

Figural creativity of dyslexic and non-dyslexic in indonesia children sample

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ABSTRACT

Children who have difficulties in writing and reading are called dyslexia. This disorder is caused by neurobiologis disorder that bring a problem in language cognitive domain, however some research states that dyslexic children often have better other cognitive domain abilities than children in general, for instance, intelligence level, talent, and etcetera. That is why the researcher compares figural creativity level of dyslexic children and non-dyslexic children. Figural creativity is applied because dyslexic children undergone problem in language thus they do not use verbal creativity. This study employed ex post facto research design and the subject were 8 students that consisted of 4 dyslexic children and 4 non-dyslexic children. Caloured Progressive Matric test was used to measure creativity level. The result shows that there is no differences between creativity level of dyslexic students and non- dyslexic students. It can be seen when children have similar average intelligence, they have the same average level of creativity. It also supported by creativity theories which states that creativity is formed by individual cognitive factor.

Keywords: figural creativity, intelligence, and dyslexia

ABSTRAK

Anak-anak yang mengalami kesulitan dalam menulis dan membaca disebut disleksia. Gangguan ini disebabkan oleh gangguan neurobiologis yang menimbulkan masalah dalam domain kognitif bahasa, namun beberapa penelitian menyatakan bahwa anak-anak disleksia sering memiliki kemampuan domain kognitif lain yang lebih baik dibandingkan anak-anak pada umumnya, misalnya, tingkat kecerdasan, bakat, dan sebagainya. Itulah sebabnya peneliti membandingkan tingkat kreativitas figural anak-anak disleksia dan anak-anak non-disleksia. Kreativitas figural diterapkan karena anak-anak disleksia mengalami masalah dalam bahasa sehingga mereka tidak menggunakan kreativitas verbal. Penelitian ini menggunakan desain penelitian ex post facto dan subjeknya adalah 8 siswa yang terdiri dari 4 anak disleksia dan 4 anak non-disleksia. Tes Caloured Progressive Matric digunakan untuk mengukur tingkat kreativitas. Hasilnya menunjukkan bahwa tidak ada perbedaan antara tingkat kreativitas siswa disleksia dan siswa non-disleksia. Hal ini dapat dilihat ketika anak-anak memiliki rata-rata kecerdasan yang sama, mereka memiliki rata-rata tingkat kreativitas yang sama. Hal ini juga didukung oleh teori kreativitas yang menyatakan bahwa kreativitas dibentuk oleh faktor kognitif individu.

Kata kunci: kreativitas figural, kecerdasan, dan disleksia.

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INTRODUCTION

Learning difficulty is a disorder in the process of speaking, language, reading, writing, and arithmetic (Hallahan & Mercer, 2002), and it is also disorder of nonverbal behaviour such as body language, face expression, and distance (Fast, 2004). Students who have learning difficulties have the same physical state as other students (Adiputra, 2015). 80% of learning disorder children experience difficulties in reading. It was occurred to overall school-age children, including Indonesia. It is concerned due to the fact that language is an introduction for learning and supporting everything happened at school (Brent, Gough, & Robinson, 2001).

The most problem happened to children reading incapability caused by the problem how to understand sound, letter which can arrange words appropriately (Santrok, 2007). Dyslexic children have difficulties in writing and spelling. They write slowly or their writing is unreadable, and they make a lot of mistakes in spelling due to disability in comprehend between sound and letter. However, they have normal intelligence level.

International Dyslexia Association defines dyslexia as disability of certain learning that caused from neurobiological disorder. It is recognized by difficulty in knowing words with spelling and vocabulary disruption. The difficulties usually happened because of trouble in language phoneme component which related to individual cognitive ability and less effectiveness of classroom instruction. Consequently, default in comprehending reading, memorizing vocabulary, and understanding basic languages are occurred (Reid, Shaywitz, & Shaywitz, 2003).

A child is called dyslexia when accurately and fluency in reading and spelling are not complete, though every children have different of difficulty level. Causal factor of dyslexia is 50% from genetic and 50% from the environment (Pavey, 2007). Dyslexia occurred due to combination of genetic factor, difficulty in reading process, spelling, and writing. The weaknesses are rapidity in understanding language, problem in short-term memory, alphabet order in the word, spoken language, and language skill.

