

Chapter 12

Intelligences Outside the Normal Curve: Co-Cognitive Factors that Contribute to the Creation of Social Capital and Leadership Skills in Young People

Joseph S. Renzulli & Stephanie D'Souza

1. Overview

The field of gifted education has had a longstanding interest in examining non-cognitive characteristics such as social and emotional development, self-concept, self-efficacy, and issues related to leadership, self-regulated learning, and character development. Research in these areas has taken many forms ranging from studies dealing with maladaptive behaviors faced by gifted children and adults to a more recent concentration on “positive psychology” approaches, which focus on providing young people with the opportunities, resources, and encouragement to support matters that touch their social consciousness and other non-cognitive skills. We believe that all people have a “social intelligence” (Goleman, 2006) and that leadership styles play an important part in the evolution of people who have made a difference in their chosen areas of societal contributions. We further believe that one of the challenges faced by our field is to devote resources to the development of non-cognitive behaviors just as we have for so long focused on cognitive development.

This chapter focuses on the latter two parts of a four-part theory summarized in Figure 1. The first two parts of this general theory, the Three-Ring Conception of Giftedness and the Enrichment Triad Model, address questions about conceptions of giftedness and how we develop creative productivity in young people. Concurrently, the latter two sub-theories, Operation Houndstooth Co-Cognitive Factors and Executive Functions Leadership Development, address questions about how we can promote an orientation toward using one’s gifts for the promotion of social capital, and how we can provide executive function experiences that create effective and compassionate leadership in the population of young people with exceptionally high potential. We refer to these two areas of focus as “co-cognitive” characteristics or “intelligences outside the normal curve” because they interact with and give rise to cognitive development, while also playing a role in the formation of beliefs, attitudes, values, and the development of an action orientation for following through on one’s beliefs and values.

This work is based on the assumption that people with the highest potential will assume positions of leadership and policy-making in all walks of life including religion, politics, business, government, science, the arts and humanities, and other domains that define a society and a culture. What kinds of leadership will these people display? Will they use their gifts and talents to make the world a better place? We need only contrast a Nelson Mandela with an Idi Amin or a Bill Gates with a Bernard Madoff to realize that life’s experiences can take people in directions that benefit or hinder the public good.

Relatively rare among programs that serve gifted and talented youth are concerted efforts to provide experiences that will develop the kinds of moral, ethical, and compassionate leadership characteristic that encourage using one’s gifts and talents in positive ways. While the development of academic talent is

and will continue to be the centerpiece of gifted education programs, this chapter presents an intervention theory for co-cognitive development that is designed to promote a much-needed *supplement* to the traditional focus only on academic development in special programs that serve gifted youth. The intervention theory discussed later in this chapter was developed to guide activities that promote the social capital and leadership objectives implicit in the two sub-theories at the bottom of Figure 1.

2. Summary of Underlying Sub-Theories

The first two sub-theories in Figure 1, the Three-Ring Conception of Giftedness and the Enrichment Triad Model, have been dealt with extensively in the literature and information about them can be found in referenced material. As discussed in previous publications, it is our belief that gifted behavior occurs when three dimensions of human potential (above average academic ability, creativity, and task commitment) interact and are brought to bear on a domain of interest (Renzulli, 1977, 1978, 1986, 2005). The three rings of potential are embedded on a Houndstooth background to represent the interaction between personality and environment with giftedness. Recent research has given rise to the addition of another aspect to the original Three-Ring theory: the components of Operation Houndstooth and intelligences outside the normal curve which we will address in detail in sections that follow (Renzulli, 2002; Renzulli, Koehler, & Fogarty, 2006). It is our belief that gifted education need not be limited to academic components, but can also include preparation for a life-long pursuit of the common good and ethical and responsible leadership (Renzulli, 2002; Renzulli, 2005).

As referenced in previous works (Renzulli, 1977, 1978, 1986, 2005) it is our belief that there are two types of giftedness: high achieving giftedness - the more traditional presentation of gifted behaviors in school-related learning activities; and creative/productive giftedness where gifted behaviors are applied to product creation in non-formulaic original experiences. In an attempt to maximize creative/productive giftedness, we created the enrichment triad model (Renzulli & Reis, 1997). The enrichment triad model depicts three different types of activities that, when combined, we believe inspire students to think in creative ways and search out inspiration. The first type of activity is Type I Enrichment: General Exploratory Activities. These activities are designed to expose students to a wide variety of topics, disciplines, people, places, events, and cultures that they would not generally have the opportunity to explore. Type II Enrichment: Group Training Activities are meant to promote the development of thinking and feeling processes and a concern for making contributions to the creation of social capital. Finally, Type III Enrichment: Individual and Small Group Investigations of Real Problems hinge on student passion and romance with a topic.

