Pre-K Gifted Research Model

A Classroom Research Model Based on Best Practices
Developed for Experienced Preschool Teachers

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http://www.ctgiftedprek.org

Foreword:

In 2010 we were approached by a colleague who asked, "What do you do for a two year old who can identify all the letters of the alphabet placed on the refrigerator in random order?" With input from experts in the field of giftedness, we developed the Pre-K Gifted Program Standards which were published by ERIC.

Since then, we have received web inquiries from as far from our home in Connecticut as Australia, Argentina, and Venezuela.

In 2012 we could see the need to expand the "Social and Emotional Considerations" section of the Pre-K Gifted Program Standards. To accomplish this we are asking for the help of all experienced preschool teachers, anywhere in the world. We have created a Single Case Design research model that can be individually implemented by an experienced preschool teacher with or without the supervision of a University research PI (Principle Investigator). The model has been vetted by experts in the field of gifted research and follows "best practices" which means that the intervention is not given and then withheld to meet statistical cause and effect (causal) standards.

Q: Can preschool teachers study and collect research data on the gifted children in their classrooms?

A: We hope so as Government funding for gifted children ages three to five is scarce.

The following is a classroom research model that can be implemented by an experienced preschool teacher.

[Disclaimer: make sure you have your school administrator's approval, and the child's parents' consent, before utilizing this research model.]

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PROJECT TITLE: THE EFFECT OF CURRICULUM ON THE SOCIAL AND BEHAVIORAL SKILLS OF GIFTED PRESCHOOL CHILDREN

a. Significance of the project

The purpose of this study is to determine if a gifted preschool child will be less likely to experience severe emotional disturbance if he, or she, has been exposed to a curriculum that is appropriate for his, or her, mental age and an environment with true peers that is appropriate for his, or her, chronological age.

Gifted students are inherently at risk and more likely than average to suffer emotional disturbance than normal children. According to *The Social and Emotional Development of Gifted Children*, (2002) characteristics associated with giftedness are:

- frustration, irritability, anxiety, tedium, and social isolation
- intense social isolation and stress among those with IQ greater than 160
- difficulty making friends due to advanced concept of friendship, mostly among those less than age 10
- de-motivation, low self-esteem, and social rejection among the exceptionally gifted.
- emotional awareness beyond their ability to control
- difficulty with peer relations proportional to their IQ
- loneliness, anxieties, phobias, interpersonal problems, fear of failure, and perfectionism
- underachievement for social acceptance
- lack of resilience reinforced by easy work and well-intentioned but misguided praise
- increasing perfectionism throughout school years among girls
- fear of failure and risk avoidance due to perfectionism
- depression among creatively gifted

Silverman, in her 1987 text on gifted children, stated "The specific problems that may result from giftedness can be external or internal: difficulty with social relationships, refusal to do routine, repetitive assignments, inappropriate criticism of others, lack of awareness of impact on others, lack of sufficient challenge in schoolwork, depression (often manifested as boredom), high levels of anxiety, difficulty accepting criticism, hiding talents to fit in with peers, nonconformity and resistance to authority, excessive competitiveness, isolation from peers, low frustration tolerance, poor study habits, and difficulty in selecting among a diversity of interests." (Silverman, 1987)

Since most disabilities do not prevent giftedness, it is logical to expect that there would be the same percentage of gifted and talented children with disabilities as exist in the general population (Silverman, 1989). The Massachusetts Medicaid, MassHealth, estimates that within their program, 5 to 8 percent of all children are diagnosed with serious emotional disturbanceSED) annually. The U.S. Census (2009) estimates there are 21,299,656 children in the United States under age five. Of this, approximately 8,519,862 are preschool age. If the Massachusetts figures can be applied nationally with some degree of accuracy then between 425,993 and 681,589 preschool children will be diagnosed with SED, and of this number, 21,300 to 34,079 will be gifted. Unfortunately, the population of gifted children with SED increases dramatically during the school years. By the time these gifted preschool children reach age eighteen, between 18% and 25% of them will have dropped out of high school because they are depressed and/or withdrawn as a result of their needs and feelings not being addressed (Betts and Neihart, 1988; Solorzano, 1983; Robertson, 1991).

If a reduction in the at risk diagnosis for SED can be causally linked to curriculum, then an appropriate early preschool intervention could be developed for these children, which could be carried forward and linked to compacting and acceleration through kindergarten and elementary school until the gifted children can connect with enrichment programs in middle school and high school. Currently, there exist no curricular standards for meeting the needs of gifted preschoolers. In fact, there are few, if any, gifted programs for preschool aged children. The unfortunate result is that gifted preschool children are not being identified and in educational

settings, they learn to hide their advanced general or specific skills to fit in with their peers. The current public education system does not give gifted and talented children, who may be at risk for Severe Emotional Disturbance (SED), an appropriate education.

