The Biology of Music Making

MUSIC AND CHILD DEVELOPMENT

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From Tyro to Virtuoso:
A Long-term Commitment to Learning

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Imagine, if you will, a group of young adults whose skill at a piano keyboard has earned them the highest honors available from the music community. Certainly these outstanding pianists were not born so accomplished. How then did they get to be such fine musicians? What follows is a story of the transformation from tyro to virtuoso. It is a story, too, of a long-term commitment — to the piano, to music-making, and to the process of learning. It holds lessons, I hope, not only for the development of musical talent, but also for the process of successful learning of many sorts.

More specifically, this is a story of the experiences of twenty-one concert pianists who shared their educational histories so that we might better understand the development of talent. The data that provide the foundation for this story are drawn from the Development of Talent Research Project (Bloom, 1985). The subjects for that larger study were groups of individuals who, though relatively young, had realized international levels of achievement in one of six fields: concert piano, sculpture, Olympic swimming, tennis, research mathematics and research neurology (two artistic disciplines, two psychomotor activities and two academic fields).

The focus of the Development of Talent Research Project was on the role(s) of the home, teachers, schools and other educational and experiential factors in discovering, developing and encouraging such high levels of competence. The study was concerned with questions like: How did an individual begin his or her involvement with a field? How did he or she work at the activity — how were time, materials and other resources used? What roles did family and teachers play in the learning process? How were interest and involvement maintained? How did activities and experiences change as the learner gained skill and understanding? The plan was to search for regularities and recurrent patterns in the education histories of groups of successful learners, consistencies that might shed light on how unusually successful learning is achieved.
The project explored the lives of more than 100 talented individuals in all, approximately 20 in each field. Retrospective, semi-structured, face-to-face interviews were conducted with the individuals who met criteria of outstanding achievement set by experts in their respective fields. Parents of many of the individuals were also interviewed, by telephone, for corroborative and supplementary information.

The Choice of Concert Pianists

Concert pianists were the first group of unusually successful learners studied as part of the Development of Talent Project. The decision to study concert pianists as one of our artistic fields, rather than, say, violinists or clarinetists, was made after considerable discussion with musicians and music teachers. Our informants pointed out not only that learning to play the piano was a fundamental part of much music education, but also that learning to play the piano placed fewer physical requirements on individuals than did many other instruments. A youngster did not have to be as physically well-coordinated to play the piano as would be necessary to play the violin, for example. Further, if a youngster learned which key to strike on a piano, the instrument itself would make the proper sound; a beginner does not have to count on his or her own ability to construct a particular note. These, then, were among the reasons for selecting concert piano performance as one of the artistic fields to be studied.

The selection of the particular pianists to be studied also depended heavily on the advice of music informants. For the purposes of research, we knew we needed to interview approximately two dozen people in each of the fields we were studying. We knew also that we needed to interview people who were relatively young — both so that they would be able to recall their early years of learning and so that we might have the opportunity to interview their parents as well for supplementary and corroborative information. Further, we believed it was important to limit our work to individuals raised in the United States — to avoid confounding our findings with cultural differences. Finally, and perhaps most importantly, we believed it was essential that the particular people we interviewed in each field represent what experts in the field consider to be the highest levels of talent.

For each of the fields we studied, then, we asked informants to help us set the criteria for defining outstanding achievement. They reported to us the evidence they would use to identify relatively young individuals who had
reached an extremely high level of achievement. We used the evidence they suggested to identify the talented individuals we should interview.

Our music informants strongly suggested, for example, that we not use as one of our criteria engagements with major symphony orchestras. Their concern with this criteria was twofold. First, they said the decision about who should play with a major symphony orchestra often was made by a single individual, rather than by a group of musicians. Second, they were concerned that these decisions too often were political decisions. Instead, our music informants pointed us toward international competitions they believed were most important at that time for identifying exceptionally accomplished pianists. Pianists who were finalists in these competitions were rated highly by a group of musicians, and typically, by pianists who were themselves recognized for their expertise. The competitions that our informants agreed were, at that time, the most highly rated by pianists themselves were: The Chopin International Piano Competition in Warsaw, The Leventritt Foundation International Competition, the Leeds International Pianoforte Competition, The Queen Elisabeth of Belgium Competition, The Tchaikovsky International Competition, and the Van Cliburn International Quadrennial Piano Competition.