Not all research result of dyslexic children describe negative situation, a research reveals that dyslexic child has visual spatial talent higher than common children (West, 2005). The unique of dyslexia children is probably because of their ability to focus. There are many acknowledgments about the talent nature of dyslexic children; talent domain assumes that dyslexic children have some genetic talents such as creativity. This analysis motivates the researcher to investigate comparative study between creativity level of dyslexic children and non-dyslexic children.

It is supported by creativity theories that emphasize the important of cognitive factor which underlay the basic of creativity development. Creative ability is influenced by intellectual factor that point to development of language and communication skill. So dyslexic children who have cognitive disorder and also coding trouble in neural brain are difficult to be analysed their creativity using language and verbal, thus analysis of figural creativity is faster than analysis of verbal creativity. It is supported by dyslexic children age who were investigated was around 10-14 years old where they are on the top stage of communication ability through picture (Gaspar, 2013).

The development of creativity theory today is the result of JP Guilford and E. Paul Torrance who has developed creativity concept even though they have many inequalities understanding about character of creativity and the way to measure it (Sternberg, 2006). It is because they have different perspective of creativity. According to Guilford (1973), creativity is divergent thinking which make unconventional and unpredictable answer. Theory of creativity emphasizes on the way to view divergently that does not merely point to one answer (convergent). Creative person will has ability to pass over tradition and custom, think many ideas, work out of the box, and merge contradiction ideas. Then they most like great idea and realize idea in real.

Torrance (1965) explain differently, creativity regarded as something new according to individual and culture, whereas for achieving creativity needs a creative thinking including 4 aspects: a) thinking product that up to date and valuable, b) unconventional thinking or need modification) thought needs high motivation and diligence, d) able to formulate undefined problem.

Creativity viewed as general characteristic of individual which derived from cognitive factor and power support life (Palaniappan, 1998). High creative person tends to have high motivation in solving the problem. Up to now most of dyslexia research still oriented in investigating what wrong is, and develop treatment method, but some researchers have investigated that many dyslexic person have genetic talent. Recently thought shows that the excess talent of dyslexic children is necessary for individual interest (West, 2005).

Research about creativity level of dyslexic children has been conducted by others country such as Nakato and Alves (2014), they investigated the distinguished creativity of dyslexic children and non- dyslexic children where the research sample was children in Brazil. Then, be explained the creativity result of dyslexic children and non-dyslexic children from various school in French and Belgium ((Kapoula, Ruiz, Spector, Mocerovi, Gaertner, Quilici, & Vernet, 2016). Also be investigated instrument test of creativity at the junior high school students who undergone dyslexia and non-dyslexia in Italia (Cancer, Manzoli, & Antonietti, 2016). However, the results of these studies have not represented yet dyslexic children in Indonesia. Study of dyslexic children in Indonesia is scarcely. Therefore, the aims of this study to know how the creativity is level of dyslexic children and non-dyslexic children in Indonesia.

RESEARCH METHOD

Research design

This study used ex post facto research design. This study tried to take the effect of dependent variable and investigate it retrospectively for fostering the cause, relationship, association, or its meaning (Cohen, Manion, & Morrison, 2007). In ex post facto research design the researcher did not manipulate variable, the researcher only investigate what happened on independent variable and looked for information about cause and effect from an event.

Subject

This study described level diversity of figural creativity of dyslexic children and non- dyslexic children in elementary school Gegerkalong KPAD Bandung, Indonesia. The research subject was 9 years old children consisting of 8 students who divided into 4 dyslexic children and 4 non- dyslexic children. It is supported (Cohen, Manion, & Morrison, 2007) by statement that the number of sample depends on the objective of the research and the characteristic of population. This study employed purposive sampling technique. The criteria for dyslexic children are those who have reading disorder and have above average intelligence quotient. Whereas the criteria of non-dyslexic children those who have above average intelligence quotient.