Theoretical and Empirical Rationale for the Study

Asynchronous Development:

Asynchronous development is a hallmark characteristic of gifted students, leaving many feeling socially vulnerable and at risk of social alienation (Columbus Group, 1991; Silverman, 1987). An asynchrony between mental and physical development has been researched and incorporated as part of the theoretical learning frameworks established by Hollingworth, Dabrowski, and Vygotsky, among others (Neihart, Reis, Robinson, & Moon, 2001; Silverman, 1987). Having "the mental maturity of a 14 year-old and the physical maturity of an 8-year-old poses a unique set of challenges analogous to those that face the child with a 14-year-old body and an 8-year-old mind" (Silverman, 1987).

Mental development can be measured by a construct called mental age, developed by Alfred Binet (Binet & Simon, 1908). Mental age examines the degree to which children's mental age differs from that which is the norm of students at the child's same chronological age. Mental age predicts "the amount of knowledge he or she has mastered, the rate at which the child learns, sophistication of play, age of true peers, maturity of the child's sense of humor, ethical judgment, and awareness of the world" (Silverman, 1995, 1997). When discussing asynchronous development in children, we must contrast the child's mental age with his or her chronological age, which predicts such characteristics as height, coordination, and social skills (Silverman, 1995, 1997).

Asynchrony is not static; in gifted students it is dynamic and constantly changing. The ratio between mental age and chronological age indicates varying degrees of asynchronous development that increase with age (Gross, 1993). Silverman (1997) provides us with the following example: "At the age of 6, a moderately gifted child with an IQ of 135 has a 6-year-old body and an 8-year old mind; at 9, the same child has a 9-year-old body and a 12 year-old mind, and at age 12, the child will be mentally 16. By comparison, an extraordinarily gifted 6-year- old, with an IQ of 170, has a 10-year-old mind, at 9 the child has a 15-year-old mind, and at 12 the child will have a 20-year-old mind. So, asynchrony cannot be thought of as static; it is dynamic, constantly changing."

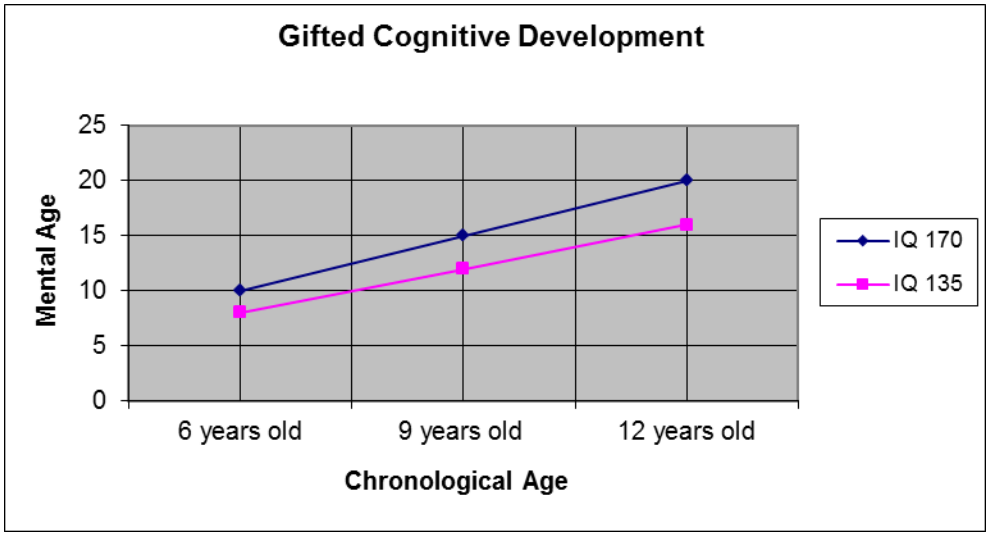


Figure 1. Students who are exceptionally gifted demonstrate greater exponential growth in mental age as they progress chronologically than do students who are moderately gifted