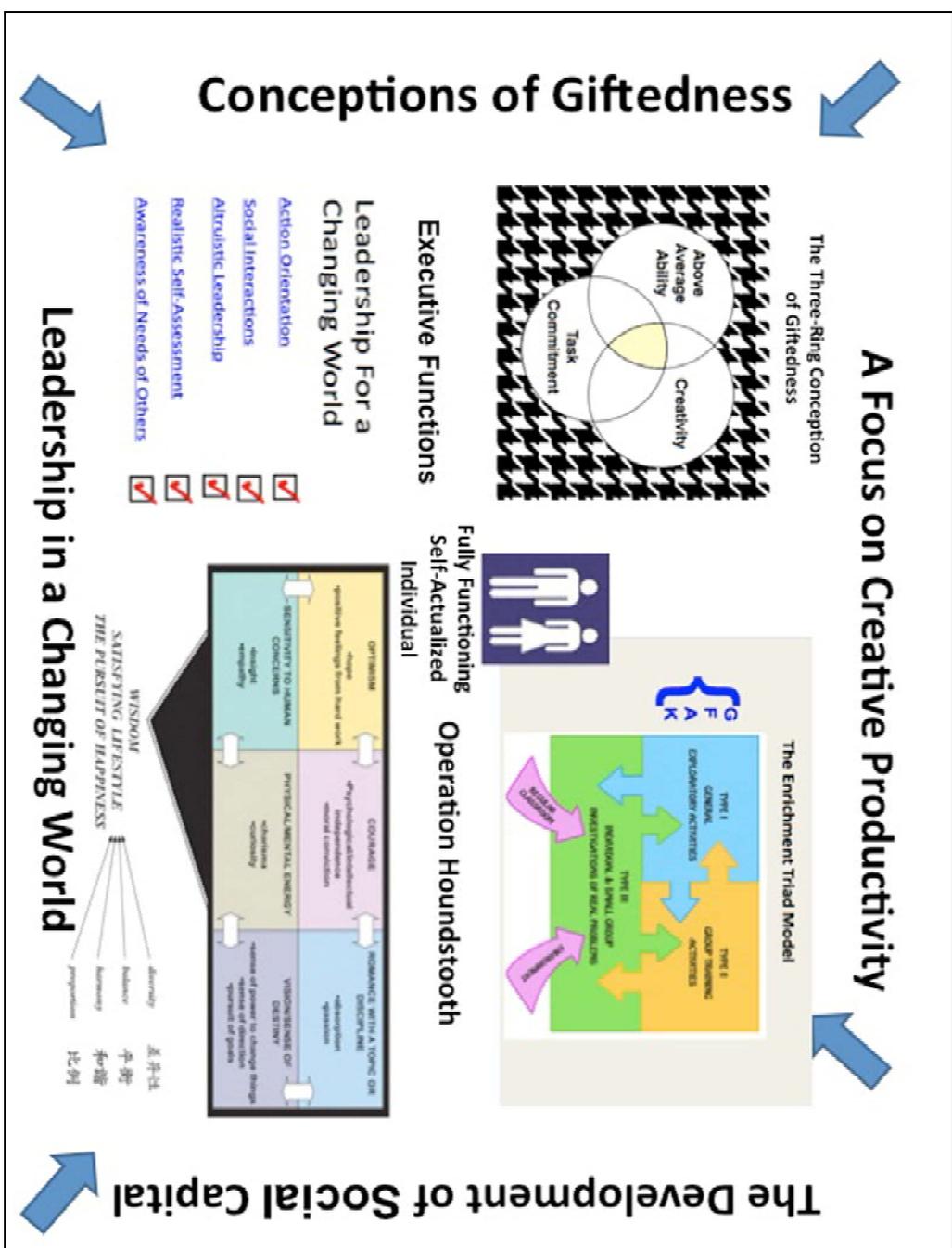


Figure 1: A Focus on creative productivity.

The enrichment activities are based on the student's advanced interest and place the student in the role of a first-hand inquirer. The activities used in teaching students about Type III Enrichment encourage them to practice problem solving, complex thinking and higher-order executive functioning tasks, while simultaneously exposing the students to a complex, changing and challenging world that gives rise to self-reflection on diversity, human concerns, altruism, and ethics.

Developments in more recent research have led to an expansion in this thinking, resulting in the conceptualization of the latter two sub-theories, Operation Houndstooth and Executive Functions Leadership Development. Sternberg (1998, 2005) greatly contributed to the existing body of theory and research with his argument that wisdom in combination with intelligence and creativity promotes gifted behavior. Sternberg asserts that wisdom is present when individuals pursue the common good and that without wisdom, an individual may be a good contributor to society, but will never be a great contributor. He further states that intelligent individuals who use their unique gifts for evil or selfish ends or those who ignore the well-being of others may be smart but they are also foolish. Sternberg's statements echo our beliefs that there are intelligences beyond what standardized tests can measure and that those with high ability may become a Bill Gates, but they may also become a Bernard Madoff if social capital and social responsibility are not pursued. In a similar fashion, Gardner (Fischman & Gardner, 2009; Gardner, 1993; Gardner, Csikszentmihalyi, & Damon, 2001) has developed a sub-theory that relates to Sternberg's and our ideas with his idea of good work, which combines the factors of excellence, ethics and engagement.

