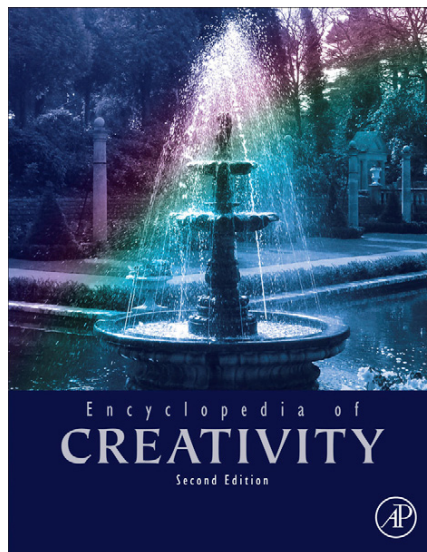


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## Underachievement

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### Glossary

#### Attention deficit hyperactivity disorder

(ADHD) Symptoms include heightened activity, inattentiveness, and impulsivity.

**Convergent thinking** Generating one 'correct' answer for a given problem.

**Cortical activation** Brain activity during any given task.

**Creativity** A product or an idea that is novel and useful.

**Divergent thinking** Generating multiple answers for a given problem.

**Giftedness** Above average intellectual ability.

**Underachievement** Student's actual performance below his/her ability level.

### What Is Underachievement?

Underachievement refers to a level performance that is below an individual's actual ability level. In contrast, overachievement refers to a level of performance that appears to be higher than one would expect given the individual's ability level (although some question whether it is logically possible to achieve above one's potential). Gifted underachievers typically have average or above average academic achievement, yet many do not perform on a par with their abilities. Thus, underachievement can, and should be, differentiated from low achievement. Defining underachievement requires that we are able to measure ability. The most common yardstick for measuring ability is IQ, an easy and widely employed index and significant predictor of future academic performance.

### Who Underachieves and Why?

The causes of underachievement can be divided into internal factors such as personality, motivation, gender, ethnicity, and language, and external factors such as family, peer group, teacher, school, and social environment, and culture. Both kinds of causes can lead to underachievement due to low self-confidence, a low ability to persevere, lack of goals, and feelings of inferiority.

#### Internal Factors

##### Personality

In 1992, L. J. Emerick showed that gifted underachievers exhibit independence of thought and judgment, willingness to take risks, perseverance, above average ability, creative ability, and an intense love for what they like doing. Gifted students tend to be sensitive to teachers who are critical, rigid, officious, and unsympathetic, as well as to negative social feedback, which can all contribute to emotional conflict and the development of underachievement, as studied by J. R. Whitmore in 1980. Gifted underachievers with emotional problems have relationship problems with teachers, such as demanding behavior, excessive attention seeking, hostility, and rebelliousness, and relationship problems with peers,

including being either intensely competitive or fearful of competition.

Personality inventories of male high ability students show that male high ability dropouts are more assertive, independent, rebellious, cheerful, expressive, frank, and talkative than male high ability nondropouts. S. P. Lajcie and B. M. Shore discussed in 1981 that this might indicate that school pressures for conformity, rather than a lack of interest in school, create potential dropouts. Further, such characteristics can prevent the students from being selected for gifted programs, even if they have superior ability and other talents.

##### Motivation

Motivation plays an important role in underachievement. Two types of motivation can be distinguished: mastery goals and performance goals motivations. Mastery goals motivation leads to pursuing competency in a chosen field. Students who adopt such goals are self-efficient, persist in the face of difficulty, and are high achievers. Performance goals motivation, on the other hand, leads to hiding of existing ability and being afraid to make mistakes, seeing them as a sign of weakness. Students who adopt these goals tend to be low achievers.

##### Gender

Boys are more likely to underachieve than girls, with 50% of gifted boys performing below their level of ability. In addition, boys are more likely to drop out of school. However, there is evidence suggesting that there is an equal representation of males and females among underachieving students (e.g., Preckel et al. 2006). The cause for this inconsistency in findings may be that girls' problems and needs are more difficult to identify, and therefore their underachievement is easier to overlook.

##### Language and ethnicity

English proficiency tends to be associated with greater academic achievement for students whose first language is not English. However, maintenance of their first language is also associated with greater academic achievement because balanced bilingual students tend to perform better academically than monolingual students. Value systems within different communities and cultures have a high impact on academic achievement. For Asian

American and Hispanic American students, strong ethnic, culture, and language retention is associated with successful academic achievement. These students incorporate both cultures into their life experience, and draw resources available to them from either their own or American culture. However, African American students experience the opposite in that ethnic and culture retention tends to be associated with less successful academic achievement. It is more difficult for these students to achieve success if they retain their own cultural norms, in which academic achievement can be considered as "acting white."