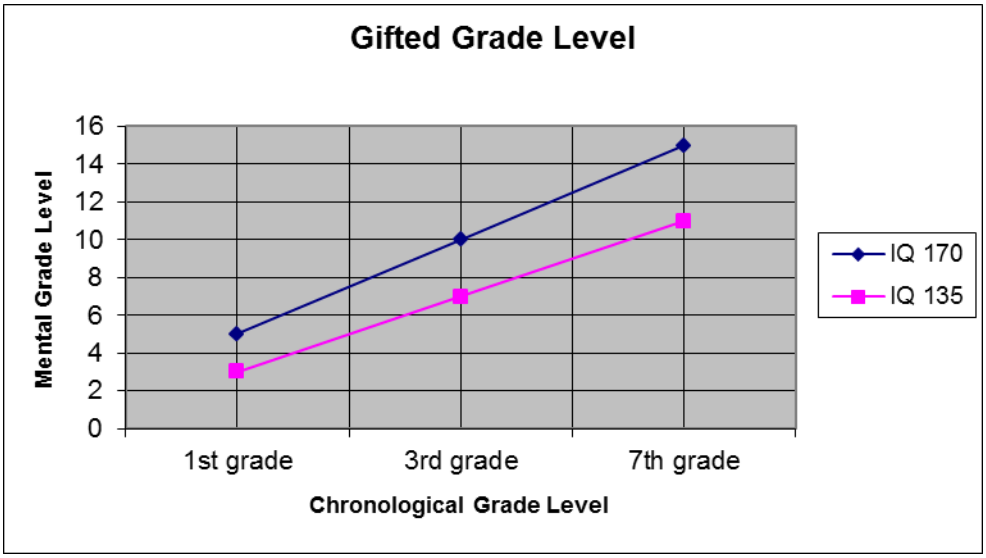


Figure 2. The mental grade level compared to chronological grade level.

The Miraca Gross (1993) data illustrates that a child with an IQ of 135 will function at a mental age 33% higher than their chronological age at ages: six, nine, and twelve. The child with the 170 IQ functions at a mental age 67% higher than their chronological age at ages: six, nine, and twelve. Preschoolers ages three to five are quite different from children ages six to twelve, but, it is not unreasonable to anticipate that a gifted four year old with an IQ of 170 may cognitively function somewhere between the first and second grade, while emotionally still operate at a preschool level.

In terms of development, chronological age may be the least relevant piece of information to consider. Kate, with an IQ score of 170, may be six, but she has a ‘mental age’ of ten and a half. Unfortunately, Kate is an amalgam of many developmental ages. She may be six while riding a

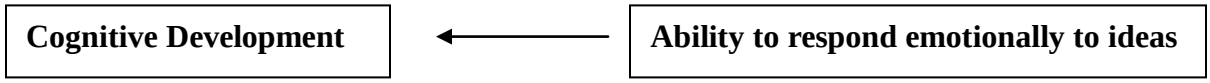
bike, thirteen while playing the piano or chess, nine while debating rules, eight while choosing hobbies and books, five (or three) when asked to sit still. Cognitive complexity and emotional intensity lead to awareness for which the child may not be emotionally ready. Gifted children see the complexities of the world but feel powerless to contend with their advanced awareness (Roeper, 1995; Silverman, 1997).

Social Cognitive Theory of Self-regulation: Children and adolescents develop self-regulatory behaviors in a variety of ways; however, when these behaviors are learned from socializing agents in an adaptive, generative, and creative manner, these behaviors are better internalized by students (Bandura, 1986; Como, 1989; Fuson, 1979; Kopp, 1982; Mithaug, 1993; Paris & Newman, 1990; Vygotsky, 1978; Wertsch, 1979).

One such manner is through the development of self-efficacy, a student's belief about his or her capability to learn and perform behaviors (Bandura, 1986, 1997). Believing that one is making progress toward a goal, as well as the knowledge that one will obtain personal satisfaction after that goal is attained, encourages students' self-efficacy and in turn helps sustain their motivation and self-regulation (Schunk, 1996).

If a student has a high level of self-efficacy, or belief in their own abilities, then negative evaluations or not attaining specific goals will not result in decreased motivation. Because of their high level of self-efficacy, these students understand that they do not lack the ability to succeed, but rather they understand that they need to increase their effort or find alternate strategies in order to reach their goals (Schunk, 1994; Schunk & Zimmerman, 1997). When compared to students with lower levels of self-efficacy, these students "work harder, persist longer when they encounter difficulties, and achieve at a higher level" (Schunk and Zimmerman, 1997). Effective self-regulation depends upon the student's feeling of self-efficacy for using skills to achieve mastery (Bandura, 1986, 1997; Bouffard-Bouchard, Parent, & Larivee, 1991; Schunk, 1996; Zimmerman, 1989).

