Larson, R. (2011). Adolescents' conscious processes of developing regulation: learning to appraise challenges. In R. M. Lerner, J. V. Lerner, E. P. Bowers, S. Lewin-Bizan, S. Gestsdottir, & J. B. Urban (Eds.). *Thriving in childhood and adolescence: The role of self regulation processes: New Directions for Child and Adolescent Development.* No. 134. San Francisco: Jossey-Bass.

Adolescents' Conscious Processes of Developing Regulation: Learning to Appraise Challenges

Reed W. Larson

Abstract

To understand regulation and agency, it important to consider the nature of the regulatory challenges that adolescents must deal with. These include emotional, motivation, interpersonal, and other obstacles and problems. This chapter discusses the challenges reported by youth working on arts, technology, and social justice projects in organized programs and how they learn to address them. Adolescents' new higher-order cognitive capacities allow them to better understand the irregularities and complexity of real-world challenges. They also use these capacities to consciously develop skills to navigate these challenges.

Acknowledgements. I'm grateful to the William T. Grant Foundation, who funded this research, and to Cole Perry for helpful assistance with the manuscript.

"There's a time where you really have to start to take things into your own hands, and you begin to realize it may actually be true when they say you're only gonna be as good as you wanna be."

Sean, a teenage actor preparing for the role of Jean Valjean

If you are a teenager, self-regulation is not something you can get from a bottle, a book, or a scientific formula. Certainly you can benefit from observing good role models, getting coached, and living in an asset-rich community. You also benefit from your brain's development of new neural circuits for higher-order integration of your mind-brain. But in adolescence the development of regulation increasingly depends on *your own* thoughts and actions: on your conscious, constructive processes. One must learn to select goals judiciously, develop more effective means to reach goals, and improve your strategies to avoid and deal with setbacks, among other things (Gestsdottir et al., this volume). But effective self-regulation also depends on an intentional "self," on adolescents being producers of their own development (Lerner, 2002).

This is not easy. Adolescents face difficult challenges, such as the koan-like dilemma articulated by Lerner and colleagues (this volume): "When one is moving toward an end state or goal that is as yet uncertain, how does one select the best means to get there?" In the real-world one is often trying to satisfy multiple, sometimes shifting goals: self-needs, achievement goals, relational goals, and ethical warrants. Even when you are able to focus on a principle goal, determining the best means to reach it can be difficult. Much is unknown. The paths to reach goals can be opaque, especially to young people. Even for adults actions aimed at reaching goals are often unsuccessful or have unintended consequences (Brandstädter, 2006; Gollwitzer, 1999).

I think is important to understanding the *processes* by which adolescents are conscious producers of regulatory abilities. I am especially interested in their development of *skills for agency*: how they gain knowledge and learn effective means for achieving goals[1]. Understanding the challenges youth experience in trying to reach goals, I believe, is an important step to understanding this skill development. Eminent scholars from Charles Darwin to Herbert Simon have stressed the importance of studying the obstacles or "problems" an organism encounters in natural environments as a key to understanding its development. By *challenges* I mean puzzles, obstacles, problems, and situational demands that must be addressed to reach a goal. Challenges includes both threats and opportunities (Little, Snyder, & Wehmeyer, 2006).

Adolescence is an important period to study the relation of challenges and agency because teens gain new cognitive capacities that may increase their ability to appraise what stands in the way of reaching a goal. They develop new capacities for understanding complex systems, as well as higher-order executive skills. They become more able to understand dynamic processes in the external environment (and internal psychological processes), analyze and anticipate hypothetical scenarios, and formulate strategies based on reasoning they do with these tools (Kuhn, 2009; Steinberg et al., 2010; Habermas, in press). Younger children are prone to egocentric magical means-ends thinking ("magico-phenomonalistic") that over-estimates their ability to control events (Geldhof & Little, this volume). We could expect that adolescents use these new cognitive capacities to recognize a deeper level of complexity – of challenges – entailed in reaching goals.

[1] Agency is also defined as "intentional action" (Brandstädter, 2006). The concept of "agency skills" bears some resemblance to Geldhof and Little's (this volume) concept of "action control beliefs."

To understand teens' development of skills for agency, our research group has narrowed our focus to one context – organized youth programs. Research suggests that organized programs provide particularly favorable conditions for positive development (Mahoney, Vandell, Simpkins, & Zarrett, 2009; Lerner, Phelps, Forman, & Bowers, 2009). It is also a context in which youth report high levels of motivation and attention (Larson, 2000). Therefore we view it as a rich natural laboratory for understanding teens' deliberate process of developing regulatory skills. We have focused on programs in which high-school-aged youth work on arts, technology, or leadership projects: activities in which they are trying to achieve difficult goals. So these programs provide the opportunity to observe adolescents' development of agency skills.