### External Factors of Underachievement

Poor family relationships and inconsistent standards, peer group, teacher, school, and social environment and culture are external factors that can lead to underachievement.

### Parent, peer group, teacher, school, and social environment and culture

In 2001, of the Ph.D.s awarded in the Sciences, 80% were white, 9% were Asian, 4% were African American, 4% were Hispanic, and less than 0.5% were Native American. One of the likely reasons for the persistent underachievement of African American (and some other minority) students is the disproportionate numbers who live in poverty, which often include inadequate learning materials, under-qualified teachers, high administrator and teacher turnover, and overcrowded schools. Other factors include low teacher expectations, lack of access to more rigorous courses, and disproportionate referral to special education. Kozol showed in 2005 that African American students in gifted programs may disengage psychologically because of the lack of diversity in gifted education programs. African American students, and gifted students in particular, do not know that their school counselors or their interactions with counselors are ineffective.

However, African American students attending middle-class schools still do not perform at the level of their white and Asian counterparts. One of the contributing factors is attributed to parents' involvement in their children's education. African American parents tend to have lower academic expectations for their children compared to white parents. For African American students, peer pressure plays a significant role in their underachievement as well.

Comparative studies of ethnic differences in academic achievement tend to label whole groups of African American students as 'underachievers.' Such labeling can damage the way educators perceive African American students' intellectual capabilities and can reinforce the ecological fallacy. Majority and minority students have different reasons for academic achievement and retention in school. Inadequate preparation has been widely assumed to be the cause of most poor academic performance. However, programs that target such causes are not universally successful. Such programs improve academic achievement of majority students, but minority students can still lag behind. Other factors tend to influence minority students' academic performance. Minority students lack minority role models and advisors, who are available to support and advise them and this may be the reason for this disparity.

Teachers' lack of cultural awareness also explains minority students' underachievement, and thus schools need to provide

additional training and educational support to meet the needs of such teachers.

## Creativity and Underachievement

### Role of Creativity in Underachievement

Creativity is critical for the highest levels of academic achievement. It is a better predictor of outstanding adult accomplishments than measures of intelligence or school grades. In social sciences, for example, creativity explains more variability in performance than reasoning capacity, speed, or memory. In addition, creative thinking is more related to final dissertation marks than to exams or continuous assessment performance.

### Neuropsychology of Creativity and Underachievement

Some studies have argued that neural efficiency explains differences in human intelligence – that is, brains may function more efficiently in highly intelligent individuals. (Staudt and Neubauer, 2006)

Highly intelligent individuals use less mental activity (i.e., higher alpha power) than average intelligent ones to perform the same kinds of tasks. Further, there are differences on the neurophysiological level between highly creative individuals compared to less creative ones. Highly creative individuals show less mental activity (i.e., low cortical arousal) than average creative ones while working on open-ended problems. Similarly, highly creative individuals show lower levels of cortical arousal than less creative ones during an inspirational (i.e., thinking of a story) phase but not during an elaboration (i.e., writing down the story) phase (From Staudt and Neubauer in 2006). In 1980, Whitmore showed that underachievers are highly imaginative as well as creative and perform better on holistic or divergent tasks than on analytic or convergent problems. They show a different cortical activation pattern, with greater neural efficiency in frontal cortical areas, compared to achieving students. Differences between achievement and underachievement groups (i.e., underachievers' lower activation) are found in that brain regions which are prominent for creative and divergent problem solving – the anteriorfrontal/frontal cortex. Defocused attention with a lower level of frontal lobe activation and low arousal is important for producing creative ideas. Creative problem solving is generally accompanied by lower levels of cortical arousal. Thus, underachievers might be more creative than achievers because of their lower level of cortical activation in the anteriorfrontal/frontal brain regions (from Staudt and Neubauer in 2006).

### Creativity in classroom and at home

See the detailed discussion by K. H. Kim in 2008.

### Characteristics of a Creative Student

Creativity can be a gift. However, it is just as true that creativity can be a curse for some students in traditional school environments, where it can lead to underachievement. It has been well documented that highly creative students experience difficulty in traditional school environments. For example, 60% of 400 eminent creative individuals had serious school problems.

