

Reis, S. M., & Renzulli, J. S. (2009). Developing talents and gifted behaviors in children. In B. MacFarlane & T. Stambaugh (Eds.), *Leading change: The festschrift of Dr. Joyce VanTassel-Baska* (pp. 107–118). Waco, TX: Prufrock Press.

Developing Talents and Gifted Behaviors in Children

by
Sally M. Reis
and
Joseph S. Renzulli

The best moments usually occur when a person's body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile.

—Mihaly Csikszentmihalyi

Introduction

The process of talent development across specific domains in both children and adults has fascinated parents, educators, and psychologists over the last century. Why, for example, do some extremely smart children fail to realize their promise and potential (Reis & McCoach, 2000; Renzulli & Park, 2000)? Why is it that some prodigies grow up to be average performers in the very fields in which they showed such promise when they were children (Feldman & Goldsmith, 1991)? Why do other traits, described by Renzulli (2002) as co-cognitive traits, appear to be so important in the process of talent development?

Research on Talent Development

Inherent value exists in using retrospective research to better understand gifted and creatively productive individuals. These studies, such as those conducted by Bloom (1985); Csikszentmihalyi, Rathunde, and Whalen (1993); Reis (1998); Renzulli (1978); and others examine the childhoods and backgrounds of highly accomplished individuals in different domains in order to identify common features in their backgrounds that contributed to their talent development. Retrospective studies suggest some of the factors that we should consider as we contemplate the process of talent development in children and young adults.

Talent development requires constant attention, nurturing, and sheer, focused effort and task commitment (Gruber, 1986; Renzulli, 1978). Whether or not a talent ultimately is developed depends on many factors including abilities, creativity, effort, motivation to achieve, societal support and appreciation of the talent area, environmental support and opportunities, and chance or luck (Bloom, 1985; Csikszentmihalyi et al., 1993; Renzulli, 1978, 1986; Tannenbaum, 1986). Supportive experiences at school, in the community, and at home also are critical forces in transforming potential into fully developed talents (Bloom, 1985; Csikszentmihalyi et al.,

1993; Reis, 1998; Renzulli, 1978). For example, Csikszentmihalyi and his colleagues studied talented teens, identifying a variety of factors that contribute to the development of their talents, including enjoyment of classes and activities, having adults help them establish both short- and long-term goals, and encouraging student engagement and commitment to their talent areas during critical periods of development, such as adolescence.

Out-of-school and extracurricular activities have been consistently cited in the research as being critical to the process of talent development, as they contribute to the motivation that talented children must develop to work more diligently in their area of talent (Reis, 1998; Renzulli, 1978; Sternberg, 1985). Other retrospective studies of eminent individuals (Bloom, 1985; Reis, 1998; Roe, 1953) indicate that out-of-school learning, mentors, identification of interests, organized activities, and parental enrichment and teaching often play a much more important role in talent development than school-based programs. Research also has verified that the psychological development of outstanding talent is developed by the individual over a long period of time and is influenced by a variety of factors, such as the personal characteristics of the talented person and strong support systems of the individual (Bloom, 1985; Csikszentmihalyi et al., 1993).

Researchers who study the process of talent development often try to identify positive or negative environmental factors that focus on childhood, family, and school experiences of those who achieve eminence. Roe (1953), for example, studied 64 leading American scientists in the fields of biology, physics, and the social sciences, many of whom were Nobel Prize winners. She found that as children, the scientists typically began their collection of objects, experimentation, and theory building as young as the age of 7. Roe's classic research, published in a book entitled *The Making of a Scientist* (1953), examined different social and personal forces of 64 eminent scientists. She found that teachers had little or no influence on the vocational choice of the scientists, particularly at the elementary and secondary level. The only important classroom activity mentioned by some of the scientists as influential was the in-depth project work they did independently in school to learn information for themselves. Roe explained, "The important thing is that they learned that they could satisfy their curiosity by their own efforts" (p. 238).

