BELIEFS ABOUT THE HIGH ABILITIES OF TWICE – EXCEPTIONAL STUDENTS WITH DYSLEXIA

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Table 1. Scale items (Croatian) ordered according to students’ average agreement with the item

<table>
<thead>
<tr>
<th>Component Number</th>
<th>Description</th>
<th>Mean</th>
<th>Extremes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE1</td>
<td>What is your opinion about dyslexia?</td>
<td>4.19</td>
<td>1,514</td>
</tr>
<tr>
<td>TE2</td>
<td>What is your opinion about dyslexia?</td>
<td>4.19</td>
<td>1,514</td>
</tr>
<tr>
<td>TE3</td>
<td>What is your opinion about dyslexia?</td>
<td>4.19</td>
<td>1,514</td>
</tr>
<tr>
<td>TE4</td>
<td>What is your opinion about dyslexia?</td>
<td>4.19</td>
<td>1,514</td>
</tr>
<tr>
<td>TE5</td>
<td>What is your opinion about dyslexia?</td>
<td>4.19</td>
<td>1,514</td>
</tr>
<tr>
<td>TE6</td>
<td>What is your opinion about dyslexia?</td>
<td>4.19</td>
<td>1,514</td>
</tr>
</tbody>
</table>

Figure 1. Scale plot with tentative support for a single factor structure (need for further investigation of a two-factor structure solution)

Figure 2. Scale means for students enrolled in different academic years

Table 2. Scale Items

<table>
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</tr>
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<td>What is your opinion about dyslexia?</td>
</tr>
<tr>
<td>TE5</td>
<td>What is your opinion about dyslexia?</td>
</tr>
<tr>
<td>TE6</td>
<td>What is your opinion about dyslexia?</td>
</tr>
</tbody>
</table>

1. Introduction

1.1. Who are twice-exceptional (2e) students with dyslexia?

Term twice-exceptional or 2e describes students who are both intellectually gifted (based on a standardized assessment) and also have high abilities. Students with dyslexia represent a specific group within this category.

1.2. Characteristics of 2e students with dyslexia

2e students with dyslexia manifest typical characteristics of dyslexia that are related to the problems in the acquisition of reading and writing skills and high abilities in specific areas. In the context of cognitive functioning, sometimes high abilities can mask symptoms of dyslexia, and differ from those of many students not recognized on time. Although there is no unique description of high abilities of 2e students with dyslexia, scientific and professional literature presents three specific abilities that are usually mentioned:

1. Innovative, creative and artistic thinking (e.g., original and creative thinking, 2013; artistic expression such as dancing, art or acting, Chakravarty, 2009);
2. Visual perception of events (Eide and Eide, 2012);
3. Visual perceptual processing (Birley et al., 1992);
4. Visual-spatial memory (Arnold, 2010);

It is important to note that students with dyslexia can also have above-average motor performance and focus on active sports (Berninger et al., 2005).

1.3 Teaching 2e students with dyslexia

Preservice teacher education significantly contributes to the formation of student’s beliefs about the characteristics of children with special educational needs, including twice-exceptional students with dyslexia. A belief that students with dyslexia have high abilities in some cognitive domains and that they also can be gifted is a significant predictor of future teachers’ ability to recognize such students and to build on their strengths rather than focus only on supporting them in domains that are challenging for them. Results of previous studies on this topic are often inconsistent and have informed and have positive beliefs about the possible giftedness of students with dyslexia (e.g., Wadlington, and Wadlington, 2005).

However, they do not feel prepared to teach 2e students generally (Rowan and Townsend, 2016).

2. The main goal of the study

The main goal of this paper is to present findings from a pilot study designed to evaluate the measurement characteristics of the Beliefs about the High Abilities of Students with Dyslexia Scale. In particular, we wanted to examine the factor structure and reliability of this scale. In addition, we wanted to examine the effects of experience on students’ beliefs about these abilities of students with dyslexia.

References

Acknowledgments

This work was supported by the Learning and Instruction Laboratory (http://www.uis.sk/) at Faculty of Education, University of Žilina, Faculty of Teacher Education. Authors are thankful for the time students invested in providing answers to the questionnaire and to their teachers who allowed data collection during their regular classes.