Despite strong support for the importance of creativity, classrooms generally do not appear to be creativity-fostering places, primarily due to the biases of teachers and traditional classroom organization, lack of meaningful curriculum differentiation, and lack of originality in classroom-based enhancement efforts.

When highly creative students are forced into traditional school environments, they may become troublesome to teachers and disruptive in the classroom. They may resent the constraining structure of the classroom, excessive rules and regulations, and the press for the conformity. They avoid unpleasant academic tasks and interactions with teachers or peers and can become troublemakers, which can in turn negatively affect the classroom environment for others. Eventually, these creative individuals can develop into underachievers.

Not surprisingly, teachers prefer students who are achievers and teacher-pleasers, rather than disruptive or unconventional creative students. Teachers frequently perceive creative student behaviors as 'misbehaviors.' Creative students often display characteristics disliked by teachers such as hyperactivity, argumentativeness, selfishness, stubbornness, and independence. Many of the traits associated with attention deficit hyperactivity disorder (ADHD) also seem to be present in children who have been identified as gifted, talented, or creative. For example, compared with students who can focus attention easily, students with ADHD gather and use more diverse, non-verbal, and poorly focused information, and show higher figural creativity. In fact, teachers may mistake a highly creative student who is energetic and unconventional as having ADHD. This disconnection between teacher's preferences and highly creative students may lead to a discrepancy between classroom expectations and a creative student's educational needs. Therefore, educators are encouraged to be mindful of the creative talent in young people by recognizing and nurturing it to reduce underachievement, the school dropout rate, and other negative spin-offs.

### Teachers' Preferences and Perceptions

Teachers tend to prefer students who conform to their requests, and exhibit socially acceptable behaviors. When questioned about the characteristics of their ideal student, teachers list easily manageable behavior and logical thinking as some of the most desirable traits. G. A. Davis and S. B. Rimm discussed in 1994 that teachers tend to prefer students with a high IQ rather than students who are both highly creative and highly intelligent. Some teachers see creative children as a source of interference and disruption. In fact, teachers' judgment of their favorite students is negatively related with creativity.

Although teachers agree with the abstract goal of fostering and encouraging creativity in children, their in-class demeanor and nonverbal behaviors appears to be antithetical to such a goal. For example, teachers report that they value qualities such as curiosity and independent thinking in their students, but students report that their teachers' behavior suggests that they value obedience and devalue asking questions and self-sufficiency. In fact, the work on teachers' views of the creative personality generally has been interpreted by Davis and Rimm as indicating that creative children in the classroom will be ignored or even punished.

Many teachers perceive highly creative students as nonconformists, easily distracted, and experiencing obstacles in fulfilling their academic obligations. E. P. Torrance and H. T. Safter discussed in 1999 that most teachers show a general lack of understanding about the nature of creativity and the characteristics of creative students. They most often associate creativity with artistic ability. Teachers often confuse characteristics of gifted high achievers with creative characteristics. When teachers are asked to think of a creative student, they frequently describe high achievers who possess some creative traits. However, intelligent people produce high quality products, but not necessarily novel ones. Therefore, if traits of creativity are confused with traits of high intelligence, a large majority of creative students will be overlooked.

Funding limitations may lead to situations where teachers are overloaded by class sizes. Naturally teachers seem to gravitate to students that are easier to handle, respectful, not disruptive, follow along in class, and accept their teaching unquestioningly. This may lead to rigid classrooms, which discourage new and unique ideas and demand obedience, rote memorization, and conformity. Ultimately, this combination can stifle creativity and lead to underachievement of highly creativity students.

### Structure and Conformity

Teachers who prefer conformity are frustrated by many characteristics of highly creative students. Highly creative children, especially highly creative boys, have a reputation for having wild or silly ideas. After a child gains a reputation for being silly, it is difficult for teachers and classmates to see good ideas as anything but silly. This is exemplified by a third-grade teacher who had emphasized conformity to behavioral norms so much that she could not recognize the achievements of a certain highly creative student, even though this student had learned more than any of her other students (from E. P. Torrance in 2000).

As gifted students move forward in school, their desire to conform, fit in, and be accepted by teachers and peers causes many of them to disavow their uniqueness (as discussed by Torrance and Safter). A teacher's desire for conformity can also drive students to nonconformity. Nonconformity can become a drive in highly creative individuals with exceptional mental abilities, whose natural thought processes can lead to exploring concepts and methods that diverge greatly from the norm, especially when they are faced with pressure to conform.