Zuckerman (1977), surveying American Nobel laureates, reported that most had been students of previous laureates, and that these laureates had mentored the most talented students who appeared to be most likely to carry on their line of work. The American Nobel laureates sought guidance from these older mentors and recognized their greatness. The previous laureates were most helpful about the identification of scientific problems with future potential for discovery. Two additional important studies of talent development across domains also shed insight into this process, and are further summarized in the following sections: Bloom (1985) and Csikszentmihalyi et al. (1993).

Bloom's Study of Talent Development

Bloom (1985), in collaboration with several colleagues, studied musicians, athletes, and scholars who achieved high-level public recognition, focusing on the significant factors in the development of talent and the contributions of home and school. In interviews with more than 120 persons who excelled in an area before the age of 35, the researchers found that schools were, quite simply, not places where exceptional talent was identified or developed. The researchers sought to identify factors that contributed to the development of talent, and specifically, to determine how home and school contributed to an international level of accomplishment by individuals in three areas: the artistic (concert pianists and sculptors); the psychomotor (Olympic swimmers and tennis players); and the cognitive (research mathematicians and neurologists). In the majority of cases, Bloom found that a positive family environment existed with parents or other family members who had a personal interest in the talent field and provided strong support, encouragement, and rewards for developing the talent. In fact, family members assumed and took for granted that a child's talent would be identified and developed as part of the family's lifestyle, especially between the ages of 3 and 7.

Bloom and his colleagues found the home to be important during the early years of talent development—providing support and resources, monitoring practice sessions and correcting the child's work, and helping in the consideration of future options. Parents found numerous public arenas outside the home that provided opportunities for their children to express their talent, including recitals, contests, and concerts. These events motivated children by providing important rewards and approval. Competitions also were meaningful in providing an external goal for training, identifying benchmarks of a child's progress, and establishing a context in which a group of individuals who share a special interest can form a community. Bloom found that when working in the talent field, children became fully engaged, but that schools rarely (if ever) enabled students to become fully involved in any one part of the curriculum. Bloom concluded that talent development and schooling seldom enhanced each other.

When Bloom and his colleagues studied the talent development process, they found that talented individuals across the fields of music, art, athletics, mathematics, and science demonstrated the following qualities: a strong interest and emotional commitment to a particular talent field; a desire to reach a high level of attainment in the talent field; a willingness to put in the great amounts of time; and the effort needed to reach very high levels of achievement in the talent field. The psychological development of outstanding talent occurred in these young people over a long time period and was influenced by a variety of individuals and factors, including personal characteristics of the talented person, the need for a strong support system, and the instilled value of working hard.

Developing Talented Teens: Csikszentmihalyi, Rathunde, and Whalen

Csikszentmihalyi et al. (1993) conducted a 5-year longitudinal study to investigate the process by which 200 talented teenagers in athletics, art, music, and

science became committed to the development of their talent, and why others with similar potential were disengaged from their talent areas. This study sought to identify similarities and differences between teens who developed and used their talents in adulthood, as opposed to those who drifted away from their talents to pursue work that required only average skills. The researchers described the need for talented teenagers to acquire a set of “metaskills” that allowed them to work with intense concentration and curiosity to develop their talents. Talent, these researchers learned, was developmental and affected by contextual factors in the environment. Talent was nurtured by the acquisition of knowledge of the domain, motivation provided by the family and persons in the specialized field of talent, and discipline created by a set of habits resulting in long-term concentrated study and superior performance.

The talented teenagers studied had certain personal characteristics, including the ability to concentrate, leading to both achievement and endurance, and an awareness of experience, enhancing understanding. Their personal goals sought both expressive and instrumental rewards, with students describing experiences of flow, an earlier area of Csikszentmihalyi’s research, when engaged in their talent area. Csikszentmihalyi (1990) defined flow as “the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it” (p. 4). The high school students studied experienced “flow” as they became totally engaged in their talent, which only occurred when they were consistently provided with challenges and emotional support. When immersed in pleasurable work, these teenagers pursued work as a reward in itself. Csikszentmihalyi also demonstrated that enjoyment plays a crucial role in inspiring students to become interested in a particular area and staying immersed in it.