Measures

The intelligence level was measured using CPM (Coloured Progressive Matric) which developed by J.C. Raven. It was used to assess individual intelligence of 5 to 10 years old children (Hayashi, Kato, Igarashi, & Kashima, 2008). CPM is an instrument test for measuring free cultural intelligence due to abstract pictures. CPM is intelligence test which implemented in group and it is more efficient in term time and cost.

Creativity level was measured by Figural Creativity Level (TKF) designed by Utami Munandar. It is adapted from Torrance Test of Creative Thinking (TTCT) by Torrance (Munandar, 2009). Then the aspects underlay Figural Creativity Level (TKF) is fluency, flexibility, originality, and elaboration in creative thinking. This test was used to measure creativity of 10 to 18 years old children.

Data analysis

Process of analysing the data, the researcher used U Mann-Whitney test. The researcher assumed that the use of small subject is appropriate with the use of non-parametric statistical test. Mann-Whitney analysis used to test average difference of independent group that is taken from similar population (Siegel, 1956). Thus it can be concluded there is any creativity difference between dyslexic students and non-dyslexic students.

RESULTS AND DISCUSSION

Data CPM test result (*Coloured Progressive Matric*) between dyslexic students and non-dyslexic students:

Table 1. The average raw score of dyslexic students' IQ and non dyslexic students

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|---|---------|---------|-------|----------------|
| Dyslexic | 4 | 26 | 28 | 26.75 | .957 |
| Non_dyslexic | 4 | 26 | 28 | 27.25 | .957 |
| Valid N (listwise) | 4 | | | | |

Table above shows that the average raw score of dyslexic children IQ ($\bar{x} = 26,75$; $SD = 0,957$) and the average raw score of non-dyslexic children IQ ($\bar{x} = 27,75$; $SD = 0,957$) which in percentile point exist in high intelligence level in CPM test.

The result of non-parametric statistic Mann-Whitney obtains description between dyslexic student's creativity and non-dyslexic students as follows:

Table 2. The average score of dyslexic students and non dyslexic students

| | Students | N | Mean Rank | Sum of Ranks |
|------------|--------------|---|-----------|--------------|
| Creativity | Dyslexia | 4 | 5.00 | 20.00 |
| | Non Dyslexia | 4 | 4.00 | 16.00 |
| | Total | 8 | | |

Table 3. Analysis Mann-Whitney Test

| | Creativity |
|--------------------------------|-------------------|
| Mann-Whitney U | 6.000 |
| Z | -.577 |
| Asymp. Sig. (2-tailed) | .564 |
| Exact Sig. [2*(1-tailed Sig.)] | .686 ^a |

Table 2 and 3 identifies the average score of dyslexic students creativity ($\bar{x} = 5$; $SD = 20$) higher than non-dyslexic creativity ($\bar{x} = 4$; $SD = 16$), but statistic test of Mann-Whitney shows there is no significant difference between dyslexic students and non-dyslexic students. It can be seen from score of Sig. (2-tailed) around 0.564, it means that higher than 0, 05. So $0,564 > 0, 05$, it proves that there is no significant difference between dyslexic students and non-dyslexic students.

Table 4. The average score of dyslexic students and non-dyslexic students

| | N | dyslexia | | Non dyslexia | |
|-------------|---|----------|----------------|--------------|----------------|
| | | Mean | Std. Deviation | Mean | Std. Deviation |
| Fluency | 4 | 17.00 | 4.243 | 17.00 | 2.160 |
| Flexibility | 4 | 11.75 | 5.560 | 15.00 | 5.228 |
| Original | 4 | 19.75 | 7.588 | 16.75 | 2.500 |
| Elaboration | 4 | 4.25 | 5.058 | 2.50 | 2.887 |

Based on data analysis showed in table 4, it found that dyslexic student’s creativity in originality and elaboration aspect is better than non-dyslexic students, whereas flexibility aspect of non-dyslexic student’s creativity is better than dyslexic students. In fluency aspect, there is similarity between dyslexic students and non-dyslexic students.