### Parental Influences

Parental attitudes can impact a child's creativity in a similar manner to teachers' attitudes. Parents of highly intelligent and highly creative children emphasize different characteristics when asked to describe their children. Parents of intelligent children tend to describe their children as polite and studious. Parents of creative children, on the other hand, tend to describe their children as enthusiastic, open to experience, and having a lot of interests. There is a strong relationship between preschool children's creativity test scores and their mothers' chaotic or rigid family style.

Parents may feel threatened when their highly creative children express their creativity. Some of the questioning, experimenting, and wild ideas can be annoying. Creative behavior may be interpreted as aggressive or even hostile, and it becomes just that if ideas and questions are rejected. Children who show creative activity consciously ask annoying questions and challenge the *status quo*. In response, parents may react by punishing this exploration of alternatives and discouraging their child's abilities.

## Creativity and Society

### Sensitivity, Risk-Taking and Socialization

Highly creative students face social difficulties due to their unique personality characteristics and needs which may not be experienced by other students. What distinguishes creative adolescents from their less creative counterparts is their greater independence and rebelliousness, deeper feelings and fuller range of emotional expression. Creative people are highly sensitive and are easily disturbed. They integrate feminine and masculine characteristics more fully, and demonstrate higher originality, imagination, and divergent thinking. In addition, compared to students with high IQ, highly creative students exhibit much higher degrees of humor. They enjoy taking risks and being in unusual situations. Torrance showed in 2000 that if a student asks an unusual question or advances a new idea, the student runs a risk of ridicule by classmates and by the teacher. This risk of ridicule may tend to discourage risk-taking, which is important in the acquisition of skills and knowledge.

Evidence of the anti-creativity effects of childhood socialization can be described by a 'fourth grade slump,' which is a drop in creativity test scores after the third grade. The observed drop may be caused by peer pressure and demands for conformity in the classroom. In addition to creativity, curiosity declines by fourth grade among gifted students.

### Gender Roles

Gender role expectations may have an impact on underachievement and creativity. Creative individuals seem to diverge from sex norms because both sensitivity, which is traditionally a feminine virtue, and independence, which is considered to be a masculine virtue, are essential for creativity. Torrance indicated in 2004 that some students may sacrifice their creativity in order to maintain their masculinity or their femininity, which can lead to emotional issues and other problems for highly creative students. Teachers who are sensitive to gender issues among their students are in a position to soften the negative impact of sex-role stereotyping.

### Suppression of Creativity and Emotional Problems

An entirely different problem may manifest when highly creative children suppress their creativity and become overly conforming and obedient. They are likely to grow up with a lack of confidence in their own thinking and be overly dependent upon others in making decisions. They fail to develop because

they have not been provided situations in which it is safe to practice without negative evaluation. The psychological dangers are severe if creative needs are strong and suppression is severe or prolonged. Torrance showed that in such cases, tension is likely to be overwhelming and psychosis can result. Creative people derive meaning from expressing their creativity, and denying them the opportunity to express their creativity can lead to numerous problems. Students may succumb to peer pressure and conformity, which can lead to the denial and inhibition of their creative ability. It may create personal tension, feelings of social stress, estrangement, and eventually may even cause a breakdown. Ultimately, such stifling of creativity affects creative students' quality of life.

Loneliness is a serious problem for highly creative students, especially if they do not have anybody who can listen to their original ideas without criticism. However, this is often the reality for creative children – they find themselves isolated from, and even teased by, peers and sometimes go through school unnoticed. Because creativity involves independence of mind, nonconformity to group pressures, or breaking out of the mold, highly creative students can experience problems of adjustment. They must either repress their creativity or learn to cope with the tensions that arise from being different. Repression of creative needs can lead to personality breakdown, while expression of those needs leads to loneliness, conflicts, and other problems of adjustment (see Torrance in 1994).

### Unrecognized Creativity

Many unrecognized, creatively gifted, students are somewhat shy or nonassertive in the classroom. Some are children who teachers report to be in frequent conflict with classmates. The disruptive child usually consumes a lot of teacher attention, but does not show exceptional academic achievement or potential. Some students become highly creative when they enter special programs for the gifted, but most of them have learned to suppress creative impulses or had not yet discovered them. This means that such students may only become aware of their potential for creative productivity and the intrinsic rewards derived from the act of creating, once they are placed in an environment that encourages creativity.