These talented teens were aware of the conflict between giving in to peer pressure and maintaining productive work in their areas of talent. Many of them felt different from their peers and accepted this feeling because they knew they were different. They reacted to negative peer pressure in a variety of ways: changing groups of friends, adopting different personas in different groups, becoming more solitary, or deciding to attend specialized schooling to pursue their talents in a more supportive environment. Csikszentmihalyi and his colleagues also found that teens with little family support spent large amounts of time with peers instead of working on their talents, and subsequently failed to develop their abilities, suggesting the need for careful parental monitoring of talent development. Interestingly, the team also found that adolescents from disadvantaged backgrounds had higher levels of enthusiasm and optimism than those from affluent backgrounds. All teenagers’ perceptions about work also were carefully examined and findings suggested that they had unrealistic expectations about the type of career they would have and how much money they would be expected to earn. Csikszentmihalyi et al. (1993) attributed this finding to the changing nature of adult jobs and to lack of exposure to real work experiences.

This research led to the identification of eight factors that influenced talent development in the teens who participated in this study (Csikszentmihalyi et al., 1993). First, the researchers found that children must initially be recognized as talented in order to develop a talent, and therefore they must have skills that are considered useful

in their culture. Second, talented students had to have personality traits conducive to concentration, such as achievement orientation and endurance, as well as traits that enabled them to be open to experience, such as awareness and understanding. Third, talent development was easier for teens who developed habits that were conducive to cultivating talent (e.g., spending time in challenging pursuits with friends instead of hanging out, the modulation of attention, spending more time alone). Fourth, talented teens were more conservative in their sexual attitudes and aware of the possible conflict between productive work and peer relations. Fifth, families who provided both support and challenge enhanced the development of talent. Sixth, talented teenagers liked teachers best who were supportive and modeled enjoyable involvement in a field. Seventh, talent development was found to be a process that requires both expressive, positive feelings and instrumental goals that are useful to future rewards. Last, talents can be developed if the process produces optimal, enjoyable experiences, and the memories of peak moments that continue to motivate students.

Developing Talents in Gifted Females

Reis (1987, 1995, 1998) studied the paths leading to female talent realization in women. She studied 22 American women who gained eminence in diverse fields. Qualitative case study methodology was used including interviews, questionnaires, document review, and in-depth interviews to probe perceptions of both work and personal lives (Miles & Huberman, 1994; Yin, 1994). Each eminent woman was recognized as a major contributor in her field, and several achieved the distinction of being the first or one of the first women in her respective domain.

Using data from this and past research, Reis (1987, 1996, 1998, 2002, 2005) developed a theory of talent development in women. The theory includes abilities (intelligence and special talents), personality traits, environmental factors, and personal perceptions, such as the social importance of the use of one's talents to make a positive difference in the world. Underlying this theory is the belief that talent can be developed in women of high potential through systematic work, active choices, and individual, sustained effort (Dweck, 1999; Moon, 2003; Renzulli, 1978, 1986).

These women developed their talents over time. Each woman displayed a careful patience about the development of her gifts, with some waiting years to have the opportunity to invest considerable blocks of time to her work, while others were able to work steadily over the years. Rather than early recognition, the women in this study demonstrated persistent production, evolving into higher forms of talent. The sheer volume of output, what appeared to be "learned creativity," and intense love for work is what led the women in this study to exceptional achievement. The personality traits of these women included determination, motivation, creativity, patience, and the ability to take, and in some cases thrive on, risks. Each woman exhibited determination, reflected by an ability to strive for success and to continue to persevere, often under adverse conditions and sometimes without the love and support of one's family and/or partner. Each displayed a type of creativity rooted in the love of work, interests, and the way time was found for other essential aspects of life, such as family and relationships. In

addition, each displayed a willingness to attempt tasks that they believed others would not have the courage or the interest to pursue.