Summary

In the initial phase of Beliefs About High Abilities of Twice- Exceptional Children study, we piloted the first version of a scale focused on beliefs about students with dyslexia. A convenience sample of 159 students (97.5% female, Age: M=20.67, SD=1.67) from the Teacher Education Study Program at the University of Žilina, Faculty of Teacher Education participated in this pilot study. Students were asked to respond to a questionnaire necessary to socio-demographic information. We also analyzed results on a 15-item scale intended to measure beliefs about high abilities of twice-exceptional children with dyslexia. Preliminary results suggested that the questionnaire has some limitations in terms of reliability and validity. The exploratory component analysis provided evidence for a single construct measure with a tentative possibility for differentiation of two sets of items related to innovative, creative and artistic thinking from the set of items related with visual learning and processing abilities. Discriminant validity of these two sets needs to be further evaluated. Single construct scale demonstrated high reliability. Students from higher years of program study had significantly higher scale scores when compared to first years. Moreover, it indicates that positive beliefs about high abilities of twice-exceptional students with dyslexia became more prominent as students advance through study program.

3. Method

3.1. Participants

A convenience sample of 159 students of all academic years (97.5% female, Age: M=20.67, SD=1.67) from Teacher Education Study Program at the University of Žilina, Faculty of Teacher Education participated in this pilot study.

3.2. Measures

In the initial phase of construction of the Beliefs About High Abilities of Twice- Exceptional Children Scale, we piloted the first version of a scale focused on beliefs about students with dyslexia. Reliability and validity of this single construct scale online questionnaire was constructed. The questionnaire consists of a protocol with socio- demographic information items. The first phase of this study resulted in a scale of high abilities of Students with Dyslexia Scale. This scale consists of 15 items that examine to what extent students with dyslexia can be considered twice-exceptional students. In future phases, this scale is intended to be used to measure the high abilities of different academic domains (sports, colours, music, dance, art or acting).

3.3. Procedure

The survey was conducted at the beginning of the academic year 2019/20 through the online Limesurvey platform among students of all five years from the integrated bachelor and master Teacher Education Study Program at the University of Žilina, Faculty of Teacher Education. Students provided their responses during regular classes, using their smartphones. For students who could not access the questionnaire through smartphones, access was provided in the computer lab.

4. Results

Preliminary results indicated that the scale has satisfactory psychometric characteristics. The exploratory component analysis (Table 1: Scree plot with tentative support for a single factor structure) indicates that a single factor measure with a tentative possibility for differentiation of two separate sets of items: first related to innovative, creative and artistic thinking and second related to visual learning and processing abilities. Items with high loadings on these two factors are presented in the first and second factor loadings. The first item presents factor marker variable.

F1: Innovative, creative and artistic thinking (α=0.88)

TE10: expressing ideas and feelings

TE9: original and creative thinking

TE10: artistic expression (e.g. music, dance, drawing or acting)

TE5: research thinking/reflection

TE7: verbal processing (e.g. reading, writing)

TE4: visual learning and processing abilities (α=0.80)

TE2: visual memory (e.g. children’s drawings, memories)

TE9: visual-spatial reasoning

TE5: visual-spatial memory

TE6: visual representation of space

TE7: visual-spatial memory

TE8: organizations of sensations into a perceptual whole

TE13: visualizations in three dimensions

Discriminant validity and reliability of these two sets need to be further evaluated. Single construct scale demonstrated high reliability (Cronbach alpha= 0.9). The results of the descriptive analysis indicate that students have positive beliefs about the high abilities of students with dyslexia. Students from higher years of program study had significantly higher scale scores when compared to first years, indicating that positive beliefs about high abilities of twice-exceptional students with dyslexia became more prominent as students advance through study program.

5. Discussion and conclusions

The results of this preliminary study indicate a high level of future teacher students’ awareness of the high abilities of students with dyslexia. Students from different academic years indicate a significant impact of the university on their beliefs about dyslexia. A significant number of students believe that their future work program on their beliefs about the high abilities of students with dyslexia. To conclude, it should be pointed out that the context of twice-exceptional students with dyslexia is relatively new and not yet considered in special needs education. In the scientific approach to the measurement of investigational construct and additionally in illuminating future teacher’s beliefs about the nature of twice-exceptional students with dyslexia. Future studies, it is necessary to elaborate the existing scale items according to the proposed two-factor structure and to determine its discriminant validity. The research confirmed the importance of initial teacher education in creating positive beliefs about the high abilities of students with dyslexia. Students from different academic years, who have different opportunities in domains where these students can demonstrate their high abilities.