The Link Between Emotions and Cognition:
"Vygotsky saw emotional and cognitive development as interrelated, with children's ability to respond emotionally to abstractions intimately linked with the gradual course of cognitive development spanning the childhood years." (Roeper, 1995).



"Emotions cannot be treated separately from intellectual awareness or physical (development). All three intertwine and influence each other. A gifted 5-year-old does not function or think like an average 10-year-old. He does not feel like an average 10-year-old, nor does he feel like an average 4 or 5-year old. Gifted children's thoughts and emotions differ from those of other children, and as a result, they perceive and react to their world differently (Roeper, 1995)" (Silverman, 1997).

Early Intervention: Curriculum and Environment:
Hollingworth (1930, 1940) advocated for a child-centered philosophy toward gifted education. This philosophy sought solutions to the social and emotional problems faced by gifted students and the design of programs based on this philosophy included fast-paced instruction, telescoping or compacting curriculum, providing a challenging academic curriculum, bibliotherapy, independent study, classroom based discussions, interdisciplinary studies, and social justice. All of the aspects of Hollingworth's vision encompass what is now considered to be an ideal gifted education program. A child (or student) centered gifted curriculum should empower the student to reach his or her full potential (Schunk & Swartz, 1993). This is accomplished by recognizing that gifted students have needs, as learners, which are different from their chronological age mates, and these needs are not met in environment where gifted students are unchallenged or uninterested. Gifted students in these environments either conform to the expected norms, and never attempt to excel; withdraw from social activities; or become disruptive and exhibit signs of underachievement (Diezmann, 1995).

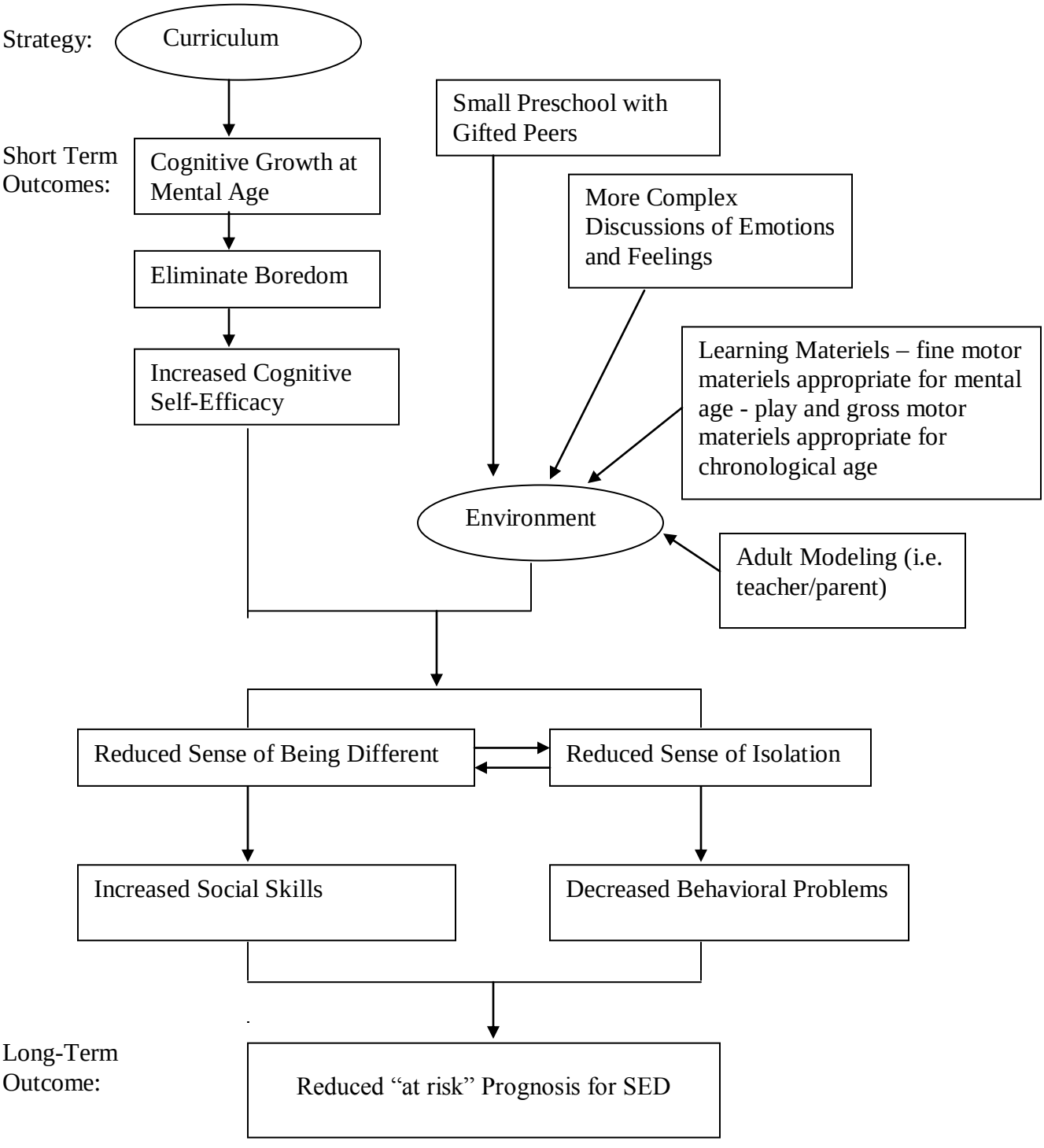
Hodge (2006) warns that "without modification, the regular curriculum is unlikely to meet the gifted child's needs (Robinson, 2003), and, if unchallenged, that child may escape into imagination or reading (Freeman, 1979), behave disruptively (Diezmann & Watters, 1995), or simply conform to low expectations. In any of these scenarios, the negative attitudes to school described by Porath (1996) and Assouline (1997) may ensue."