Students' creativity can contribute to their underachievement as indicated by the real world measure of grades. It appears that some classroom interactions discriminate against creative ability such that students who try to use this ability achieve less well. Students with only high IQ, for example, achieve more than students with only high creativity scores, and students with combined high intellectual and creative skills do equally well on achievement measures, but have significantly lower school grades. In addition, those students who use their creative ability in the classrooms achieve less well than those who use their intellectual skills.

### Creativity and Behavior Problems

Students with behavioral problems obtain statistically significantly higher scores on flexibility and originality measures. For example, youth delinquents from a Juvenile Justice System showed that approximately 18% of those screened turned out

to be gifted in some way. It is possible that these students' creative personality played a role in their problems.

Discrimination against creativity may go as far as to force creative students to drop out of high school or college. In fact, dropouts outperform nondropouts on creativity tests. Similarly, high school underachievers are found to be more creative compared with a group of normal achievers. Evidence suggests that creativity is related to school offenses. Popularity and misbehavior appear to be most predicted by creativity scores, whereas fluency and elaboration contribute more than other creativity subtests to the misbehavior correlation.

### What Can We Do About It?

The characteristics of gifted underachievers are similar to the characteristics of highly creative underachievers. The same models and procedures can be used for mentoring and fostering highly creative and gifted underachieving students. Once creative students are in an environment that meets their needs, they perform much better, although reversing the underachievement may take a long time and be difficult.

Students' different weaknesses or difficulties and strengths can be hidden behind similar academic achievements, regardless of underachievement or overachievement. Thus, before educators make a diagnosis to design suitable and differentiated instruction for each student, identifying strengths and explicitly building on them is as important as carefully identifying each student's difficulties or weaknesses.

### Less Restrictive and Less Evaluative Environments

Creative children's underachievement is minimized when school settings are least restrictive. The best learning environment for creative students allows them to move around and be physically active as much as possible, rather than being confined to their seats. Creative students also seem to thrive in challenging environments because without challenges creative students become frustrated and may lose interest in an activity. One of the primary problems is the failure of the school to give creative students challenging tasks in a less restrictive setting. Torrance showed in 2000 that misbehavior can often be seen as a reaction to the unchallenging, boring, and reproductive tasks given to highly creative students in restrictive school settings.

Further, students' creativity is fostered when teachers minimize the use of assessments in making social comparisons. When students focus on self-improvement, they are more likely to take risks, seek out challenges, and persevere in the face of difficulty. For students to be willing to express their creativity, they must feel that their ideas, especially those who are unconventional, are welcome in the classroom.

### Play and Fun

Abundant play facilitates maturation of the frontal lobe inhibitory skills that gradually come to regulate children's impulsive primary-process emotional urges. Many parents and school systems neglect play needs, assuming that treating children like little adults facilitates the construction of well-conducted

citizens. However, human socialization occurs when children's brains are allowed to learn and develop in culturally rich, mind-supporting environments, including those that support a variety of self-generated social activities encompassed by the concept of 'natural play.'

If creatively gifted children are engaged in an academic activity that is fun and playful, they will become more motivated to learn and grow to fulfill their potential. Therefore, teachers and parents must continuously bring fun as the most important attribute to creative children's learning. Teachers need to incorporate play and fun fully into gifted education. Highly creative students should be encouraged to have pride in their own work instead of making external rewards a goal. Intrinsic motivation should be modeled by intrinsically motivated adults. Children should be shown the value of being creative for creativity sake, rather than for competing with their peers. Creative students should be given a choice of which activities to pursue, and on how they follow such activities. And again, play, fun, and imagination should be emphasized as much as possible. Teachers, parents, and families can help creatively gifted students by allowing them to pursue topics of strong interest. Allowing students to explore a variety of topics and skills and then giving them the time to pursue some in depth is a way of reversing underachievement. Creative students seek more challenge than average students. They prefer tasks they are intensely interested in, and would rather work independently than within a group. Creative students value freedom of choice: They become more motivated and engaged if given freedom to choose activities rather than receiving direction on specific pursuits. The freedom to pursue topics of strong interest often results in high levels of achievement.

### Creative Teachers

Teachers who foster creativity allow choice of topics, welcome unorthodox views, interact with their students outside of class, and conduct classes in a more informal manner. In addition, teachers who make a difference help students fall in love with a subject so intensely that it becomes the center of the student's future career image. This future-image and passion is the best predictor of future creative achievement (see the 1994 book by Torrance).