The Concert Pianists Interviewed

Twenty-four musicians met the criteria we set to be included in the study. They were finalists in one or more of the competitions noted above, were under the age of forty, and were raised in the United States. Of the twenty-four pianists who met the criteria, we were able to interview twenty-one. Two who lived in Europe at the time could not join the project because they were too far away to interview. One other pianist never responded to our numerous attempts to contact him. Subsequently, we were also able to interview parents of sixteen of the musicians.

Of the twenty-one concert pianists we interviewed, sixteen are male. All are Caucasian. Six are only children; the other fifteen were equally likely to be the oldest, youngest or a middle child. At the time of our interviews they ranged in age from twenty-four-thirty-nine. All but two were between twenty seven and thirty seven. We think of them as representing one decade of talented musicians. Of course they are not the only exceptional pianists in their age group; each of the musicians in our sample is, however, undeniably accomplished.
Developing Musical Talent

Three findings stand out from our interviews with the pianists and their parents. These findings and some of the implication that follow from them, are the subject of this presentation. In their most abbreviated form the findings can be summarized like this:

1. talent development takes a long time;
2. the process is essentially one of qualitative change. It involves a continual and perhaps systematic reorientation and transformation — both of an individual and of the activity of learning;
3. talent development involves many people working for the achievement of just one.

A Long-term Commitment

The pianists worked for an average of 17 years from their first formal lessons to their international recognition. The fastest "made it" in 12 years; the slowest took 25. (In our study of Olympic swimmers we found that it took the men and women about 15 years to reach the Olympics from the time they began swimming just for fun, during the summer, in a nearby lake or pool).

The mere fact that it takes a long time to develop talent is hardly surprising. What struck us was that during much of the period of time the pianists spent developing their abilities, it would have been impossible to predict the pianists' (or swimmers') eventual accomplishments. With a few exceptions, the pianists did not show unusual promise at an early age. The pianists were not child prodigies, as the stereotype of musical development would have us expect. Nor did they exude obvious signs of greatness just waiting for development. The pianists, and their counterparts in the other fields we studied, worked for many years before their talents were obvious and before they were accorded the special treatment by teachers that had earlier gone to others who were perceived to have more potential.

The pianists began taking lessons by the age of six, on the average, and playing in small recitals organized by their neighborhood teachers within a year or so. Seven years later, by the time they were thirteen or fourteen,
most were playing in local competitions, or for judges at yearly music adjudications. Even after seven years of study and practice, the young pianists did not always win those events. In fact some of the pianists reported that even after seven years of work at music-making they were still losing competitions far more often than doing well (the swimmers, by the way, spent an average of eight years swimming in national competitions before they began to place — that is, to come in first, second or third — in those events).

Instead of finding that the pianists were discovered, and then helped to develop, we found much the reverse. The youngsters spent several years developing musical ability — listening to music, taking lessons, practicing daily — before they were “discovered” as the most musical in their family or in their neighborhood. This discovery, by a parent or teacher, typically led to increased opportunities for further musical development. Then, after several more years of work at an increasingly more sophisticated level, the youngsters were rediscovered, and so on (Sosniak, 1985a).

The pianists not only spent many years learning their craft, they did so for a considerable amount of time without any clear idea of where they were headed. There was no intention, at the start, to take piano lessons so that one might eventually become a concert pianist. Two parents provide succinct demonstrations of this:

“Now that I think back, I think I would have started him with a better teacher — at a conservatory — if I had known he was going to become a concert pianist...At that time, I didn’t think it was important.”

“I just thought this is a nice thing for someone, to have music as well as other things, so I know I never planned this or pushed for it. Never in my wildest dreams did I think he’d be a concert pianist...I thought he’d be something like a physicist or an engineer.”

The pianists’ experiences were not at all like the stereotype of musical achievement delivered by popular films or fiction. There, our pianists would have shown extraordinary abilities at a very early age and their parents would have dreamed of their success from the start. As youngsters they would have been performing with major symphony orchestras and giving recitals. Instead, we found outstanding musicians who learned to be so over a long period of time. Musical experiences and expectations were integrated gradually into the pianists’ (and parents’) lives. Exactly what was to be
learned, and where it would lead, were decisions made and remade many times in the process of an educative experience.

**Qualitative Change**

Why did the pianists stick with music-making for as long as they did, even without clear success or a long-term goal? As educators, how can we keep students engaged in fields of study long enough for them to become skilled at and knowledgeable about whatever it is that we want them to learn? How can we keep students engaged even as the tasks become more difficult, even as their lives become more complex and filled with competing interests, and again, even when the students are not always successful at what they are doing?