The eminent women in this study had an intensity about work characterized by energy, passionate interest, and enjoyment. Several indicated that they would rather be doing their work than anything else. However, they reported experiencing guilt when they felt this way, and confessed their attempts to do more for their partners or children to assuage their guilt.

Importantly, although these women felt a drive to pursue their talents, not all were sure that doing so made them happier or more fulfilled. When questioned about their perceptions of their success and happiness, many chose to compare their own lives with the paths and life choices of equally talented contemporaries who did not achieve at similar levels. Most participants in this study perceived that their less successful, equally talented peers lived calmer, and in some cases, happier lives. They understood that the path to eminence involved sacrifices, and in some cases, harbored regrets about paths not taken and personal choices not made. Coexisting with these feelings, however, was pride in their accomplishments.

VanTassel-Baska (1995) studied the lives of Bronte and Woolf to investigate whether the path of a talented female writer is different from a male writer and identified similarities in the lives and work of Bronte and Woolf over the life span. She found three major influences on females writers: adversity (obstacles that the women had to overcome in order to realize their potential); autodidacticism (dependence on self-learning due to limited or absent formal educational opportunities); and emotional support (need to have mentors to help these gifted women attain their potential). These areas also surface in other research related to women and the creative process across domains.

A review of studies related to talent development suggests several commonalities that emerge from research summarized in this chapter relating to this complicated process. Most important is the recognition that there is no common path that enables the development of talent to occur, but some factors contribute to the process, such as the right environment, family support, strong teachers, and the desire to work to develop one's talent (Bloom, 1985; Csikszentmihalyi et al., 1993; Reis, 1998). Some research suggests that children must be recognized as talented in order to develop a talent (Csikszentmihalyi et al., 1993) and also must have talents and gifts that are considered useful in their culture. Certain personality traits seem to accompany talent development such as concentration, endurance, and traits such as being open to experience, and abilities to focus attention (Bloom, 1985; Csikszentmihalyi et al., 1993; Reis, 1998). These, when coupled with instruction from teachers in the talent field, both at home and in an instructional setting that is more individualized and personalized, seem to enable talent development to occur if the process results in optimal experiences (Csikszentmihalyi et al., 1993). Memories of peak, exciting experiences such as starring in a drama production or publishing a story or book, can help to motivate students to continue to work to replicate the same intense experience again (Csikszentmihalyi et al., 1993; Reis, 1998). The importance of a supportive environment

and parental presence also was a major key in the development of talent (Bloom, 1985; Csikszentmihalyi et al., 1993).

The Schoolwide Enrichment Model and Talent Development

The Schoolwide Enrichment Model (SEM; Renzulli & Reis, 1985, 1997) is based on 30 years of research and field-testing and was designed to meet the needs of gifted and talented and academically advanced students, as well as to engage and enrich learning for all children. The SEM is based on Renzulli's (1977) Enrichment Triad and has been implemented in more than 2,500 schools across the country and has continued to expand internationally. The SEM provides enriched learning experiences and higher learning standards for all children through three goals: developing talents in all children, providing a broad range of advanced-level enrichment experiences for all students, and follow-up advanced learning for children based on interests. The SEM emphasizes engagement and the use of enjoyable and challenging learning experiences that are constructed around students' interests, learning styles, and product preferences.

Overview of the SEM

The SEM (Renzulli & Reis, 1985, 1997) has three major goals that are designed to challenge and meet all of the needs of high-potential, high-ability, and gifted students, and at the same time, provide challenging learning experiences for all students. In the SEM, a talent pool of 10–15% of above-average ability/high-potential students is identified through a variety of measures including achievement tests, teacher nominations, assessment of potential for creativity and task commitment, as well as alternative pathways of entrance (self-nomination, parent nomination, etc.). High achievement test scores and/or IQ test scores automatically include a student in the talent pool, enabling those students who are underachieving in their academic schoolwork to be considered.