Adult mentorship and understanding can have a strong impact because creative students are natural outsiders who often flounder in attempts at meeting seemingly contradictory needs. Teachers and counselors must help creative students learn to tolerate and understand their separateness, and they must help them find someone with whom they can communicate. Creative students need to develop and maintain self-confidence in their abilities to go beyond the limits of the known and familiar, and to endure in the face of risking failure to truly excel. Adults play an essential role in supporting creative students in their pursuits.

Highly creative teachers tend to have overachieving creative students, whereas less creative teachers have more underachieving creative students. The goal of guidance is not to promote individuality and creativity, but to encourage a healthy balance of individuality, creativity, and conformity. If students achieve a balance between creativity and conformity, they can enhance one another.

### Teacher Training

Teacher training in creativity and nonconformity is one highly recommended change. Teacher training has an impact on teachers' conformist attitudes and interactions with students. Training in creativity influences teacher attitudes toward highly creative gifted students and training reduces sex role stereotyping. Teachers who have a gifted education background respond differently to gifted students when compared to preservice teachers or teachers without a gifted education background. Unfortunately, many elementary school teachers tend to be politically conservative and conforming. These teachers have a difficult time with students who are nonconforming and speak their mind. Rather, they prefer students who are submissive and conform to teacher's rules. Thus, it is important that teachers are trained on what types of behaviors are associated with creativity and giftedness, and do not ignore or punish such behaviors. If teachers are exposed to a sufficient range of information about individual gifted, talented, or creative students, they will be sensitive to the students' multiple intelligences and will also be less likely to respond to students' gender, social class, and racial information.

### Voice and Choice

All students, but creative students in particular, have a strong need for voice and choice. Creative students need the option of voice to express their creative ideas, and choice to pursue those ideas. Stifling creative students' voice may cause them to withdraw or to rebel. Conversely, they will explore their own possibilities and strengths, and develop their own learning style when voice is given to them. Classroom meetings empower students, giving them some control over their environment and a chance to voice and process diverging viewpoints. Teachers who provide some open-ended assignments or open-ended components find success in bringing out the creative

potential in their students. Finally, concentration on meaning rather than rote memorization will benefit a highly creative student.

**See also:** Climate for Creativity; Conformity; Crime and Creativity; Deviance; Eccentricity; Education and Creativity; Giftedness and Creativity.

### Further Reading

- Davis GA and Rimm SB (1994) *Education of the Gifted and Talented*, 3rd edn. Needham Heights, MA: Allyn and Bacon.
- Emerick LJ (1992) Academic underachievement among the gifted: Students' perceptions of factors that reverse the pattern. *Gifted Child Quarterly* 36: 140–146.
- Kim KH (2008) Underachievement and creativity: Are gifted underachievers highly creative? *Creativity Research Journal* 20: 234–242.
- Lajoie SP and Shore BM (1981) Three myths? The over-representation of the gifted among dropouts, delinquents, and suicides. *Gifted Child Quarterly* 25: 138–143.
- Preckel F, Holling H, and Vock M (2006) Academic underachievement: Relationship with cognitive motivation, achievement motivation, and conscientiousness. *Psychology in the Schools* 43: 401–411.
- Staudt B and Neubauer AC (2006) Achievement, underachievement and cortical activation: A comparative EEG study of adolescents of average and above-average intelligence. *High Ability Studies* 17: 3–16.
- Torrance EP (1994) *Creativity: Just Wanting to Know*. Republic of South Africa: Benedic Books.
- Torrance EP (2000) Reflections on a career in creative teaching. In: Torrance EP (ed.) *On the Edge and Keeping on the Edge*, pp. 2–11. Westport, CT: Greenwood.
- Torrance EP and Saifer HT (1999) *Making the Creative Leap Beyond*. Buffalo, NY: Creative Education Foundation Press.
- Whitmore JR (1980) *Giftedness, Conflict and Underachievement*. Boston, MA: Allyn & Bacon.

### Relevant Websites

- [http://www.dukegiftedletter.com/articles/vol6no4\\_ee.html](http://www.dukegiftedletter.com/articles/vol6no4_ee.html) – Duke University, Talent Identification Program, Parenting Strategies to Motivate Underachieving Gifted Students.
- <http://www.nagc.org> – National Association for Gifted Children, What is Gifted?