Recently, Operation Houndstooth research has focused on examining co-cognitive factors (Sytsma, 2003) and the effects of various types of activities for promoting social capital and leadership skills (Sands, 2012). Additionally, Reilly (2009) recently examined the connection between goal orientations (specifically, a contribution orientation and a challenge orientation) and the components of Operation Houndstooth. These studies will be discussed in greater detail in the sections that follow. Currently, our research focus is creating an implementation plan for Direct Involvement I and II activities as well as assessing the effect of these activities on leadership potential and the development of a social capital orientation on the parts of young people. The following sections will provide a brief overview of the theories that guide the development of social capital and executive function experiences and that form the rationale for the Co-Cognitive Factors Intervention Theory discussed below.

3. Overview of Sub-theory on Gifted Education and Social Capital (Operation Houndstooth)

The rationale for this sub-theory and the one that follows is based on the anticipated roles that high potential young people will play in society. This

subpart of the overall theory addresses the question: “Why do some people mobilize their interpersonal, political, ethical, and moral realms of being in such ways that they place human concerns and the common good above materialism, ego enhancement, and self-indulgence?” The abundance of folk wisdom, research literature, and biographical and anecdotal accounts about creativity and giftedness are nothing short of mind boggling; and yet, we are still unable to answer this fundamental question about persons who have devoted their lives to improving the human condition. Several theorists have speculated about the necessary ingredients for giftedness and creative productivity, and their related theories have called attention to important components and conditions for high-level accomplishment. However, most of these theories have dwelt only on cognitive characteristics, and by so doing, they have failed to explain how the confluence of desirable traits result in commitments for making the lives of all people more rewarding, environmentally safe, economically viable, peaceful, and politically free.

Work related to this topic examines the scientific research that defines several categories of personal characteristics associated with an individual’s commitment to the production of social capital, briefly defined here as using one’s talents to improve human conditions, whether that improvement is directed toward one person or larger audiences or conditions. These characteristics include: Optimism, Courage, Romance with a Topic or Discipline, Physical and Mental Energy, Vision and a Sense of Destiny, and Sense of Power to Change Things (Renzulli, 2002). These factors and their subcomponents are portrayed in the lower right quadrant of Figure 1 and comprise the mosaic of Operation Houndstooth. They are represented in the Three-Ring Conception of Giftedness in Figure 1 by the houndstooth background in which the three clusters of traits are embedded. We call these constructs co-cognitive factors because they interact with and enhance the cognitive traits that are ordinarily associated with the development of human abilities. A number of researchers have suggested that constructs of this type, including social, emotional, and inter- or intra-personal intelligence (Gardner, 1993; Gardner, Csikszentmihalyi, & Damon, 2001; Goleman, 2006) are related to each other and are relatively independent from traditional measures of cognitive ability. The two-directional arrows seen in the Operation Houndstooth sub-theory diagram in Figure 1 point out the many interactions that take place between and among the factors.

The general goal of this work and the Co-Cognitive Factors Intervention Theory discussed below is to infuse activities that promote the Houndstooth components and Executive Functions Leadership attributes into students’ overall daily school experience in order to ultimately assist high ability young people in developing a sense of their responsibility to society at large. It would be naïve to think that a redirection of educational goals can take place without a commitment at all levels to examine the purposes of education in a democracy. It is also naïve to think that experiences directed toward the production of social

capital can, or are even intended to, replace our present day focus on material productivity and intellectual capital. Rather, this work seeks to enhance the development of wisdom and a satisfying lifestyle that are paralleled by concerns for diversity, balance, harmony, and proportion in all of the choices and decisions that young people make in the process of maturing. What people think and decide to do drives some of society's best ideas and achievements. If we want leaders who will promote ideas and achievements that take into consideration the components we have identified in Operation Houndstooth, then the development of giftedness in the new century will have to be redefined in ways that take these co-cognitive components into account. Thus, the strategies that are used to develop giftedness in young people will need to give as much attention to the co-cognitive conditions of development as we presently give to cognitive development.