The SEM has three components of services for students: the Total Talent Portfolio, Curriculum Modification and Differentiation, and Enrichment. These three services are delivered across the regular curriculum, a continuum of services, and a series of enrichment clusters. Once students are identified for the talent pool, they are eligible for these services. First, interest and learning style assessments are used with talent pool students, through the development of a total talent portfolio for each student. Style preferences include projects, independent study, teaching games, simulations, peer teaching, programmed instruction, lecture, drill and recitation, and discussion.

Second, curriculum compacting and other forms of modification are provided to all eligible students for whom the regular curriculum must be adjusted. This elimination or streamlining of curriculum enables above-average students to avoid repetition of previously mastered work and guarantees mastery while simultaneously finding time for more appropriately challenging activities. A form, called the Compactor, is used to document which content areas have been compacted and what alternative work has been substituted.

Third, a series of enrichment opportunities organized around the Enrichment Triad Model offers three types of enrichment experiences through various forms of delivery, including enrichment clusters. Type I, II, and III enrichment are offered to all students; however, Type III enrichment usually is more appropriate for students with higher levels of ability, interest, and task commitment.

In the SEM, teachers are encouraged to work with student to help them better understand the three dimensions of their own learning: their abilities, interests, and learning styles. This information, focusing on their strengths rather than deficits, is compiled into a Total Talent Portfolio that can be subsequently used to make decisions about talent development opportunities in regular classes, enrichment clusters, and/or in the continuum of special services. The ultimate goal of learning that is guided by these principles and the SEM is to replace dependent and passive learning with independence and engaged learning. The three service delivery components of the SEM (Total Talent Portfolio, curriculum compacting, and enrichment teaching and learning) are applied to the regular curriculum, a continuum of services, and a series of enrichment opportunities for all students.

Longitudinal Research on the SEM Related to Talent Development

Delcourt (1988), Hébert (1993), Starko (1986), and Westberg (1999) investigated the long-term effects of SEM school and childhood experiences on creative productivity and talent development. Delcourt studied characteristics related to talent development of Type III products completed in or out of school. Results related to family, school, and individual students' talent development revealed that students exhibited characteristics similar to those of creative/productive adults and that they could produce high-quality work. Delcourt also found, as did Csikszentmihalyi et al. (1993), that students performed better when their talents were better understood by themselves, their parents, and their teachers.

Starko (1986) also examined the effects of the Enrichment Triad Model on student creative productivity. Students who participated in SEM programs for at least 4 years were compared with students who qualified for such programs but received no services. Questionnaires were used to determine the number of creative products produced by both groups, within school programs and within independent activities outside of school. Information about attitudes and skills associated with creative productivity also was gathered through a questionnaire. Results indicated that students who became involved in independent study projects in the SEM more often initiated their own creative products both *in and outside of school* than did students in the comparison group. The group in the enrichment program reported more than twice as many creative projects per student as the comparison group. The group that participated in the enrichment program also reported doing more than twice as many creative produces outside of school on their own time than the comparison group. Additionally, students who participated in the enrichment program showed greater diversity in projects and more sophistication in both the creative products attempted and in their description of goals.

In an examination of students who participated in an Enrichment Triad program for almost a decade, Hébert (1993) found several benefits of program involvement. The students selected for the study were chosen because of the number and quality of the Type III products they completed during their elementary TAG program experience. The interviews with the students about their Type III experiences were transcribed and analyzed for themes, finding that Type III interests of students affected their postsecondary plans and that students missed the chance for more creative outlets in high school. He also found that the Type III process serves as an important training for later productivity in college and in adult life. Moreover, many students' Type III interests in school influenced their subsequent careers and work.

