

## Short Review

### State of Research on Giftedness and Gifted Education: An In-depth Analysis

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#### Abstract

The early part of the 20th century witnessed psychologist Lewis Terman set out to dispel the "early ripe-early rot myth". Terman posted that a person's IQ was all that was necessary to predict his/ her life's success and it could be figured out early in life. So he found out an elite group of high-IQ individuals whom he tagged as the "Termites", averaged a whopping IQ of 151. He followed them up and at their mid- life 35 years later, they definitely seemed to conform to his expectations, being- taller, healthier, physically better developed, and socially adept (dispelling the myth at the time of high-IQ awkward nerds). The intriguing field of mental health and development in gifted children is often neglected in pediatrics because psychomotor development data are still rare, since "gifted" children are generally noticed towards the end of their primary schooling by IQ measurement. Developmental studies have shown the evidence from several fields that children identified as "high-level potentialities" or "intellectually gifted" develop sensory, loco motor, neuropsychological, and language skills earlier than typically expected. It further needs to be delved into as to how these developmental advances go on to interact with the social environment and in certain situations, may necessitate an increased risk for giving rise to socio- emotional difficulties; mental health issues and various kinds of learning disabilities, and adjustment problems that often go unnoticed and unattended due to the masking caused by the advanced intellectual capabilities and capacities.

**Key words:** Cognitive abilities, Developmental psychology, Super stimulabilities, Intellectually superior

#### Introduction

Giftedness is a concept whose perceptions have changed over time and the variations in its conception have created problems and cultural differences as its nature varies from culture to culture. Talking about the field of gifted education, it dates over 100 years in the United States to the establishment of schools for bright students, but education for the society's most intellectually smart and talented student can be traced back to hundreds of

years, if not

thousands. As the scientific study of giftedness has a much more limited past, Galton's (1869) *Hereditary Genius* is often accredited with the first scientific study of achievement and high ability [1]. Among other early seminal works are Hollingworth's (1926) researches of high IQ students in New York City [2] and the pivotal and path-breaking longitudinal study of high IQ students in California by Terman (1926)

[3]. Further, the essential areas of giftedness research will be highlighted; and an overview of the issues faced by them in terms of their cognitive and emotional well-being and the challenges faced by the contemporaries shall be emphasized.

### **Tracing the Development from a Theological, Through a Metaphysical, to an Empirical Approach to Giftedness**

The three phases or approaches to giftedness over the period of modern history have been differentiated by Raul and Ziegler (2000) in accordance with the theoretical basis given by the philosopher Auguste Comte (1798- 1857): a) a theological phase, b) a metaphysical phase, and c) a scientific, or empirical phase. As per the first phase, giftedness came to be considered as a blessing from the supreme power. Gifted people were seen as supernatural beings [4]. As a matter of fact, a lot of cultures reflect this mindset.

For example, both Plato in Greece and Confucius in China spoke about “heavenly children”. Even Bible has a statement-“Having then gifts differing according to the grace that is given to us”. According to this approach, even the various discoveries and inventions were considered as rediscoveries of previous creations of God [5].

In the second phase i.e. the metaphysical phase, giftedness came to be more deeply connected and arising out of an individual; talent and giftedness were recognized as aptitudes possessed by an individual. Also, in this phase though gifted individuals weren't considered as supernatural beings, but certain myths were still widely accepted, like there was a belief that gifted individuals tended to have shorter life spans and died earlier. Further, their tag of being a “crazed genius” was still widely prevalent in this phase [6].

Focusing on the third phase which demonstrates an empirical approach reveals that post the 20<sup>th</sup> century, the approach to giftedness was dominated by scientific reasoning. This transition can be credited to the scientific and accurate progress in the field of psychology and the application of progressively sound and controlled empirical research methodology. Moreover, in this phase, scientists and social researchers began to measure gifts and talents and took them as a strong basis for exceptional achievement. As a matter of fact, talents were closely linked with higher levels of intelligence. Gradually, giftedness started to be identified as an interaction among various personality traits [7].

### **Current Status and Implications of Theory**

The early ideas and conceptions of giftedness reflect the theoretical advancement in the areas of intelligence and creativity. For that matter, the early intelligence theories of two broad categories – be it unitary; or more multidimensional, stressed upon the significance and importance of an individual and they were predominantly psychometrically derived. Even the theories on creativity used to be on similar lines. Another thing worth mentioning here, are the successfully launched programs for gifted youth like the Talent Search programs by Julian Stanley and his colleagues by which were based on the psychometric conceptions [8].

