills for nondirective assistance or ''leading from behind.'' Training methods that involve discussion of case examples may help novices develop and internalize guidelines for when and how to provide support that sustains youth's experience of control and engagement (Larson & Walker, 2010). Finally, it is important that programs help youth learn to use strategic skills in the pursuit of prosocial goals. The ability to reason ecologically and anticipate the thinking of others can be used in Machiavellian ways (cf. Epley, Caruso, & Bazerman, 2006). Programs for youth need to provide a context in which the ethics of means and ends are modeled and regularly discussed, so that youth develop strategic skills they will use, not only for their own well being, but that of society.

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Appendix: Youth Programs in the Research

Principal activities	
Arts and media arts programs	
Art First, urban	Painting community murals, internships in businesses and NGOs
Les Miserables, small city	Rehearsing and preparing a musical
Faith in Motion, small city	Preparing dance performances, devotional activities
Media Masters, urban	Learning graphic software and video equipment and creating artwork
The Studio, urban	Producing, engineering, and designing graphics for a music CD
Leadership programs	
Clarkston FFA, small town	Participating in competitions, planning a daycamp for fourth graders. Service activities, lobbying the state legislature
Youth Action, urban	Campaigns to change school policies, planning a Youth Summit
Prairie County 4-H Federation, rural	Planning activities for children in 4-H
Harambee, urban	Researching city transit issues, creating a mural and documentary video
El Concilio, urban	Planning community events for youth and service activities
SisterHood, urban	Weekly discussions, fundraising