In this chapter I discuss the different types of challenges youth describe in their work and how this is related to their development of skills for agency. The projects in youth programs often require navigating real-world systems (Heath, 1999). Thus, they may provide a preview of the kinds of challenges youth will experience in adult work and other pursuits. Because we are interested in adolescents' conscious processes of development, we draw on their accounts of dealing with specific challenges in their projects. We have used methods of grounded theory to develop preliminary concepts about processes of development from the "producers" themselves. First I describe the types of challenges youth experience in their projects, then I discuss how these are related to their development of agency skills.

Challenges Experienced By Youth

Since the challenges in a situation are partly defined by a person's goals there is no clear means to capture them objectively. However, because we are concerned with youth's conscious development, I am interested in challenges as they are subjectively perceived and defined by adolescents: What obstacles or problems are salient to them? What are their appraisals of threats and opportunities in their work? Our data came from 648 interviews with 108 youth over the course of their projects in 11 urban and rural programs. In each interview, we asked about challenges and obstacles in their work at that point in time.

A first basic discovery was that youth reported enormously varied challenges in relationship to their projects. They faced threats and opportunities from every direction. These included many challenges that were only indirectly related to their work, like family issues or schoolwork that interfered with devoting time to their project. They also included diverse challenges in doing the work itself: everything from boredom, to obnoxious peers and adults, to complex civics problems, such as how to influence the Chicago School Board. For the challenges related to their projects we made an imperfect distinction between challenges that seemed to be internal (psychological) and those that were external, that dealt with being effective in the work (the task environment, or the "problem space" of their work).

Often psychologists' discussions of "self-regulation" (not surprisingly) focus on the first portion of this term: on regulation of the self. Many of the internal challenges youth in our research reported were *motivational*. Youth wanted to be able to work on their project but: "I ain't all the way focused"; "I have to do the work, but I'm like lazy." The challenge was their minds were not cooperating with their goals. They couldn't just push a button to make themselves motivated. In addition, youth reported frequent *emotional* challenges (Larson & Brown, 2007). These involved, for example, anger toward collaborating peers, disappointment with a setback, or the need to control their outward expression of pride for something they did well. Youth in one program were lobbying officials and Aisha wanted to present data they had obtained in a way that would be persuasive. But she was concerned that "I might get nervous; hopefully I don't flip out or nothing, and I can answer the questions that people ask me." Notice

that the challenge is not a current emotional state: it is the hypothetical possibility of nervousness during her presentation.

Although we classified these motivational and emotional challenges as internal, when we looked closer, almost every one involved an interaction or fit between internal and external components of a youth's situation. They concerned tasks or events in youth's work. Motivational challenges often involved problems with a specific task. Emotional challenges often involved events or interpersonal dynamics in their work, for example, dealing with a difficult peer (Larson, 2011). The point is that the motivational and emotional challenges youth encountered did not occur in a vacuum; they were linked to dynamics in the task environment.

So let me shift to the challenges we coded as "external." These were challenges that did not focus on regulating the self, but rather on regulating their work, including, for example, how to have an influence. (The self was still the implicit agent of the regulation – so maybe the term "self-regulation" still applies – but the self was not the target of the regulation, as it is in much of the literature on self-regulation -- and also on agency; cf. Bandura, 2006).

Given our interest in agency we were most interested in the challenges youth described in completing their projects. What was notable, here, was that these challenges entailed a wide range of human systems. Aisha, for example, was not solely concerned about becoming nervous. She was challenged by understanding how to present her data to officials in ways that were persuasive *from their point of view*. She and other youth were trying to figure out how the adult officials think so they could have an impact. Another member of Aisha's program described challenges involving understanding how teenagers think. He was preparing a youth forum on sexuality, and was concerned with: "How to keep the discussion interesting; how not to lose the interest of the group." Youth in different programs we studied also described challenges in other human systems, including the obstacles and dynamics entailed in producing a quality work of art, difficulties that occur within teams, and structural racism in society and how to address it.

In sum, youth reported challenges in a wide range of psychological and ecological systems. Each type of system entailed a somewhat distinct array of challenges, as a product of the dynamics of that system. These challenges included the irregular non-logical nature of emotions and emotional systems (Larson, 2011); how adults in different institutional roles think (e.g., school board members who they wanted to influence, teachers they wanted as allies; Larson & Hansen, 2005); and the twists and turns in producing a particular type of art or creating a theater production (Larson & Angus, 2011).