Soon after, a significant impact was made in the 1970s when the intelligence and creativity theories started to emphasize the role of environmental influences and the multidimensionality, giving way to the momentous and substantial development in the form of the first definition by the federal government which projected that giftedness was revealed broadly in 6 varied areas namely

general intellectual ability, creative or productive thinking, leadership ability, visual and performing arts, specific academic aptitude and psychomotor ability [9] and it was directly associated with the need for specialized programming in schools for such children.

Further in this line, a much broader approach started to emerge where the key features were intelligence, creativity and giftedness. The most well-known examples of such theories is the path-breaking work citing the interaction among creativity, task commitment, and above average ability. Numerous studies have been conducted by Renzulli and his colleagues validating the three-ring conception [30]. Additionally, Gagné's (1995, 2000) contribution was a milestone as he gave the Differentiated Model of Giftedness and Talent (DGMT) where he defined gifts as certain innate and inborn abilities in at least one domain area i.e. creative, academic/ intellectual, sensorimotor or socio-affective that help the individual in reaching among the top 10% of similar age band peers [10].

The most recent major theoretical development is done by Subotnik, Olszewski-Kubilius, and Worrell by proposing a model where giftedness is defined as that performance which reaches the upper end of the continuum of a specific ability / domain even in relation to other differently abled individuals of that domain [11]. This approach laid great emphasis on the difference between potential and outcomes, and unequivocally stated that construct to change as people grow and mature.

### **Current Status of Research**

Broadly speaking, the literature in gifted education consists of theoretical models, generative essays, research studies and

projects, and advice pieces. Talking particularly about research, there is an ample number of correlational, descriptive and empirical evidence available [12]. It is rather unfortunate because there is either dearth of funding or the small sample sizes that make it quite difficult for the application of randomized controlled designs. This leaves the field with a considerable amount of ambiguity in the arena of research. Further, even the intervention studies are very less in number making it quite inconsistent and lacking specificity when defining giftedness and its statistical modeling within gifted education.

Areas where Results can be implemented to Guide Policy and Practice proves to be a little challenging when there is an absence of interventions for advanced students who can otherwise learn the material at an above average pace. The first initial research studies produced by the National Research Centre on the Gifted and the Talented (NRC/GT) provided evidence that deficits in curricular and instructional differentiation weren't challenging enough for the gifted students across all the subject areas in both elementary as well as secondary schools [13].

Another area with a wide research base is *Acceleration*. Broadly, schools around the globe tend to be age based so as to bring parity among the students progressing through their education at the same pace. They are broadly put under two categories namely: *content* or *subject based acceleration* and *grade based acceleration*. Meta-analyses of a few authors and the traditional views have reflected largely positive reviews and conclusions about all the types of academic acceleration [14].

The third most significant area with immense research support is *curriculum design*. These can be characterized in two broad models- a descriptive framework of curriculum where teachers use a model as a guide in developing

daily lesson plans or Individualized Education Programs (IEPs); or as Prescriptive where teachers follow a pre-developed plan based on a model's guiding principles.

### **Areas where Solid Empirical Foundations of Gifted education, Developmental Psychology and Cognitive Ability Research are Evolving**

Numerous recommendations have been proposed to improve the identification practices of the gifted children. A point worth noting here is that the current policy practices are emphasizing the identification of the underrepresented populations of students coming from various ethnic backgrounds such as African-American, Hispanic/Latino, American Indian, and students from the low socio-economic strata.

Giving a new perspective to all of this, Peters, Matthews, and McBee (2014) presented an argument that identification should be used as a process of inclusion (adding more students) rather than it being taken as a means of exclusion (keeping students out) [15]. They further added that most programs must be made open to all those students who wish to challenge themselves. With such new aforementioned conceptions about giftedness, the future of improvements in the identification process seems quite optimistic.

Coming on to another realm which has shown impressive progress is the field of *innovation* and *creativity*. These constructs have become hot topics of discussion across a number of fields like psychology, economics, business, management, organizational behavior, and social entrepreneurship to name a few demonstrated the fact that there are several other areas too which need immediate attention in terms of research including the most effective ways to help the prospective teachers learn diversely interesting ways to teach for creativity, and linking creativity to

specific academic content areas [16].

### **Delving into the neuroscience of giftedness: Physiology of the brain:**

It is commonly stated that when it comes to intelligence, it's the brain size that matters. We gain reference from the sci-fi where it is shown that the biggest brains are the smartest. Take, for instance, the Star Trek's Talosians, or the Martians of 'The war of the worlds'. This folklore often is repeated and represents itself into the class taunting and jokingly labeling about 'brainiacs' and the gifted children's 'big brain', erroneously associating intellectual capacities with size.