The result of IQ test using CPM shows that all subjects are already in high level. Statistic test Mann-Whitney identifies there is no significant difference between dyslexic students and non-dyslexic students. It showed from Sig. score (2-tailed) around 0.564. Creativity aspect of dyslexic students is higher in originality and elaboration, and for non-dyslexic students the higher is in flexibility aspect, whereas fluency aspect between dyslexic children and non-dyslexic children has the similarity average score.

Regarding to characteristic of creativity according to Guilford (1973), children with high intelligence between dyslexic and non-dyslexic children have the same level of fluency, related to ability to think many ideas; many solutions to solve problem, whereas high intelligence level of non-dyslexic children have flexibility of capability to change idea and substance become new, better different than dyslexic children. Dyslexic children with high intelligence level have originality level of think divergently and elaboration related to ability to work out of the box better than non-dyslexic children.

The research shows that intelligence level influence creativity, therefore both of dyslexic children and non-dyslexic children who has above average intelligence also has similar creativity level. It is supported by the result of research (Jauk, Benedek, Dunst, & Neubauer, 2013) that mention intelligence is requirement for having creativity. Beside those children with high creativity happened due to high intelligence level. Be stated that creativity as one of creativity sub models, thus creativity considered as part that can measure intelligence (Carroll, 1993).

This result was differenced from Kim’s research (2005) who reported that there was no relationship between intelligence and creativity. It can be proven from correlation level between intelligence and creativity $r = 0, 17$. This study stated that children who have low IQ can be more creative than those who have high IQ, but this study used game technique as media in giving creativity test.

The result of statistical analysis test shows that there is no diversity between dyslexic children creativity and non-dyslexic. It is in line with research which was conducted (Nakano & Alves, 2014) to investigate disparity between creativity and intelligence of dyslexic children and non-dyslexic children and prove there was no relationship between them. Even non dyslexic children have creativity average score that higher than dyslexic children.

Contrary with the result above (Kapoula, Ruiz, Spector, Mocerovi, Gaertner, Quilici, & Vernet, 2016) that explains creativity result of dyslexic children and non-dyslexic children gives a conclusion those dyslexic children is more creative than non-dyslexic children. Then (Cancer, Manzoli, & Antonietti, 2016) been tested WCR (*widening, connecting and reorganizing*), it is an instrument for testing creativity of junior high school students. The research explains that dyslexic children are better than non-dyslexic children in doing the creativity test.

The result reveals that dyslexic children have good creativity and intelligence level. It refers to the notion that dyslexic children have disorder cognitive domain (Power, Colling, Mead, Barnes, & Goswami, 2016). Thus others cognitive domain does not get disruption as no annoyance on intelligence and creativity. Therefore there is no difference between creativity of dyslexic children and non-dyslexic children.

The way people thinking will cause thinking skill that make people become more creative. Individual who has high creativity tends to has high motivation in activity and performs unique thinking skills for instance (a) synthetic skill to know a problem in new way and change conventional thought, (b) analytic skill to recognize which one's ideas are feasible and not feasible and (c) contextual skill can influence ideas value of other people. These skills are complementary collaboration between creativity skills. Thus big or small of children creativity is affected by thinking skill.

This study has limitation of number of children that become a research subject and limitation in research time. It causes less of overall observation on dyslexic students. It causes the researcher lacked to explore completely related to the differences of creativity and intelligence of dyslexic students and non-dyslexic students in behaviour day. Beside that this research merely compared dyslexic students and non-dyslexic students at the level of high intelligence, the researcher has not investigate yet dyslexic children that has below average, average, and superior intelligence.

CONCLUSION

Creativity emerges from cognitive domain, so the way of thinking is influenced by individual creativity level. It causes intelligence level has influenced creativity. Every person has different cognitive thinking level. This thinking style makes synthesis, analysis, and contextual thinking skill that become indicator for children creativity.

The result of study identifies that behind language incapacity of dyslexic children, they have innate potential including intelligence level, and good creativity. Therefore teacher should be better focus on dyslexic children potential than their weakness. Besides that, the result of this study have to be a reference for the teacher in order to determine learning method that can be understood easily by dyslexic students and non-dyslexic students.

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