I am aligned with other contextualists in arguing that each context or system presents youth with a distinct reality: with unique dynamics, obstacles, and ways of thinking and doing things (Shweder et al., 1998; Vygotsky, 1978). These systems are not strictly logical, but they have a "disorderly order" to them that can be at least partly learned (Larson, 2011). This property is true of different ecological, relationship, and activity systems. It is also true of the motivational, emotional, and cognitive systems that come into play when one is trying to reach a goal. To become effective agents, adolescents need to learn to navigate the dynamics and challenges of these heterogeneous systems – as best they can.

Moreover, I argue that often the "devil is in the details" -- in the *deep complexity* of these diverse systems, as well as how they interact with each other (translation to statistics: the great majority of the variation is not easily captured by variables). Although I may state it more strongly, I think this perspective is compatible with other chapters in this volume. The authors point to this complexity of multiple interacting bio-ecological systems. Geldholf and Little (this volume) also describe how regulation can be seen from multiple viewpoints, including those

focusing on motivation, control-systems, and social construction processes. Perhaps it is self-evident, but development of effective self-regulation ultimately requires adolescents to develop knowledge and skills to manage all the different levels and systems pertinent to their goals and daily life – again, as best they can.

Fortunately the new cognitive capacities of adolescence include those for understanding complex interacting systems (Fischer & Bidell, 2006). Our analyses suggest that the appraisals youth made of challenges in their projects reflected use of these higher-order capacities.

Adolescents' Use of Higher-Order Thinking in the Appraisals of Challenges

I am going to focus on one youth as a principal illustration of our findings. Sean, a 17-year-old thespian, had landed the part of Jean Valjean in a high-school production of the musical *Les Miserables*. Asked about the challenges and obstacles he faced, he said: "Most of the roles I've done have been comedic roles that are mostly two dimensional characters, with the typical cheesy line that they say over and over again." He went on to describe the challenge in "rendering" Valjean's conflicted, multi-dimensional character.

A second challenge Sean described was psychological: how to manage his expectations (and those of his peers) in developing this central figure in the musical. Shortly after receiving the part he said:

> I don't want to set the bar too high. I want to succeed on my own terms,…to have a reasonable standard, to have something that's not the bare bones standard, but that is, you know, "This would be a success, this would be good; not outstanding, but good."

This is an abstract challenge. It involved his construction of hypothetical scenarios that he wanted to steer between. Many challenges youth reported were just obstacles or unstructured problems. Sean was describing a problem he had structured. In effect he had formulated a "model" of the problem he faced, one that contained its solution – that provided guidelines on calibrating his expectations to optimize his work. Two weeks later he described how his work was going well, because he had learned from experiences with past roles "not to place all these like demands on yourself right at the beginning, just kind of space it all out evenly."

Although Sean was unusually articulate, other youth in our study also used abstract ideas to describe and formulate the structure of the challenges they faced. I don't have data to show that preadolescents can't or don't do this. Other naturalistic data we have collected, however, suggest they are much less likely to use these kinds of abstract constructions (Larson & Asmussen, 1991). This use of abstract concepts to formulate problems represents use of the higher-order cognitive potentials of adolescence.

As the rehearsal went on, Sean reported other challenges that showed use of higher-order abilities to conceptualize the dynamics of disorderly real-world systems:

> One night I learned two songs, and I had to remember them to my next practice which was two days away, and I got up on stage and went completely blank and it was one of those things where I just realized I've got to expand my memory.

Having your mind going blank, Sean decided, was one of those peculiar mental dynamics he must take into account. So after that, he put in extra effort to practice between sessions to strengthen his recall of songs, a technique he also described transferring to practicing songs for band. He was learning about the order within a phenomenon that originally seemed disorderly.

In the final weeks, Sean described encountering another challenge that reflected this ability to think about disorderly human processes. He said he felt like his progress in developing Valjean's character had stalled. But:

> In past years it's been the same way. You get into maybe a rut or maybe some point where you think you're not moving anywhere. But that's just when you're starting to get closer. It all slows down and it doesn't seem like it's going anywhere. But that's alright before you actually hit that transition to not being just good, being great kind of thing.

Again, Sean was learning about peculiar, non-logical dynamics of real-world projects.

Other youth in our study reported learning to incorporate disorderly dynamics into how they formulated challenges. Right before an event she helped plan, Elena said: "like you think you're prepared, but something always comes up. I'm like waiting to see what that is." In the real world, you need to be prepared for the unexpected. Different youth reported learning to be ready for things to go wrong, "plan for more," and "always have a Plan B" (Larson & Angus, 2011). This kind of "pragmatic reasoning," which combines abstract propositional with contextual thinking, has been described by others as a new kind of cognitive ability associated with adolescence, particularly late adolescence (Labouvie-Vief, 1990).