Part of the answer, I think, will require a better understanding of the qualitative shifts over time in a successful learner's experiences and behaviors. It is obvious from the pianists' histories that change over time in the process of learning was much more than getting smarter or more skilled at the keyboard (Sosniak, 1987), much more than working intensely at more difficult tasks. "To be educated," R.S. Peters (1967) reminds us, "is not to have arrived; it is to travel with a different view." The pianists progressively adopted different views of who they were, what music-making was about, and how music fit in their lives.

There seem to have been three distinct periods of learning, reminiscent of Whitehead's (1929) writings on the rhythm of education and stages of romance, precision and generalization. These three broad, empirically derived phases are revealed in the pianists' and parents' talk about changes in behaviors, perceptions and experiences. They can be identified by looking at the learner's relationship with the piano and the world of music; parents and teachers roles in the process; and motivators, rewards, and symbols of success.

The discussion that follows will provide a brief overview of these phases. Rough edges will be smoothed over, and the subtlety will be lost. Of course, there are many places in the pianists' reports where things did not work exactly as I'm going to describe. Those actually turned out to be quite helpful in our analyses, because the corrections that took place in the pianists' experiences made it easier for us to see the patterns (Sosniak, 1985b).
The First Phase of Learning — The Early Years

The earliest years of learning were playful and filled with immediate rewards. At home, at first, youngsters spent time “tinkering around” at the piano, “tapping out melodies for fun.” One pianist recalled “plunking on the keys as much with the palms of my hands as with my fingers, and then running to mother and saying ‘was that a nice song?’ and then going back and doing it some more.”

Listening to music was a natural part of life in most of the pianists’ homes. Parents of two of the twenty-one pianists were professional musicians themselves (neither of these was a pianist). Parents of the rest of the pianists represented the entire range of possible associations with music. A few were music lovers who, as amateurs, enjoyed playing an instrument; a few were musically indifferent and unknowledgeable (at least when their children were young). Most liked music well enough, although they were not musical themselves (Sosniak, 1985c). Typically, they enjoyed listening to music on the radio or on records, and, like parents of most children, they believed some music education for their children was “a good thing.” (Music U.S.A. 1974).

The youngsters were encouraged to play with an instrument if one was available, to sing songs and pick out tunes, and listen to the radio and records. Some parents bought children’s records. Some, the few who could play an instrument themselves, sometimes played duets with their children. Parental involvement at this stage shouldn’t be overemphasized; still, it is important to keep in mind that music — at least listening to music — was a natural part of life to a greater or lesser extent in the pianists’ homes. Music was something “good,” “nice,” an amusement for the parents and child, an interest for them to share.

Initial music instruction also typically was playful, enticing and encouraging. First teachers were said to be “really great with young kids,” “very kindly, very nice,” and “enormously patient and not very pushy.” First teachers were typically not very good musicians themselves; rather, they tended to be “the local teacher,” “a neighborhood teacher,” someone nearby and maybe even “a friend of the family.”

Lessons with first teachers reportedly were “fun” experiences. “It was an event.” “I looked forward to them.” Instruction was informal, personal, and filled with immediate rewards. The teacher was likely to “indicate when a
piece was finished by putting a star at the top of the page." One pianist told an especially memorable tale about a first teacher: "She carried a big bag of Hershey bars and gold stars for the music, and I was crazy about this lady. All I had to do was play the right notes in the right rhythm and I got a Hershey bar."

For the most part, both the students and teachers seemed unconcerned with objective measures of achievement. The first period of instruction emphasized engaging in lots of musical activity, and exploring possibilities. ("Doesn't that note just feel so good that you'd just want to hold it a little longer?" a teacher might ask.) The students responded to the warmth and enthusiasm of their teachers, and got involved with the piano and music-making.

The Second Phase — The Middle Years

Isaac Stern noted the following about musical development in a New York Times Magazine article:

"Somewhere along the line, the child must become possessed by music, by the sudden desire to play, to excel. It can happen at any time between the ages of 10 or 14. Suddenly the child begins to sense something happening and he really begins to work, and in retrospect the first five or six years seem like kinderspiel, fooling around." (Winn, 1979).

So it was, more or less, for the twenty-one concert pianists we interviewed. The age was not necessarily the same, but the experience was very much shared.

The dominant theme of the middle years of the pianists' development, which typically began when the pianists were between the ages of ten and thirteen, was one of precision.