4. Overview of Sub-theory on Gifted Education and Executive Functions - Leadership for a Changing World

This sub-theory may very well be the “yeast” that enables all constructs described above to actually be used to pursue a desired goal in an efficient and effective way. We sometimes describe this final sub-theory as simply “getting your act together.” The most creative ideas, advanced analytic skills, and the noblest of motives may not result in positive action unless leadership skills such as organization, sequencing, and sound judgment are brought to bear on problem situations. Landmark research by Duckworth, Seligman and others (Borghans, Duckworth, Heckman, & Weel, 2008; Duckworth, 2009; Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009a; Duckworth & Seligman, 2005) has shown that students who persist in college were not necessarily the ones who excelled on measures of aptitude, but the ones with exceptional character strengths such as optimism, persistence, and social intelligence. This research showed that measures of self-control can be more reliable predictors of students’ grade-point averages than their IQ scores. Including this focus in the overall theory represents a distinctly different approach to talent development than most of the models focusing primarily on cognitive development. The research noted above documents that both IQ and self-discipline are correlated with GPA, but self-discipline is a much more important contributor. Those with low self-discipline have substantially lower college grades than those with low IQs, while high-discipline students received much better grades than high-IQ students. Even after adjusting for the student's grades during the first marking period of the year, students with higher self-discipline still had higher grades at the end of the year. The same could not be said for IQ. Further, these studies found no correlation between IQ and self-discipline -these two traits varied independently.

This sub-theory dealing with leadership development focuses on what are commonly referred to in the business and human resource literature as executive

functions. These functions are broadly defined as the ability to engage in *novel* situations that require planning, decision-making, troubleshooting, and compassionate and ethical leadership that is not dependent on routine or well-rehearsed responses to challenging combinations of conditions. These traits also involve organizing, integrating, and managing information, emotions, and other cognitive and affective functions that lead to “doing the right thing” in situations that do not have a predetermined or formulaic response. These functions are especially important to highly capable people because of the positions of power to which they typically ascend.

A number of researchers have pointed out the importance of incorporating these non-cognitive skills, such as those described in the latter two sub-theories, into everything from curricular experiences (Diamond, 2010) to educational assessments (Levin, 2011; Sedlack, 2005) and college admission considerations (Sternberg, 2005). These skills have important implications for the academic success of students, career decisions, and even the economic productivity of nations. While not minimizing the importance of traditional cognitive ability, these authors point out that conventional assessments account for a small portion of the variance when examining long term academic and career accomplishment, especially as it relates to the advancement of adult competencies in highly demanding professions where leadership skills and creative productivity are the criteria for success.

A good deal of the background material that led to the inclusion of executive functions in this overall talent development model comes from the field of human resources (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Heckman & Rubenstein, 2001). These authors point out the importance of non-cognitive skills in personal and social, as well as academic development and - more importantly for this overall theory - a meta-analysis showed that these skills can be taught. Initial input was also derived from the literature on social, behavioral, and “emotional intelligence” (Goleman, 2006). Goleman argued that great leadership works through non-cognitive traits such as Self-Awareness, Self-Management, Motivation, Empathy, and Social Skills. Although the research literature on these types of non-cognitive traits is massive, there is general agreement that the following so-called “Big Five” personality traits (Almlund, Duckworth, Heckman, & Kautz, 2011) are the basis on which education intervention programs should focus:

1. *Openness* - inventive and curious as opposed to consistent and cautious.
2. *Conscientiousness* - efficient and organized as opposed to easy-going and careless.
3. *Extraversion* - outgoing and energetic as opposed to solitary and reserved.

4. *Agreeableness* - friendly and compassionate as opposed to cold and unkind.
5. *Self-Assured* - secure and confident as opposed to neurotic and nervous.

Our research to date on this sub-theory has included the development of an instrument called *Rating the Executive Functions of Young People* (Renzulli & Mitchell, 2011). This diagnostic instrument is designed to assist in research dealing with the types and degrees of executive function traits in young people and can be used both to identify potential leadership traits in young people and help teachers determine which curricular experiences can develop desirable leadership traits in individuals or groups. Subsequent diagnostic techniques may include simulations to determine successful performance in demanding problem-solving situations.

A review of research conducted in the process of instrument development revealed several constructs including mindfulness, ethical/moral, social, motivational, and leadership traits as well as the so-called Big Five personality traits or factors mentioned above as contributors to success (Renzulli & Mitchell, 2011). Also identified were specific traits such as being eager to learn, studious, intelligent, interested, and industrious and other variables such as positive and realistic self-appraisal, preference for long-range goals, successful leadership experience, and community service. Researchers in other domains have also identified non-cognitive variables of persons who lead and make a difference (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Goleman, 2006; Heckman & Rubenstein, 2001). For example, in reports on the characteristics possessed by some of the most altruistic persons in American society, common traits that were demonstrated by most of these individuals included passion, determination, talent, self-discipline, and faith (Goleman, 2006). Leadership, ethics, accountability, adaptability, personal productivity, personal responsibility, people skills, self-direction, and social responsibility have also been identified as critical skills in the literature dealing with 21st Century skills, as were professionalism, enthusiasm, leadership, positive work ethic, values, decisiveness, teamwork, character, support, conformity, openness, self-concept, anxiety, and life-long learning (Goleman, 2006).