Westberg (1999) had similar results in a longitudinal study of students in Enrichment Triad programs, finding that they maintained interests and were still involved in both interests and creative productive work after they finished college and graduate school. Moon, Feldhusen, and Dillon (1994) also conducted a retrospective study investigating the effects of an elementary pull-out program gifted program based on the Purdue Three-Stage Model, which has similar components to the SEM program. Their results were similar, finding that students and their families believed that the program had a long-term positive impact on the cognitive, affective, and social development of most participating students.

Conclusion

Recent years have shown an increasing interest in and research about talent development (Olszewski-Kubilius & Lee, 2004a, 2004b, 2004c). The work of Joyce VanTassel-Baska has added to the volume of knowledge with both the biographical research cited in this chapter (VanTassel-Baska, 1995) as well as content-based curriculum (VanTassel-Baska, Bass, Ries, Poland, & Avery, 1998; VanTassel-Baska, Zuo, Avery, & Little, 2002) that results in talent development opportunities. Her extensive work on developing curriculum units to enrich curriculum for gifted students has extended basic curricular concepts within units that integrate advanced content and processes. Her model units across content areas have resulted in opportunities for accelerated work, problem-based learning, and issue-based student inquiry models. Longitudinal research should continue to examine the impact of her work, and this type of research should continue about all research-based approaches in gifted education. There is no more important research than understanding the process by which students can develop their gifts and talents.

References

- Bloom, B. S. (Ed.). (1985). *Developing talent in young people*. New York: Ballantine Books.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper & Row.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. Cambridge, England: Cambridge University Press.

- Delcourt, M. A. B. (1988). *Characteristics related to high levels of creative/productive behavior in secondary school students: A multi-case study*. Unpublished doctoral dissertation, The University of Connecticut, Storrs.
- Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Philadelphia: Psychology Press.
- Feldman, D. H., & Goldsmith, L. T. (1991). *Nature's gambit: Child prodigies and the development of human potential*. New York: Teachers College Press.
- Gruber, H. E. (1986). The self-construction of the extraordinary. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 247–263). New York: Cambridge University Press.
- Hébert, T. P. (1993). Reflections at graduation: The long-term impact of elementary school experiences in creative productivity. *Roeper Review*, 16(1), 22–28. <https://doi.org/10.1080/02783199309553529>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: SAGE Publications.
- Moon, S. M. (2003). Personal talent. *High Ability Studies*, 14(1), 5–21. <https://doi.org/10.1080/13598130304095>
- Moon, S. M., Feldhusen, J. F., & Dillon, D. R. (1994). Long-term effects of an enrichment program based on the Purdue three-stage model. *Gifted Child Quarterly*, 38(1), 38–48. <https://doi.org/10.1177/001698629403800106>
- Olszewski-Kubilius, P., & Lee, S.-Y. (2004a). The role of participation in in-school and outside-of-school activities in the talent development of gifted students. *Journal of Secondary Gifted Education*, 15(3), 107–123. <https://files.eric.ed.gov/fulltext/EJ682708.pdf>
- Olszewski-Kubilius, P., & Lee, S.-Y. (2004b). Gifted adolescents' talent development through distance learning. *Journal for the Education of the Gifted*, 28(1), 7–35. <https://doi.org/10.1177/016235320402800102>
- Olszewski-Kubilius, P., & Lee, S.-Y. (2004c). Parent perceptions of the effects of the Saturday enrichment program on gifted students' talent development. *Roeper Review*, 26(3), 156–165. <https://doi.org/10.1080/02783190409554261>
- Reis, S. M. (1987). We can't change what we don't recognize: Understanding the special needs of gifted females. *Gifted Child Quarterly*, 31(2), 83–88. <https://doi.org/10.1177/001698628703100208>
- Reis, S. M. (1995). Talent ignored, talent diverted: The cultural context underlying giftedness in females. *Gifted Child Quarterly*, 39(3), 162–170. <https://doi.org/10.1177/001698629503900306>
- Reis, S. M. (1996). Older women's reflections on eminence: Obstacles and opportunities. In K. D. Arnold, K. D. Noble, & R. F. Subotnik (Eds.), *Remarkable women: Perspectives on female talent development* (pp. 149–168). Cresskill, NJ: Hampton Press.
- Reis, S. M. (1998). *Work left undone: Choices and compromises of talented women*. Mansfield Center, CT: Creative Learning Press.
- Reis, S. M. (2002). Toward a theory of creativity in diverse creative women. *Creativity Research Journal*, 14(3&4), 305–316. https://doi.org/10.1207/S15326934CRJ1434_2