Hypothesis and Research Question
Hypothesis:
A gifted preschool child will be less likely to experience severe emotional disturbance if exposed to a curriculum that is appropriate for their mental age and an environment with true peers that is appropriate for their chronological age.

The hypothesis incorporates the malleable factors of: curriculum, more complex classroom discussions of feelings, learning materials appropriate for a gifted child's mental age, adult modeling (teacher/parent - this assumes that parental involvement can be influenced by the educational system), small group size, and true peers. Some important mediators and moderators are: boredom, cognitive engagement, small peer group, feeling isolated, feeling different, and adult modeling.

Outcome map below:

The outcome map for the hypothesis is as follows:



Research Question:
Will curriculum influence behavior in gifted preschool children?

Explanation of the Practical Importance of the Variables

The independent variable addressed in this research model is curriculum - the dependent variable is the "at risk" prognosis for SED. The malleable factors are: 1) curriculum, 2) more complex classroom discussions of feelings, 3) learning materials appropriate for gifted the child's mental age, 4) nurturing environment appropriate for the child's chronological age, 5) gross motor activities appropriate for the child's chronological age and safety, 6) small peer group, 7) play, 8) parent education regarding involvement in their child's education, and 9) teacher/adult modeling.

1) Curriculum: a child-centered curriculum appropriate for the gifted child's mental age is possibly one of the most important factors in dealing with the asynchronous development of a gifted preschool child, but it cannot be separated from a social/emotional environment appropriate for the child's chronological age. For example, placing a three year old in a first grade class would not be appropriate for the social/emotional development of the child.

2) More complex classroom discussions of feelings: gifted children experience feelings at a deeper level, and view things with more complexity than most children. They see things that other children do not and may feel helpless, frustrated, and afraid. In a small group setting of gifted children, a preschool teacher can address the child's concerns at a depth that would not be appropriate for a larger group. One technique is teacher directed puppet play "puppets with problems" where children are encouraged to express feelings, develop a vocabulary for feelings, and create solutions for problems.

3) Learning materials appropriate for the gifted child's mental age: when using a cognitive curriculum appropriate for the child's mental age, we must also have the fine motor materials appropriate for the lesson. This will require some teacher skill (and a wealth of materials) as fine motor development may lag behind cognitive development. If this is the case, the teacher may help the child with strategies and techniques to use the materials, but if frustration develops, the materials must be adjusted to a level that is closer to the child's chronological age but still cognitively challenging.

4) A nurturing environment appropriate for the child's chronological age is essential. The teacher must be someone who listens to children in a warm, personal, and open-ended way. The teacher must give each child their attention and respect. A consistent daily schedule, helps build a trusting relationship between teacher and child; however, a skilled teacher can also allow for flexibility and spontaneity that creates teachable moments. The physical environment must not only provide stimulating centers, but also provide a cozy spot to curl up and read a book, explore literacy boxes, and so on.

5) Gross motor activities appropriate for the child's chronological age and safety: a designated space with equipment that compliments the child's size and skills must be provided. An outdoor Playscape encourages children to climb, slide, crawl, etc. Physical activities such as running, jumping, throwing, kicking a ball, or pedaling a tricycle develop the child's large muscles. Outdoor games give children an opportunity to create and negotiate rules, work out problems, and socially interact. Creative movement gives the child an opportunity to further develop gross motor skills to music, with or without props such as scarves, streamers, hoops, or nets.