Quite interestingly, different parts of the brain tend to develop at different times, somewhat replicating an ongoing game of brain region musical chairs. This asynchronous brain development might give rise to minor oddities or quirks in reasoning, thinking, or overall behavior. A more noteworthy asynchronous development might give an explanation for the intense OEs or some other common comorbidities at times linked to giftedness, and even certain clashes in the visual and auditory processing, learning difficulties particularly dyslexia, and perhaps autism and ADHD [17].

### **Neuroscience of Giftedness: The association between increased brain areas and emotional processing:**

Gifted people are often characterized being oversensitive and having outsized feelings. Although, not all the gifted people go through extreme emotions states and feels, but they definitely possess oversized emotional processing in their brains.

Kennett et.al. (2018) found out that individuals with a higher intellectual functioning and levels do have larger volumes in particularly two

regions of the limbic system which have been found to be linked with emotional processing [18]. This highly extensive emotional integration might also be able to give the reasoning for the more qualitative trademarks of giftedness, also taking into consideration the existential depression, and a more emotional or empathic link, for some gifted children and adults more than other people. Research carried out by Penny et al delved into the possible connections between anxiety, worry, and intelligence, and it was revealed that verbal intelligence uniquely predicted worry and rumination severity positively [19].

### **Neuroscience of Giftedness: Greater Sensory Sensitivity**

Although there is a dearth of literature in the area of gifted children's sensory sensitivities which show the actual process of stimulation and why is it that gifted children act the way they do, but the work that does appear to be related is rather intriguing. One study carried out on the same revealed enhanced auditory response in the exact same way as the auditory super stimulability would look like. Further research has found out that gifted children have an earlier peak latency (hear sounds faster) and with a higher amplitude (louder) as compared to non-gifted children [20].

For supporting gifted children, it's imperative for adults to acknowledge the challenges faced by the child. The first step under advocacy is an accurate assessment, which is often in the form of an evaluation done by an occupational therapist or an audiologist who can actually explain as to what the child is going through and can offer support in finding the balance between mitigation, sensory integration, treatment, and accommodations so that the child is able to have the appropriate tailor-made options, plans and individualized programs for dealing with their

super stimutable bodies.

### **Areas in Need of Research**

There are still many areas that need further significant research in the field of gifted education. While one end of the research conclusions point towards the presence of the gifted children possessing unique social and emotional development and needs which are equal to or superior to the general population, there is yet another extreme which tend to vouch for the fact that no such unique social and emotional characteristics are present, rather it's their family, school, and environmental and cultural influences that manifest such traits in unique ways [5-7].

Despite the fact that there have been concerted efforts since the past several decades to address serious issues like underrepresentation and narrow achievement gaps among the subgroups of talented and bright students, there is considerable amount of evidence that supports the fact that underrepresentation does exist as a problem and that these "excellence gaps" have only grown over the past generation [8].

### **Future Policy and Practice**

The development and improvements in policy and practice will prove fruitful only if there are sufficient support mechanisms to sustain further research. The death knell of the Javits Act funding and the lack of funding support for the formation of a National Research Centre will hamper the rapid developments of our understanding of gifted students' changing needs with the changing times. Moreover, the mainstreaming of gifted students in regular schools while satiating their hunger for knowledge must be catered to adequately. There is also a dire need for the regular updating of the knowledge and skills of the special teachers appointed specifically for the teaching of gifted children.

The changing age in the milestone accomplishments of the gifted students these days also needs a special mention here. Since they tend to be physically, emotionally, and developmentally progressing at a different pace, their varied needs must be met well in time and steps must be taken to help them overcome the frustrations and imbalances that might crop up as a result of such unwarranted changes.

### Conclusion

Putting in a final word, we may assert here that the longitudinal study by Terman has undoubtedly been a milestone in the field of gifted education, it has brought to the gifted individuals a special mention, recognition and identification [4]. Today, after all these years there have been numerous developments and changes in the lives of the gifted children with huge gaps too in terms of research, intervention strategies, policies, identifications, inclusions and mainstreaming; and there have also been huge developments in the areas of developmental, cognitive well-being, physical agility, emotional strength and resilience, importance of humor, adjustment related issues and adaptive skills. Amidst all of this, giftedness has been rapidly evolving with the mental well-being and needs of the gifted children being seen in a new light and their recognition and a fair acceptance has been witnessed by one and all. It just needs to be reiterated here that with the rapidly changing times, there needs to be constant up gradation of the policies and the research gaps must be covered making the gifted individuals feel inclusive and adaptive.

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