"I would take more care with how I prepared things. Do it right from the very beginning. Learn it slowly, put in the right fingering. Just do things with care."

This period was marked by a tremendous amount of time spent on details. The pianists did the same thing over and over, now consciously making slight variations each time. They were busy looking for flaws in their own playing as well as in the music-making of great performers.
In the second phase of learning, instruction became more rational and less informal and personal than it had been earlier. Technical skills and vocabulary were the core of lessons. The rules and logic of music-making were dealt with in a very disciplined and systematic way.

Sometime during or immediately before this period the pianists typically moved from working with “nice” teachers who were conveniently located to working with teachers who were recognized in the local community at least for being more musically sophisticated. Lessons changed dramatically.

“[They] were very long. Very, very detailed. Always working on the shape of my hand and all these little tiny things. She had me phrase things. Had me do things over and over to make them as beautiful as possible. With great attention to detail.”

Most of the pianists learned technique by working through the music they were assigned. Each new and more difficult piece was approached as a new problem. The pianists worked on a piece of music for as many as eight or ten lessons, going over it note by note, phrase by phrase, “until I got it right.”

And, underlying technical mastery, a new musical dimension was gradually made available to the pianists. One pianist explained it this way:

“We talked about when this composer lived, and what kinds of things were going on — cultural attachments and the like in the other arts; what this represented, what this went along with, or what was parallel to this. Significance on the very spiritual level. Very detailed. Very intense. Talking about all kinds of things.”

Still another reported:

“My teacher] continually stressed that there was something behind the notes or underneath the notes that one must respect. That there’s something bigger than respect for just the literal facts on the page and that’s the heart of the matter, what the music has to say, the content.”

Objective measures of achievement — the results of adjudications and competitions — provided both a personal sense of accomplishment and a means of planning subsequent instruction. Knowledgeable criticism from teachers and juries of musicians at adjudications and competitions became as reward-
ing as applause and adulation had been earlier. The personal bond between teachers and students shifted from one of love to one of respect.

The student/teacher relationship was carried well beyond the once-a-week lessons. The teachers encouraged, enticed and prodded the students to take part in public musical activities. They told students about competitions and adjudications, spent extra hours helping the students prepare for these events, and sometimes went so far as to drive the students several hundred miles to take part in these activities. The teachers arranged recitals, special summer camp opportunities, and meetings and auditions with important musicians — all experiences important for learning and becoming part of the world of music.

Parents began to consider what activities they could allow their child to engage in without the possibility of harming his or her music-making. They thought also about how much of an investment they could allow their child or themselves to make in music without harming the child’s larger development. Their actions, both consciously decided upon and spontaneous, generally were strongly supportive of musical development.

Parents began making large sacrifices of time and money to get the child a better teacher, buy a better piano, and travel to competitions. They rearranged life in their homes to accommodate their children’s musical activities. Parents and children willingly began to sacrifice all other extra-curricular activities, and sometimes to sacrifice a general education as well, to concentrate on piano practicing.

Over a period of four to six years the pianists developed skills, a sense of competence, and an identity as musicians, although they were still just good amateur pianists. These changes took place gradually. Toward the end of these middle years of learning there was an inkling in the hearts and minds of most of the pianists that they were aiming toward concert soloist status. Earlier, such an idea would have been unthinkable for most. For nearly a dozen years, then, the pianists had been working for the moment, and the moment following that one, not for a dream about years down the road.

The Third Phase — The Later Years

The third phase of learning typically began when the pianists were between the ages of sixteen and twenty. The emphasis shifted from disciplined mastery of specific skills, to a broader and more personal understanding of and commitments to making music. The question that all the pianists and their
teachers faced was: Given all the students knew, could they go beyond that knowledge to understand, appreciate, and finally bring something of themselves to the experience?

According to more than one master teacher, youngsters sometimes “sound remarkable...and suddenly they stop dead and they go absolutely no further.”

Another reported:

“Often, even after teaching a young person quite a number of years, and they play very well, you suddenly find a ceiling when they have to do something by themselves. There’s sometimes a lack of imagination, or a lack of intellectual grasp.”

Some students are simply great imitators. One teacher commented:

“That’s fine, if it’s a stimulant [to creativity], but not if it remains as a product... We all learn by imitation of a sort. But we have [to have] a way of making it our own.”