6) Small peer group: a small group of true peers will allow gifted children to know they are not alone. These small groups also allow for curriculum and play that is more stimulating. They may

see another child who does not have the words to express a complex idea, or the ability to write what s/he is thinking, and develop empathy and concern. Unconsciously they will model behavior for each other.

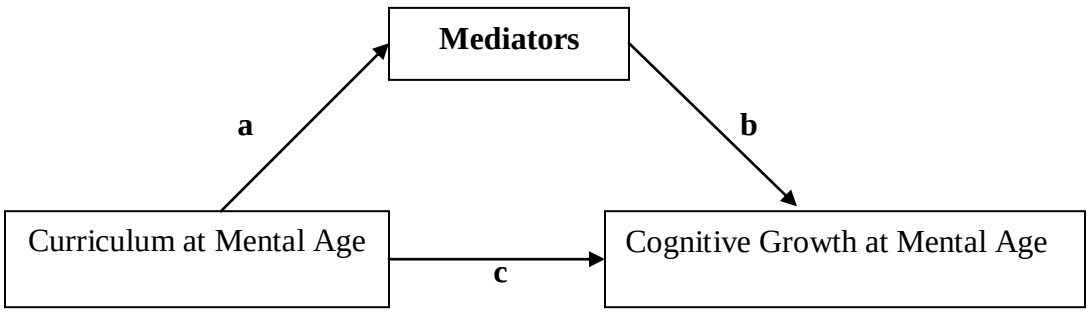
7) Play: curriculum and social/emotional development cannot be separated from "play." During play, children learn to make up rules, to take turns, negotiate with others, solve problems, and develop vocabulary. "Dramatic play" helps children act out social situations such as an upcoming Doctor's appointment, the death of a pet, and so on.

8) Parental involvement: while not under the direct control of the educational system, educators can provide parents with materials stressing the importance of their involvement in their child's education.

9) Teacher/adult modeling: parents, teachers, and caregivers are the most important adults in a child's life. What these adults model is what children will emulate. Teachers can model attitudes, interest, listening, problem solving, care, concern, and professionalism. And, while not under the control of the educational system, parents can be given suggestions such as reading to their child, talking to their child, the importance of becoming involved in their child's education, having at least one sit down meal a day as a family, number of hours of sleep necessary, limiting the number of hours in front of a monitor, and so on.

Mediators and Moderators are variables that help explain a causal relationship. Mediators are links explaining the "how" and "why" of a cause and effect, and moderators are qualitative and quantitative, magnifying or reducing the effect. Moderators help explain "when" or "for whom" the impact of the independent variable is the strongest or the weakest.

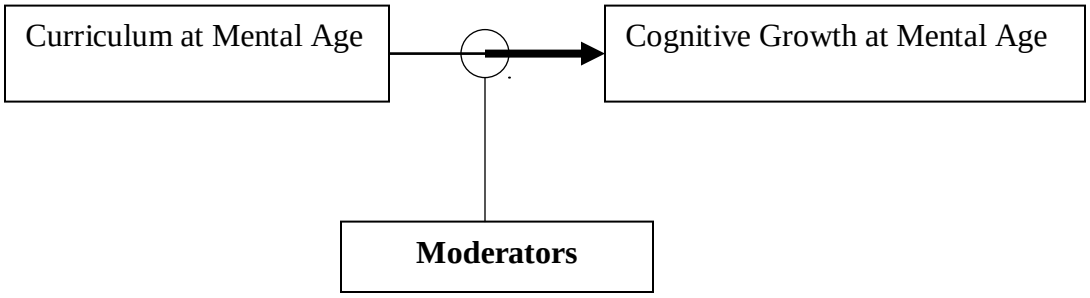
Mediator Model



The "how" and "why" mediators in the first causal relationship of our hypothesis in the model above are:

1) Teachers: when explaining concepts
2) Learning Materials: when tactile manipulation helps explain the subject
3) Play: when dramatizing the subject for a deeper understanding
4) Parents: when involved and talking with their child about the subject
   (assuming parents can be influenced by parent-teacher communications)

Moderator Model



The moderators that can magnify or in some cases diminish cognitive growth are:

1) Teachers: when encouraging or giving approval (i.e. magnifying when giving approval; diminishing when showing disapproval)
2) Learning Materials: when they reinforce or clarify the subject (i.e. magnifying when challenging and stimulating; diminishing when routine, repetitive, or too advanced causing frustration)
3) Play: including outdoor gross motor activities that allow children to release energy, frustration, and build coordination and confidence
4) Parents: when showing an interest in what their child is studying
   (again, assuming parents can be influenced by parent-teacher communications)

b. Methodological requirements

(i) Research design (vs. normal classroom design)