- Reis, S. M. (2005). Feminist perspectives on talent development: A research-based conception of giftedness in women. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (2nd ed., pp. 217–245). New York: Cambridge University Press. <https://doi.org/10.1017/CBO9780511610455.014>
- Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly*, 44(3), 152–170. <https://doi.org/10.1177/001698620004400302>
- Renzulli, J. S. (1977). *The Enrichment Triad Model: A guide for developing defensible programs for the gifted*. Mansfield Center, CT: Creative Learning Press.
- Renzulli, J. S. (1978). What makes giftedness? Re-examining a definition. *Phi Delta Kappan*, 60(3), 180–184, 261. <https://www.jstor.org/stable/20299281>
- Renzulli, J. S. (1986). The three-ring conception of giftedness: A developmental model for creative productivity. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 53–92). New York: Cambridge University Press.
- Renzulli, J. S. (2002). Expanding the conception of giftedness to include co-cognitive traits and to promote social capital. *Phi Delta Kappan*, 84(1), 33–40, 57–58. <https://doi.org/10.1177/003172170208400109>
- Renzulli, J. S., & Park, S. (2000). Gifted dropouts: The who and the why. *Gifted Child Quarterly*, 44(4), 261–271. <https://doi.org/10.1177/001698620004400407>
- Renzulli, J. S., & Reis, S. M. (1985). *The Schoolwide Enrichment Model: A comprehensive plan for educational excellence*. Mansfield Center, CT: Creative Learning Press.
- Renzulli, J. S., & Reis, S. M. (1997). *The Schoolwide Enrichment Model: A how-to guide for educational excellence* (2nd ed.). Mansfield Center, CT: Creative Learning Press.
- Roe, A. (1953). *The making of a scientist*. New York: Dodd, Mead, and Company.
- Starko, A. J. (1986). *The effects of the revolving door identification model on creative productivity and self-efficacy*. Unpublished doctoral dissertation, The University of Connecticut, Storrs.
- Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence*. New York: Cambridge University Press.
- Tannenbaum, A. J. (1986). Giftedness: A psychosocial approach. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 21–52). New York: Cambridge University Press.
- VanTassel-Baska, J. (1995). Study of life themes in Charlotte Brome and Virginia Woolf. *Roeper Review*, 18(1), 14–19. <https://doi.org/10.1080/02783199509553690>
- VanTassel-Baska, J., Bass, G. M., Ries, R. R., Poland, D. L., & Avery, L. D. (1998). A national pilot study of science curriculum effectiveness for high ability students. *Gifted Child Quarterly*, 42(4), 200–211. <https://doi.org/10.1177/001698629804200404>
- VanTassel-Baska, J., Zuo, L., Avery, L. D., & Little, C. A. (2002). A curriculum study of gifted student learning in the language arts. *Gifted Child Quarterly*, 46(1), 30–44. <https://doi.org/10.1177/001698620204600104>
- Westberg, K. L. (1999, Summer). What happens to young, creative producers? *NAGC: Creativity and Curriculum Divisions' Newsletter*, pp. 3, 13–16.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: SAGE Publications.

Zuckerman, H. (1977). *Scientific elite: Nobel Laureates in the United States*. New York: The Free Press.