This overwhelming list of traits that emerged from the literature review has been grouped into five general categories as a result of a factor analysis of data collected from several hundred respondents using the instrument mentioned above. The first factor is Action Orientation, which includes specific characteristics that motivate an individual to succeed. The second factor is Social Interactions and it includes traits that enable someone to successfully interact with others. The third factor is Altruistic Leadership, and it includes characteristics relating to both empathy and dependability. The fourth factor is

called Realistic Self-Assessment and it includes characteristics that demonstrate awareness of one's own abilities, realistic self-appraisal, and self-efficacy. The fifth factor, Awareness of the Needs of Others, subsumes sensitivity, approachableness, and strong communication skills. Taken collectively, all of these behaviors reflect not only the characteristics of highly effective persons, but also include traits that cause people who have emerged as leaders in their respective fields to "do the right thing" in the arenas and domains over which they have had an influence.

The implications for including executive functions in a theory about the study of giftedness relates to the anticipated social and leadership roles that high potential young people will play in their future endeavors. Embracing executive functions also has significance for the types of programs and experiences that should be provided to develop these skills and the roles and responsibilities of curriculum developers and service providers. The relative newness of this dimension on the parts of scholars in the field is obviously in need of more research and there are many opportunities for creative implementation practices and original research related thereto.

5. Co-Cognitive Factors Intervention Theory

If we agree with the arguments put forth above about the need to include concerns that deal with enhancing the development of social capital and executive functions leadership skills within the services provided to high potential students, then the next challenge is to devise a theory or paradigm about how to organize, select, and deliver such services. The Co-Cognitive Factors Intervention Theory (see Figure 2) evolved from research studies summarized below and is based on procedures that have been used to create learning experiences directed toward various aspects of co-cognitive development. Our research has shown that as experiences proceed from the bottom to the top of the six listed interventions, we observe a higher degree of internalization of the attitudes, beliefs, and values that have been identified in the two sub-theories of Operation Houndstooth and Executive Functions Leadership Development discussed above. While all of the activities offer valuable information for a chain of events leading from lower to higher levels displayed on the chart, the Vicarious Experience and Direct Involvement I and II show that these higher levels are the most productive in the pursuit of goals related to the two sub-theories. Following is a brief description of each of the six components of the intervention theory:

1. Rally-Round-the-Flag.

This approach is sometimes referred to as the cheerleading method. It involves visual displays promoting certain values, slogans, or examples of desired virtuous behavior (Renzulli, Koehler, & Fogarty, 2006).

2. The Gold Star Approach.

This approach is very similar to the traditional ways we have rewarded students for good behavior in the past. This level of intervention provides positive reinforcement through the form of prizes, tokens, and gold stars (Renzulli et al., 2006).

3. The Teaching-and-Preaching Approach.

This is one of the most frequently utilized methods to convey attitudes and behaviors related to character development and social capital. This approach involves the teaching of character development and leadership skills through dialogue, discussion, films or books (Renzulli et al., 2006).

4. The Vicarious Experience Approach.

This level of intervention involves placing the student in situations where he/she is expected to learn the value of a certain character trait, practice a leadership skill, or reach a non-cognitive learning objective. This intervention is frequently done through role-playing, dramatization, and simulations that force the student to think critically and use executive functioning (Renzulli et al., 2006).

5. Direct Involvement I: Participatory Activities.

Activities in this category are what we believe to be one of the most persuasive and valuable levels of intervention for character development. In these activities, students internalize non-cognitive skills through direct contact with situations and events that result in affective behaviors and the use of executive functioning. Volunteering and service learning action projects are frequently used examples of activities that expose the student to new situations, raise new questions, and ignite new curiosities (Renzulli et al., 2006).

6. Direct Involvement II: Creative/Productive Activities.

Activities in this category have a large impact on the development of social capital. These activities consist of situations where students actively utilize executive functions through true leadership roles with the goal of bringing about positive social, educational, environmental, or political change. (Renzulli et al., 2006)

Several aspects of the Intervention Theory are supported by empirical studies conducted by other researchers. Research done by McNally, Brown and Jackson (2012) studied the veracity of the social intelligence hypothesis, a theory that states social interactions provide the pressures necessary for the evolution of advanced cognitive abilities. McNally, Brown and Jackson constructed computer models of artificial organisms with artificial brains and had the brains interact in a social manner and use decision making skills. It was found that brains evolved and became more complex as they encountered more social interactions and led to the utilization of cooperation, and decision-making skills.