Children in a University research study would be sent to an expert in early childhood psychology for a Stanford-Binet, or Wechsler assessment and tested for IQ's of 130 and above. They would also be individually screened for signs of at risk behavior using the Preschool and Kindergarten Behavior Scales, Second Edition (PKBS-2). These scales would also be used as the project's measurement instrument. [In a normal classroom children would not initially be sent for IQ assessments. They would only be referred after they demonstrated above chronological level cognitive abilities and were assessed using the CogAT scales. PKBS-2 assessments are completed by the teachers after they have spent six weeks with the child and are (or can be) part of the normal classroom design for gifted children.]

The proposed project would use a Single Case Design with individual participants. A baseline for social skills and behavior problems would be established for each participant (using PKBS-2). This would be the control for comparison purposes. The outcome variable would be measured repeatedly across each intervention phase. [A Single Case Design is almost identical to the records normally kept for preschool children.]

The intervention would be a curriculum matched to the participant's mental age. This would be accomplished by using the child's I.Q. as a determinate of mental age, and then referring

to the Connecticut State Department of Education's *Preschool Assessment Framework for 2 ½ to 6-Year-Old Children* (PAF) for cognitive material at that level.

The cognitive domain of the PAF has fourteen levels (COG 1 to COG 14) and each level has four developmental stages. For example, COG 1 "Engages in Scientific Inquiry." 1) Observes or explores and notices effects. Observes events or nature. Uses materials and observes the impact of own actions. May repeat actions to reproduce an effect. 2) Experiments, observes and comments. Manipulates materials and comments on the impact of own actions related to cause and effect. Observes and comments on events or nature. 3) Experiments, observes purposefully and describes how effects vary. Makes intentional attempts to vary the effect of own actions on materials and describes how changes in actions create different effects. (What will happen if …) 4) Describes, predicts and plans purposeful exploration or observation. Predicts impact of observations or own actions and describes plans for testing predictions. And so on…

Where a child's cognitive ability is greater than age six, the Connecticut Department of Education's Curriculum Standards (kindergarten through eighth grade) would be used. The PAF would be modified slightly by taking the 14 levels and four steps per level and graphing these 56 increments to correspond to a linear development from age 2 ½ to 6. The 56 increments are graphed on the Y-axis and the 42 months between ages 2 ½ to age 6 (or 30 months to 72 months) are graphed on the X-axis.

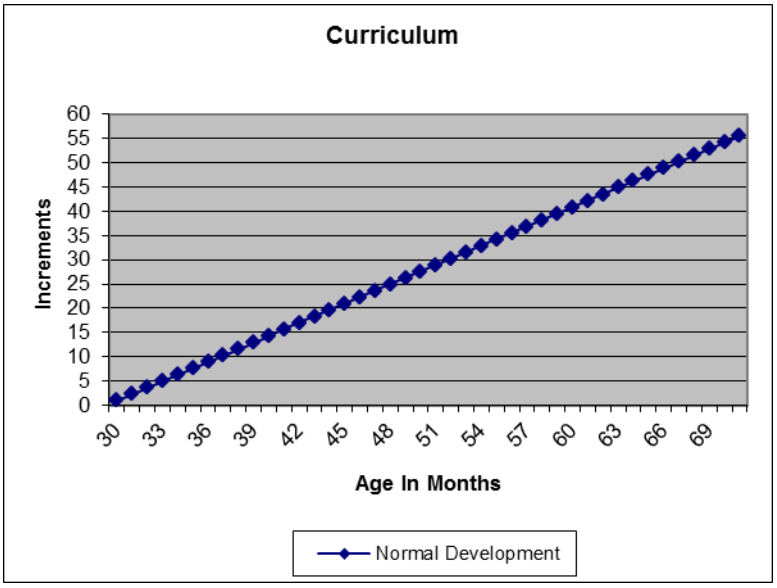


Figure 3. The Connecticut State Department of Education's *Preschool Assessment Framework for 2 ½ to 6-Year-Old Children* (PAF) for cognitive material (72 Increments) compared to chronological age level.

If a gifted three-year-old child has an IQ of 135 or 33% greater than his or her chronological age then their curriculum would begin at a mental age of 48 months. This corresponds to increment 25 or level six step one. Level six step one would be used as a guide and the teacher would adjust the curriculum up or down until the child was engaged and challenged. [This is what experienced preschool teachers normally do, if they have a small

class size, and adequate materials. Note: there is a big difference between small class (or group) size and low student to teacher ratios.]