During the third phase of learning the pianists typically worked with master teachers — teachers who were among the most respected faculty at professional schools of music, and who were, or had been renowned concert pianists themselves. Some of these teachers more than lived up to reputations for being abrasive, but a close personal bond between student and teacher was no longer an especially important part of instruction. One pianist described the experience shared by most this way:

“He was an impossible task master. It was incredible. He would just intimidate you out of your mind. He would sit there.... You played a concert, you didn’t play a lesson. You walked in prepared to play a performance... You would get torn apart for an hour.”

The pianists remember terror before lessons or tears afterwards. But they also remember the esteem they felt for their teacher, which was often enough to carry them through some very trying months as they acclimated themselves to this new way of working. The pianists spoke with awe about the opportunity to study with such outstanding musicians. “The idea that this man was willing to teach me, to give me his time, overwhelmed me.” “What she said to me was like the voice of God.”
The shared task between student and teacher in the third phase of learning was to respect and appreciate the music and music making. The pianists were taught to see "the hills and valleys" of different pieces and styles of music. They learned how and when to sacrifice some of the technical details that had been so important earlier, in order to convey meanings or feelings that they believed were essential to the music.

Let two pianists summarize for themselves the third period of instruction, with a master teacher.

"He didn't teach you how to play the piano, he teaches you...integrity, devotion, and a complete dedication to music-making."

"He made me think and he made me experience and he made me understand that you have to find your own way. You have to know what's right [and] what's wrong, but the possibilities and tonal color are absolutely endless."

With the help of master teachers, the pianists began to identify and develop personal musical styles. They began finding and solving their own problems, and satisfying themselves rather than their teachers. Eventually, as one explained, "you reach the point where you must become your own critic. You know when you have [given a solid performance] and you know when you haven't."

As a rule, the pianists took one lesson a week for the length of their musical education. Although the amount of instruction remained essentially the same, even as their commitment to music grew, and even when it became obvious that they were planning careers as musicians, the nature of instruction changed dramatically. Much the same can be said about practice time, or playing in recitals. In these two instances there were, of course, changes in the amount of time devoted to each as the pianists became more skilled and more invested in music-making. Still, the changes in amount did not begin to compare to the changes in kind — the qualitative differences in the experiences over time.

Reviewing the pianists' experience with instruction, practice, and performance, we find major changes over time in the pianists' perceptions of musical activities, in their ways of working at music-making, and in their reasons for their continued efforts. The piano shifted from being a toy to being a tool. The pianists' interests were at first in "playing around," later in mastery of the machine, and still later in making music. What seemed like a game at
first became hard work; later still it became what one aspired to do for a living; eventually it defined who one was. The pianists reported growing into the perception of themselves as pianists, and then outgrowing even that as they learned to think of themselves as musicians. They were transformed and reoriented and their experiences were reinterpreted again and again as they learned to be as good as they are today.

**Talent Development as a Group Effort**

The pianists' transformations were matched, typically, by their parents. In the beginning, the parents valued music and music-making, although their valuing was neither very intense nor very focused. Music lessons simply were a "good thing" for all children, theirs included. One mother explained why she gave her children music lessons this way: "Because I liked music. Because I felt the kids needed it. I sent them to church for the same reason. I wanted them to have the experience." The haziness of the parents' investment in music-making is further reflected in the fact that most of the pianists began lessons with a neighborhood teacher, the man or woman down the street, someone their parents knew about without having to find out about.

But as I've illustrated to some small extent, the parents — as well as teachers and other people sometimes involved in a pianists' development — involved themselves wholeheartedly in the pianists' education. Over time, it seems they created an interdependent and self-sustaining system of mutual encouragement and support. They alternately eased and prodded one another to make bigger commitments and to become more involved, as seemed good or necessary at the moment. Parents especially were willing to change their lives dramatically in response to what was taking place in the process of their child's development. They not only gave more money and time than they expected, but they learned an enormous amount about music and music-making in the process of helping their children learn.

No one had any idea what they were getting involved in at the start; no idea how long it would take, no idea where it would lead. In fact, I would argue now that if the pianists and parents had striven for huge successes from the start, they probably would have been less successful than they were. It seems that the parents' and teachers' spontaneous responses of approval and delight for the youngsters' work were all the more meaningful because they were unstudied. The pianists and parents were truly proud of each small accomplishment, and with each came the glimmer of something more to be
learned, of further possibilities. Because aspirations and expectations of concert soloist status grew with the development of skills and understandings, rather than the far off goal serving as a stimulus for their development, there was never so much to be done that the task would seem overwhelming.