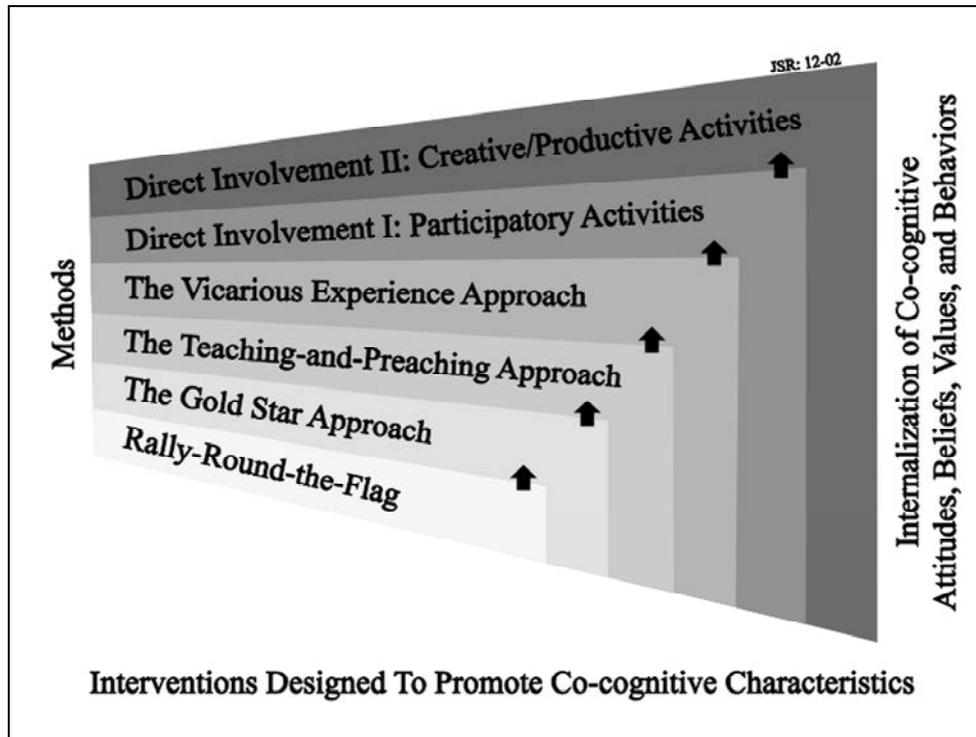


Figure 2: Interventions designed to promote co-cognitive characteristics.

The findings of McNally, Brown and Jackson lend support to the idea that social interactions are key to the evolution of intelligence. These findings support our argument that character development and leadership development activities that require the active use of executive functioning skills, including decision making and social interaction, can yield benefits for students with high leadership potential.

Research on moral development and leadership potential in talented students further supports our assertion that these students are equipped for executive functioning challenges and complex thinking. Lee & Olszewski-Kubilius (2006) used three psychometric scales, the BarOn Emotional Quotient Inventory: Youth Version, Short Form (Bar-On & Parker, 2000), the Defining Issues Test-2 (Rest, Narvaez, Thoma, & Bebeau, 1999), and the Roets Rating Scale for Leadership (Roets, 1997), to examine gifted students' levels of emotional intelligence, moral judgment, and leadership. It was found that academically gifted students possessed higher degrees of moral reasoning, and greater leadership potential than the comparison group. Both male and female academically gifted students scored higher on adaptability. These findings support our assertion that talented and precocious children have extraordinary leadership potential and a keen ability to use higher level moral reasoning when presented with real-life situations requiring executive functioning and decision

making. Lee & Olszewski-Kubilius state, “while academically gifted students appear to have some propensity for reaching higher levels of moral development and demonstrating leadership, specific programs and interventions are also needed to optimize the development of these attributes”. Our research has shown that the interventions specified in Operation Houndstooth Intervention Theory are effective methods to maximize leadership potential and utilize elevated levels of moral reasoning skills.

A study done by Manning (2005) found that valuable benefits can be derived when social interaction experiences are made available to young people. Manning looked at a model that brought together disadvantaged kindergarten students and gifted second grade students from disadvantaged backgrounds. The gifted second grade children acted as mentors and models of social behaviors for the kindergartners and Manning observed that not only did the kindergartners improve their leadership skills but the leadership skills of the second graders were improved as well. Manning’s findings support the assertion by Berkowitz and Hoppe (2009) that “allowing gifted children to teach, care for, and even design and run a character education curriculum for younger children can be both effective character education for both age groups but also an outlet for the desire to lead and assert manifested by gifted children”. Another benefit of Manning’s mentoring intervention is that it allows students to utilize their decision making skills, social interaction skills, and other executive functioning processes.