Within the examples I discussed is yet another type of cognitive ability reflective of adolescents' new potentials for higher-order reasoning: hypothetical thinking. Because teens are becoming able to think about dynamics of systems, they can engage in *reasoned anticipation.* They are able to forecast possible scenarios: what could happen if they set expectations too high or low; how their mind could go blank if they aren't fully prepared; how officials might respond to one approach versus another. As I mentioned earlier, preadolescents are prone to magical thinking about their ability to control events (Geldhof & Little, this volume), but adolescents begin to develop the skills to conjecture how diverse internal and external factors can influence outcomes. They gain ability to understand the unique dynamics of diverse kinds of human systems, and it helps them make reasoned predictions about the mechanisms at play. Bandura (2006) describes this capacity for reasoned anticipation as a defining element of human agency.

Producing One's Own Development

These new abilities for formulating challenges, I suggest, play a significant role in youth's conscious processes of developing skills for agency, for learning how to navigate complex internal and external systems to reaching goals. In other articles, we report how youth in these programs developed skill sets for managing emotions in self and work groups (Larson & Brown, 2007), for strategic thinking (Larson & Angus, 2011), for teamwork (Larson, 2007), and for understanding and counteracting their own prejudices (Watkins, Larson, & Sullivan, 2007).

These articles suggest additional ways in which youth's experiences of challenges enters into their developmental processes. When youth described learning elements of these skill sets, we asked them how they learned them. Quite often they then just described the experiences that provide the evidence on which their learning was based. "We worked really hard and it paid off." The means they had used were successful (or unsuccessful) in helping achieve their ends. They learned from the downstream outcomes of their work.

But what surprised us was that youth often described early *upstream thought processes* as critical to their learning. Sometimes these processes involved group brainstorming (cf. Heath, 1999). Sometimes they involved a youth analyzing his or her situation, thinking, and speculating on possible courses of action. In some cases learning occurred as a direct result of these upstream thought processes: They recognized that certain courses of action would have unacceptable effects (If we do this, this will happen); or the best path to reaching their goal became self-evident to them. By analyzing and thinking through a situation, youth said they were often able to learn about potential constraints, contingencies, and opportunities in that type of situation.

This upstream thinking, however, was also then subject to the information they obtained from outcomes. Youth's early theorizing about challenges and possible courses of action was refuted, confirmed, or modified by how their actions worked out. It was a process of experiential learning involving deliberate trial and error (Larson, 2011; Larson & Angus, in press). Byrnes (2005) provides a useful discussion of the flaws of experiential learning: it is often based on single trials; there is a lack of controls; youth may not recognize the role of hidden causal factors; and even adults often fail to seek confirmation. On the other hand, I argue that there are many things about action in a disorderly world that can only be learned from experience.

I want to conclude by emphasizing the limits of our exploratory findings. Not all youth described moving from unstructured to formulated challenges. Not all youth reported learning something that appeared to us to involve higher-order cognitive capacities. The processes we identified in these youth programs may not be representative of those in other contexts of adolescents' lives, nor even in other youth programs.

Let me also conclude by reemphasizing that conscious learning is just a part of how humans develop self-regulation. This volume and other sources describe the important contribution of epigenetic systems in the brain that interact with experience (Paus, 2008; Rutter, Moffitt, & Caspi, 2006). Bodrova, Leong, and Akhutina (this volume) describe how development is socially mediated by the tools of a culture (language, symbols, ways of thinking), cultural activities, and scaffolding from adults or peers. Conscious learning is often collaborative. A recent book by Young and colleagues (2010) cogently describes how youth develop capacity for agency through experiences of co-agency with parents, youth professionals, or others. So biology, culture, family, teachers, and peers contribute to regulation at many levels. Nonetheless, almost by definition, the development of agency depends on Sean's realization: "There's a time where you really have to start to take things into your own hands."

References

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*, 164-180.

Brandstädter, J. (2006). Action perspectives in human development. In R. Lerner & W. Damon (Eds.). *Handbook of child psychology. Vol. 1, 6th Ed.* (pp. 516-568). New York: Wiley.

Byrnes, J. P. (2005). The development of self-regulated decision making. In J. E. Jacobs & P. A. Klaczynski (Eds.), *The development of judgment and decision making in children and adolescents* (pp. 5-38). Mahwah, NJ: Erlbaum.