Musical experiences and expectations were integrated gradually into the pianists' (and parents') lives. The pianists learned to work toward more difficult and distant goals as they learned to care about achieving those goals. Their day-after-day perseverance developed as music-making became an increasingly more vital and valued part of their lives. Parents learned to make an increasing commitment to their child's musical development as that development unfolded. In this way, decisions concerning increasing commitments of time, money and emotional energy were generally not thought of as sacrifices, as many people might interpret them, but rather as responses to the further possibilities being presented.

Implications for Teaching and Learning

There are, of course, a myriad of implications that might be drawn from the findings of our study. I'm going to address just a few that I believe are most important for the development of talent. Much of what I will talk about here relates to the long-term nature of unusually successful learning. That issue obviously is important because it was essential to the experiences of the pianists and all the other talented individuals we interviewed. It is also important because it seems that educators and the population at large seem to pay it little attention.

In fact, one of the most common practices in recent years has been to try to predict as soon as possible which children are especially likely to be successful or unsuccessful at a particular activity — so that we might alter their educational experiences accordingly. This approach to education is clearly incompatible with our findings from the study of the development of talent. The approach is incompatible for at least two reasons. First, our findings suggest that it would have been risky business indeed to forsake youngsters who did not initially show considerable potential. As best we can tell, it would have been impossible, when the pianists were young, to predict their eventual successes. Second, had the pianists (and their parents) aimed for such high levels of development at the start, it is unlikely, given our findings, that they would have been as successful.

From Tyro to Virtuoso
There are good reasons, I believe, why we did not find many prodigies in our study (why young children who "demonstrate exceptional talent" are not likely to end up as extremely accomplished adults), and why the characteristics of exceptionally accomplished adults are not likely to be critical for the youngsters who will eventually demonstrate exceptional talent. The quantitative transformation we found in the process of unusually successful learning — the different views the pianists traveled with as they became educated about music-making — help explain this situation. So, too, does the gradual development of commitment — on the part of the learners and their parents — and the importance of this growing and changing motivation for the pianist's eventual successes.

It was important for our pianists to develop a deep interest in and involvement with music-making before they were expected to do the work required for mastering the technical skills of the art. It was important also for the pianists in our study that they could appreciate small signs of growth, and that their parents and teachers could do the same. It was important, further, that the pianists in our study were willing to take chances — to work at skills and understandings that were beyond their grasp at the moment — without becoming overwhelmed or discouraged by lack of immediate success. "Prodigies" are unlikely to have these sorts of experiences.

The question that the findings of our study raise for me is not the traditional one: how we might better identify talented youngsters at an earlier age. It is, instead, the question of how we might help teachers and parents believe in the potential of all children and work for however long, in whatever ways are necessary and appropriate, to help all youngsters succeed at things that are important to us.

To that end, it seems especially important that we take seriously the long-term nature of successful learning. Our current methods of instruction may be quite inappropriate for the long-term development of talent. We have a tendency, it seems, to emphasize momentary attentiveness, the acquisition of quickly acquired and simplistic skills, and immediate success. Are we overemphasizing the very short-term educational experience at the cost of long-term educational growth? Where is there room in our current education programs for playfulness with some subject matter? Where is there room in our current education programs for making some subject matter a vital and valued part of a learner's experiences? Where is there encouragement for students to persist at increasingly more difficult tasks for however long it
takes to master those tasks? Where is there encouragement for students to appreciate and learn from less-than-successful experiences?

Perhaps the most problematic implication from our study of the development of talent relates to the fact that unusually successful learning seems to be a group effort. The talented individuals we studied got a lot of help — sometimes from parents, sometimes from teachers, sometimes from other family or family friends. For a good number of years they worked with or had close personal contact with people they felt were “very sincere... very interested in seeing me develop,” with people they felt really believed in them, with people from whom they “got the feeling it was worth trying,” people who were “openly encouraging...no question about that.”

Is it reasonable to assume that the interdependent and self-sustaining system of mutual encouragement and support that we found is necessary for most successful learning? If so, how could most students have such experiences? How might teachers and schools reach out to their communities to make such experiences possible for their students? How might parents be drawn into the work teachers do with students to assure that the value of student learning will be a pervasive and persistent part of the students’ lives?

The development of talent is of profound importance for our society, and for all societies. The findings from the Development of Talent Research Project suggest that such unusually successful learning may be within reach of a large portion of our population, if we can learn to orchestrate environments supportive of learning over the long term.

References