A study done by Chan (2000) looked at the benefits of the Saturday Creative Leadership Training Program for School Prefects, a leadership training program in Hong Kong that focuses on three aspects of leadership skills: characteristics of leadership, teaching of leadership skills, and activities that encourage the student to actively utilize leadership skills. Students self-assessed their leadership skills before and after the program. Chan found that the students reported higher ratings of leadership skills after the program, as well as significant increases in the students’ reported levels of self-confidence, self-assertiveness, accepting challenges, persistence, creativeness, courage, directing ability, and expressiveness. Chan’s findings that show a relationship between certain personal characteristics and leadership skills support the research done by Scarf and Mayseless (2009). Scarf and Mayseless examined what characteristics were most represented in students with high levels of social leadership. Social leadership skills were most exhibited by students who displayed positive perceptions in various domains, low social anxiety, and secure orientation to peers.

Depending on the circumstances, service learning under Operation Houndstooth Interventions can be either a Direct Involvement I or a Direct Involvement II activity. The distinction hinges on whether or not students have an opportunity to be creative in their positions while volunteering. For example, a student can volunteer at a homeless shelter and reap skills that contribute to both skills

identified in Operational Houndstooth and executive functioning goals. Students may, for example, have a different and possibly more enriching experience if they perceive a problem and then find and implement a creative solution for the problem. Koliba, Campbell and Shapiro (2006) investigated the distinction between service learning and more traditional forms of community service. It was found that typically service learning has six key features:

1. A clearly articulated community partner.
2. The existence of a service to be rendered.
3. The existence of learning objectives that accompany the service-learning experience.
4. The existence of a reflective component used to facilitate the learning objectives.
5. An appropriate duration dependent on the type of project.
6. The grade level of participating students (Koliba, Campbell, & Shapiro, 2006).

As previously discussed, there is value in traditional forms of volunteer service (Koliba, Campbell, & Shapiro, 2006); however, the emphasis on reflection with service learning activities yields a greater utilization of Co-Cognitive Factors and executive functioning processes.

Terry (2000) studied three high-level service learning programs, which she termed Community Action Programs, with gifted adolescents and found that students who participated in service learning programs were empowered and engaged in social issues. These students also gained benefits with regard to their academic skills, problem solving skills, self-confidence levels, teamwork, cooperation, and ability to recognize real-life problems in their community. The students involved in the study found that “working cooperatively and using creative problem-solving methods and reflective activities, as well as the cognitive apprenticeship framework supported the development of the other four areas [attitudes, personal and social development, commitment, and empowerment]” (Terry, 2000). This finding supports Berkowitz, Battistich and Bier’s (2008) assertion that the most effective programs for promoting student character development utilize multiple strategies rather than a single approach, including: “adult modeling, promotion of character, opportunities for student service, the promotion of a caring community and positive relationships, and a safe and clean environment”. A key for successful implementation of our proposed interventions is flexibility and allowing the needs of the students to shape the interventions with a multifaceted approach.

The Civic Leadership Institute (CLI) is a service-learning program for gifted adolescents that helps students explore complex social issues that are faced by today’s society (Lee, Olszewski-Kubilius, Donahue, & Weimholt, 2007). The students in the CLI program participate in a combination of rigorous academic

coursework, community service, meetings with top community leaders, seminars on specific topics of interest, and rich residential and recreational experiences. Many of these activities, particularly the community service and meetings with community leaders, exemplify leadership behavior and thus help develop executive functioning processes and the important goals of the Operation Houndstooth Intervention Theory. The CLI conducted a study to assess civic attitudes, civic behaviors, and leadership over time in two groups: one group that received a service learning program, and one group that received an accelerated academic program. It was found that the level of civic responsibility of the service learning students both going into and following the program was significantly greater than the level of civic responsibility of the accelerated academic students, reinforcing our argument about the greater impact of Direct Involvement I and Direct Involvement II interventions on social capital development. It was also found that the service learning students indicated a “stronger personal attachment to the community...and a greater belief in making a difference in the community” (Lee et al., 2007). Additionally, the researchers examined within-group differences and found positive changes within the service learning group with regard to the “students’ attachment to their communities; awareness of political, social, and civic issues; and responsibility to help improve the community”.

The CLI conducted an additional study to examine the benefits of the program and found that the students reported that they benefited from the field activities and meetings with community leaders (Lee, Olszewski-Kubilius, Donahue, & Weimholt, 2008). Both of these activities are prime examples of students developing and utilizing skills such as intellectual curiosity, self-directed learning, and investigations of real world problems. The researchers also found that the combination of hands-on experiences and academic coursework impacted the students’ level of awareness of civic issues and the level of motivation to engage in social issues. It was also found that many students reported that their leadership skills were enhanced and many reported that they gained a “new respect and understanding for difference and diversity”.

