

INVESTIGATING TEACHERS' PERCEPTIONS OF ACADEMIC VERSUS CREATIVE GIFTEDNESS USING THE NETWORK TEXT ANALYSIS

Seon-Young Lee

*Education Department, Seoul National
University, Seoul, 08826, South Korea
E-mail: seonylee@snu.ac.kr*

Donggun An and Sungyeun Kim*

*Graduate School of Education, Incheon National
university, Incheon, 22012, South Korea
E-mail: bonnet413@naver.com
E-mail: syk@inu.ac.kr*

The purpose of this study is to investigate classroom teachers' perceptions about academic versus creative giftedness by analyzing 221 teachers' recommendation letters submitted for participation in a university-based gifted science program from 2009 to 2014 based on network text analysis. The main results were as follows: First, regardless of the type of giftedness, teachers' perceptions were focused on cognitive aspects. Second, 'achievement', 'thinking', 'leadership', and 'diligence' in academic giftedness, and 'friends', 'diversity', 'curiosity', 'reading', and 'self-leading' in creative giftedness were key words to connect not only main concepts but also various aspects. Third, 'study' and 'excellence' were relatively important concepts in academic giftedness. On the contrary, 'experiment', 'exploration', and 'concentration' were relatively crucial concepts in creative giftedness. Finally, cognitive aspects with 'scoring' and 'solving' were shown in academic giftedness, and affective, social, and environmental aspects with 'activity' and 'curiosity' were shown in creative giftedness

1. Introduction

Many researchers suggest that there are multiple kinds of giftedness (Renzulli, 2003; Sternberg, 2000). Especially, a bi-dimensional model of giftedness distinguishing academic versus creative giftedness has been actively considered (Zenasni, Mourgues, Nelson, Muter, & Myszkowski, 2006). Academic giftedness refers to test-taking or lesson-learning abilities to earn high grades in school, predominantly assessed by standardized cognitive tests (Renzulli, 2003). In contrast, creative giftedness involves the ability to produce original outcomes by adapting content knowledge and skills in a real-world oriented way (Renzulli, 2003).

There is considerable evidence to show that the two types of giftedness can be distinguished from each other. Regarding the cognitive abilities, academically gifted students tend to present a high level of logical, hypothetic-deductive thinking and generate fast solutions (Sternberg, 2000). On the other hand, creatively gifted students are more likely to have a high level of divergent and associative thinking and produce original solutions (Renzulli, 2003). In terms of personality types, thinking and judgment personality types are mainly thought to be important for academic giftedness (Gallagher, 1989; Mills, 1993). However, intuition and perception personality types primarily contribute to creative giftedness (Gryskiewicz & Tullar, 1995).

* Correspondence Author. This work was partially supported by Incheon National University Research Grant in 2017.

Although theorists have argued the distinct characteristics of the type types of giftedness, there is little research examining classroom teachers' perceptions about this issue. Considering the fact that classroom teachers' perceptions about giftedness play a central role in identification, training, and assessment of gifted students (Brown, Renzulli, Gubbins, Siegle, Zhang, & Chen, 2005), it is important to examine how differently classroom teachers perceive the distinct types of giftendess. Although a few studies investigated classroom teachers' perceptions about the different types of giftedness, most of them focused on the Renzulli's three constructs of giftedness, above-average ability, task commitment, and creativity (Renzulli, 1984). There is little research exploring the perceptions about the academic versus creative giftedness. In addition, most of the previous studies used survey investigations or qualitative methods, they did not show the semantic relationships among key concepts of the giftedness within a network structure. Therefore, it is needed to explore how classroom teachers perceive academic versus creative giftedness differently and to look at the semantic relationships among key concepts of the giftedness.

Regarding the perceptions of giftedness, one factor we need to consider is that how the perceptions are different depending on domains. Especially for creative giftedness, numerous studies have shown the different characteristics of creativity, according to domains (Simonton, 2009). Thus, it is also needed to look at how teachers' perceptions about academic versus creative giftedness are different according to domains.

The current study explored the specific distinct characteristics of the two types of giftedness (academic versus creative) through the classroom teachers' perceptions. Based on the findings, this study will provides how to identify, educate, and assess the two types of gifted students in a different way. Also, it will contribute to understand the different characteristics between mathematically and scientifically gifted students.