Fischer, K.W. & Bidell, T.R. (2006). Dynamic development of action and thought. In W. Damon & R. M. Lerner (Eds.), *Handbook of Child Psychology (6th ed.), Vol. 1* (pp. 313-399). Hoboken, NJ: Wiley.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54*, 493-503.

Habermas, T., Ed. (in press). The development of autobiographical reasoning in adolescence and beyond. *New Directions in Child and Adolescent Development*, No. 131, San Francisco: Jossey-Bass.

Heath, S. B. (1999). Dimensions of language development: Lessons from older children. In A.S. Masten (Ed.), *Cultural processes in child development: The Minnesota symposium on child psychology, Vol. 29* (pp. 59-75). Mahwah, NY: Erlbaum.

Kuhn, D. (2009). Adolescent thinking. In R. M. Lerner & L. Steinberg (Eds.). *Handbook of Adolescent Psychology (3rd ed.), Vol. 1* (pp. 152-186). Hoboken, NJ: Wiley.

Labouvie-Vief, G. (1990). Modes of knowledge and the organization of development. In M.L. Commons, C. Armon, L. Kohlberg, F. A. Richards, T. A. Grotzer, & J. D. Sinnott (Eds.), *Adult Development, 2* (pp. 43–62). New York: Praeger.

Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55, 170-183.

Larson, R. W. (2007). From "I" to "We": Development of the capacity for teamwork in youth programs. R. Silbereisen & R. Lerner (Eds.). *Approaches to positive youth development* (pp. 277-292) Thousand Oaks, CA: Sage.

Larson, R. W. (2011). Positive development in a disorderly world**.** *Journal of Research on Adolescence,* 20, in press.

Larson, R. W., & Asmussen, L. (1991). Anger, worry, and hurt in early adolescence: An enlarging world of negative emotions. In M. E. Colton and S. Gore (Eds.). *Adolescent Stress: Causes and Consequences* (pp. 21-41). New York: Aldine de Gruyter.

Larson, R. W., & Angus, R. M. (2011). Adolescents' Development of skills for agency in youth programs: Learning to think strategically. *Child Development, 82,* in press.

Larson, R. W. & Brown, J. R. (2007). Emotional development in adolescence: What can be learned from a high school theater program. *Child Development, 78*, 1083-1099.

Larson, R. & Hansen, D. (2005).The development of strategic thinking: Learning to impact human systems in a youth activism program. *Human Development, 48*, 327-349.

Lerner, J. V., Phelps, E. Forman, Y., & Bowers, E. (2009). Positive youth development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology (3rd ed.), Vol. 1* (pp. 524-558). Hoboken, NJ: Wiley.

Lerner, R. (2002). *Concepts and theories of human development* (3rd ed.). Mahwah, NJ: Erlbaum.

Little, T. D., Snyder, C. R., & Wehmeyer, M. (2006). The agentic self: On the nature and origins of personal agency across the life span. In D.K. Mroczek & T.D. Little (Eds.), *Handbook of*

personality development (pp. 61-79). Mahwah, NJ: Erlbaum.
Mahoney, J. L., Vandell, D. L., Simpkins, S., & Zarrett, N. (2009). Adolescent out-of-school activities. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology* (3rd ed.), Vol. 2 (pp. 228-267). Hoboken, NJ: Wiley.
Paus, T. (2008). Mapping brain maturation and sexual dimorphism in adolescence. In N.B. Allen & L. Sheeber (Eds.) *Adolescent emotional development and the emergence of depressive disorders*. (pp. 92-115). New York: Guilford.
Rutter, M., Moffitt, T. & Caspi, A. (2006). Gene-environment interplay and psychopathology: multiple variables but real effects. *Journal of Child Psychology and Psychiatry, 47*, 226-261.
Shweder, R. A., Goodnow, J., Hiatano, G., LeVine, R. A., Markus, H., & Miller, P. (1998). The cultural psychology of development: One mind, many mentalities. In. W. Damon & R. Lerner (Eds.) *Handbook of child development* (Vol.1, 5th ed., pp. 865-937). NY: Wiley.
Steinberg, L. et al., (2009). Age differences in future orientation and delay discounting. *Child Development, 80*, 28-44.
Vygotsky, L.S. (1978). *Mind and society*. Cambridge: Harvard Press.
Watkins, N., Larson, R., & Sullivan, P. (2007). Learning to bridge difference: Community youth programs as contexts for developing multicultural competencies. *American Behavioral Scientist, 51*, 380-402.
Young, R. A. et al., (2011). *Transition to adulthood: Action, projects, and counseling*. New York: Springer.

REED W. LARSON is a professor in the Departments of Human and Community Development, Psychology, and Educational Psychology at the University of Illinois at Urbana-Champaign.