The intervention, would be presented in an environment that was appropriate for the participant's chronological age. It would begin after the baseline was established. The intervention would be adjusted weekly to keep the child engaged and challenged. At the end of a phase, PKBS-2 would be used to measure the social skills and behavior problem outcome. The pre and post intervention PKBS-2 measurements would be visually compared to determine if a causal relationship existed. The study would last for two years and have three phases per year. The phases would coincide with normal school breaks (i.e. winter, spring, and summer breaks).

The PKBS-2 instrument was chosen because it was developed specifically for use with children ages 3 through 6 rather than a downward extension of an instrument designed for older children; thus, preschool children in the project would not mature out of the instrument range.

PKBS-2 was widely tested (N=3,313), has 76 data points, and was found to be a highly reliable measure of the social and emotional behavior of young children. "It includes items in two scales: Social Skills (34 items) and Problem Behavior (42 items). Both of these scales comprise empirically derived subscales that are useful in identifying clusters or sub domains of social skills and problem behaviors. The Social Skills Scale includes items that describe positive social skills that are characteristic of well-adjusted children ages 3 to 6 years. The Problem Behavior Scale includes items that describe various problem behaviors commonly seen in children this age group" (Merrill, 2002).

For a University study, more than one researcher would be used to assess outcomes. The baseline period would be six weeks because it is recommended that individuals other than the child's parents observe and interact with the child for a minimum of six weeks before rating the child using PKBS-2

The dependent variable would be manipulated six times during the study. The intervention would be given during the phase and withdrawn during the periods between phases (i.e. vacations).

Defining the baseline as A, and outcome variables A1 through A11, the research design would be: [A baseline phase during the first six weeks of the school year]. The first curriculum intervention "B1" would begin immediately after the baseline is established and last until winter break. Phase one: P1[A(B1, B2, B3…Bt)A1]. The second intervention phase would begin after the winter break and last until the spring break. Phase two: P2[A2(B1, B2, B3...Bt)A3]. The third intervention phase would begin after the spring break and last until the summer recess P3[A4(B1, B2, B3…Bt)A5]. The fourth intervention would begin in year two after the summer recess and last until the winter break P4[A6(B1, B2, B3…Bt)A7]. The fifth intervention phase would begin after the winter break and last until the spring break P5[A8(B1, B2, B3…Bt)A9]. The sixth and final intervention phase would begin after the spring break and end with the summer recess P6[A10(B1, B2, B3…Bt)A11].

(ii) Sample

Neither a random sample nor a large "N" number are required for Single Case Design studies; the participant provides its own control for comparison purposes. Participants would be preschool children (ages 3 to 5) with IQ's over 130. The nominees would be age 3 and the study would last for two years. [For the normal classroom, a three year old (36 months) functioning at a cognitive level close to a four year old (47 months) would be considered as having an IQ of 130 or greater. An experienced preschool teacher can readily identify this.]

(iii) Data sources

There is no comparison group in Single Case Design studies. The comparison is between pre and post intervention measurements of the same participant. In this model, an individual baseline "A" for the child would be established by the teacher/researcher. Once completed, the intervention would begin. The intervention curriculum specific to the participant's individual interests, abilities, and mental age would be labeled "B" and adjusted weekly. The outcome result "A1" would be measured at the end of each phase. The data collected would be the comparison of "A" to "A1." The model for the first phase would be: [A(B1, B2, B3 …Bt)A1]. There would be six intervention phases and visual analysis would be used to assess the causal relationship of each phase. [This is very similar to parent/teacher conferences where parents want to be updated on their child's progress.]

Three separate children, acting as three separate Single Case Design studies, with three different IQ's and social/behavioral baselines, would run concurrently in the same classroom. Each phase would produce three separate sets of data. [This would happen in the normal classroom if there were three gifted children enrolled.] Where a child showed regression, or unexpected outcomes, qualitative data (logs, observations, and parental interviews) would be used to investigate possible external causes. [This is consistent with most preschool protocols.] The PKBS-2 instrument would provide baseline and outcome data. General qualitative data (logs, observations, interviews, the child's work portfolio, and weekly curriculum notes) would also be kept.

(iv) Data analysis

To be published, data analysis and supervision would need to be performed at the College or University level.

[Disclaimer: make sure you have your school administrator's approval, and the child's parents' consent, before utilizing this research model.]

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