2. Data and Methods

The data employed in the present study were teacher recommendation letters collected from 221 gifted middle school students (72 females and 149 males; 196 seventh-grade students and 25 eighth-grade students) applying to the gifted education program from 2009 to 2014 in one science education institute for the gifted, which is attached to a university located in Seoul. Of the teacher recommendation letters in this sample, there were 15 in 2009, 34 in 2010, 38 in 2011, 43 in 2012, 47 in 2013, and 44 in 2014. The data were analyzed by using the network text analysis. In analyzing the frequency of texts that appeared in teacher recommendation letters, key words were selected. A co-occurrence matrix of the key words was established, and a basic information of network, centrality, centralization, component modularity with CNM were deducted. In addition, delta-C algorithms for comparing the relative importance of classroom teachers' perceptions between academic and creative giftedness were calculated. For the analysis, KrKwic, KrTitle, and NetMiner 4.0 programs were used.

3. Results

First, regardless of the type of giftedness, teachers' perceptions were focused on cognitive aspects with 'excellence', 'mathematics', 'science', 'learning', 'ability', and

'understanding'. Second, based on degree and closeness centrality, and frequency, regardless of domains, 'thinking' in academic giftedness, and 'friends', 'diversity', and 'creativity' in creative giftedness were key words. In addition, in a science domain, 'thinking' and 'leadership' in academic giftedness, and 'curiosity' and 'diversity' in creative giftedness were key words. On the contrary, in a mathematics domain, 'diligence' and 'science' in academic giftedness, and 'reading' and 'self-leading' in creative giftedness were key words. Hence these were key words to connect not only main concepts but also various aspects. Third, based on delta-C index, in a science domain, 'learning', 'self-leading', and 'excellence' were relatively crucial concepts in academic giftedness, and 'experiment' and 'exploration' were relatively crucial concepts in creative giftedness. At the same time, in a mathematics domain, 'learning' and 'excellence' were relatively crucial concepts in academic giftedness, and 'concentration', 'class' and 'experiment' were relatively crucial concepts in creative giftedness. Finally, based on degree, closeness and betweenness centrality, cognitive aspects with 'scoring' and 'solving' were shown in academic giftedness, and affective, social, and environment aspects with 'activity' and 'curiosity' were shown in creative giftedness.

4. Educational Contribution

The current study explored the specific distinct characteristics of the two types of giftedness (academic versus creative) through the classroom teachers' perceptions. Based on the findings, this study will provide how to identify, educate, and assess the two types of gifted students in a different way. Also, it will contribute to develop the different identification tools based on characteristics between mathematically and scientifically gifted students by using item profile analysis.

References

- Baker, D. R. (1985). "Predictive value of attitude, cognitive ability, and personality to science achievement in the middle school". *Journal of Research in Science Teaching*, 22, 103-113.
- Brown, S. W., Renzulli, J. S., Gubbins, E. J., Siegle, D., Zhang, W., & Chen, C. H. (2005). "Assumptions underlying the identification of gifted and talented students". *Gifted Child Quarterly*, 49, 68-79.
- Gallagher, S. A. (1989). "Predictors of SAT mathematics scores of gifted male and gifted female adolescents". *Psychology of Women Quarterly*, 13, 191-203.
- Gryskiewicz, N. D., & Tullar, W. L. (1995). "The relationship between personality type and creativity style among managers". *Journal of Psychological Type*, 32, 30-35.
- Mills, C. J. (1993). "Personality, learning style and cognitive style profiles of mathematically talented students". *European Journal for High Ability*, 4, 70-85.
- Renzulli, J. S. (1984). "The three ring conception of giftedness: A developmental model for creative productivity". Paper presented at the Annual Meeting of the American Educational Research Association.
- Renzulli, J. S. (2003). The Three-ring Conception of Giftedness: Its Implications for Understanding the Nature of Innovation. *The International Handbook on Innovation*.
- Simonton, D. K. (2009). "Varieties of (scientific) creativity a hierarchical model of domain-specific disposition, development, and achievement". *Perspectives on Psychological Science*, 4, 441-452.
- Sternberg, R. J. (2000). "Patterns of giftedness: A triarchic analysis". *Roeper Review*, 22, 231-235.
- Zenasni, F., Mourgues, C., Nelson, J., Muter, C., & Myszkowski, N. (2016). "How does creative giftedness differ from academic giftedness? A multidimensional conception". *Learning and Individual Differences*, 52, 216-223.