Although Operation Houndstooth is a relatively new addition to the body of research, there have been several studies that have examined components of Operation Houndstooth (Reilly, 2009; Sytsma, 2003) and explored the effectiveness of its interventions (Sands, 2012). Reilly (2009) studied the connections between the two goal orientations - contribution orientation and challenge orientation¹⁶, and the components of Operation Houndstooth. Reilly conducted in-depth interviews with two gifted adolescents who were strong examples of the two goal orientations. Reilly found that the contribution

¹⁶ *Contribution orientation* is defined here as an orientation where goals span beyond self-based outcomes. *Challenge orientation* is defined here as an orientation where difficult goals are set that benefit the individual but have little or no concern about larger impacts.

orientation integrates well with the components of Operation Houndstooth. Specifically, the Houndstooth components of courage, optimism, sensitivity to human concerns, physical and mental energy, and romance with a topic integrate well with the contribution orientation. Whereas challenge orientation exhibits the physical and mental energy component of Operation Houndstooth, it is largely lacking in the moral and ethical characteristics upon which the theory focuses. Reilly's work helps demonstrate that the co-cognitive factors of Operation Houndstooth are interrelated with goal orientation. Young gifted learners have the potential to change the world for the better and thus it would be beneficial for all of these individuals to exhibit not only academic excellence but also altruism and ethical conduct.

Sands (2012) examined the effects of different Operation Houndstooth Inventions by examining three different groups: a peer leadership program that met the description of a Direct Involvement II activity, a volunteer organization where students had the opportunity to participate in Direct Involvement I activities, and a comparison group that did not receive any Direct Involvement activities. Sands found that students who participated in the peer leadership program and received Direct Involvement II activities had higher levels of mental/physical energy after the intervention than the comparison groups. Previous research done by Sytsma (2003) theorized that increased levels of mental/physical energy are most likely the result of students' perceptions of their effort's efficacy in achieving their goals. Sands also found that students who participated at a volunteer organization and received Direct Involvement I experiences scored higher on *sensitivity to human concerns* than the comparison group and the peer leadership program group. We contend that Direct Involvement I experiences, such as service learning programs, allow students to develop valuable skills such as empathy and sensitivity through their close associations with various populations in society (Renzulli et al., 2006). We also believe that a combination of Direct Involvement I and Direct Involvement II activities greatly benefits students and results in the achievement of the co-cognitive factor goals of the Operation Houndstooth Invention Theory.

6. Summary

In the preceding section we gave a brief overview of the current research on development of leadership skills, leadership potential, and social capital factors, as well as our rationale for the importance of implementing the interventions described in Operation Houndstooth. It is our belief that classrooms contain great potential in the form of the next Marie Curie, Carl Sagan or Leonardo Da Vinci. We acknowledge that we are hardly the first to attempt to answer the question of how to produce young thinkers who care about care improving the world, but we believe we are offering an effective and feasible model to promote such development through the interventions based on Operation Houndstooth and the Executive Functions Leadership Development sub-theories. Gifted education, like all other specialized areas in the arts and

sciences, is constantly in search of its identity. What defines a field beyond random and trendy practices are the theories and related research that delineates its parameters, promotes future research, and has an impact on *defensible* practice. Our field has been notably “thin” on theory development, and the work offered here is just one approach that we hope will promote discussion among scholars and practitioners, generate research on the validity of the ideas and concepts discussed here, and inspire more theoretical development on the parts of other scholars.

The most salient point to make when discussing and generalizing about theories for the study of giftedness in the 21st Century is that there is an overlap and an interaction among cognitive, affective, and motivational characteristics. We cannot divorce these numerous and interactive characteristics from the ways we should go about developing gifted behaviors in young people.

A second and final consideration deals with how we should go about producing leaders for the 21st Century. This consideration deals directly with how gifted education should differ *qualitatively* from general education. People who have gained recognition as gifted contributors in the beyond-the-school world have always done so because of something they did - an invention, a sonata, a design, a solution to a political or economic problem. They brought a myriad of traits, including their own co-cognitive constructs, to bear on their respective challenges, and it is these types of experiences that provided such opportunities that should be the core of our efforts to educate tomorrow’s people of great promise. We propose that the creation of an extraordinary/revolutionary solution or product is enhanced by the integration of healthy and robust co-cognitive factors that propel the individual towards social capital that is both compassionate and globally focused. The anticipated social roles that people of high potential will play should be the main rationale for both supporting special programs and designing learning experiences that will prepare today’s students for responsible leadership roles in the future.

In our opinion, the biggest challenge in gifted education is to extend our traditional investment in the production of intellectual and creative capital to include an equal investment in social capital and the development of executive function skills (Renzulli, 2012). We believe that experiences designed to develop these skills should begin at early ages and focus mainly on direct involvement rather than “teaching-and-preaching” experiences. If we can have an impact on social capital and effective and empathetic leadership, then we will be preparing the kinds of leaders who are as sensitive to human, environmental and democratic concerns as they are to the traditional materialistic markers of success in today’s world. And the greatest payoff from focusing gifted education on investigative learning and using knowledge wisely will be a dramatic increase in the reservoir of people who will use their talents to create a better world.

7. References

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