Dyslexia and Sight-reading:

Perceptions of Upper Woodwind Instrumental Students with Dyslexia and their Approach to Sight-reading

by

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Abstract

This qualitative hermeneutic phenomenological research study examines the sight-reading abilities and perceptions of eight to ten high school, dyslexic, upper woodwind students from locations in the United States. The study involves students sight-reading an etude that participants had not seen previously. Though studies featuring note reading and dyslexic students are well documented, the literature has not fully addressed this phenomenon among high-school-aged students and upper woodwind students, who regularly encounter the most technically challenging rhythmic figures. The study includes eight to ten dyslexic upper woodwind high school students sightreading the etude and observing their execution. Each student completed a survey and participate in an interview, verbalizing their experience with the effects of dyslexia on their reading ability. The goal of this study is to assist students in ascertaining more effortless tactics when given sightreading exercises. The findings identify student perspectives of dyslexia's effect on their musicianship and provide insight into a potential pedagogy beneficial for dyslexic students. Though findings are individual, each perception shows an opportunity for understanding dyslexic student learning behaviors.

Keywords: Dyslexia, sight-reading, woodwind, high school, etude, perspectives, pedagogy

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Dedication

I want to dedicate this thesis to my mother and father, who would have loved to have been here to see me achieve this goal. Your support of me is still felt today, and I know you would be proud. To my husband, Kirk, thank you for supporting me and encouraging me even when I wanted to give up. With your words came the drive and motivation I needed to keep going and make it to the end of this degree. Thank you to my family and friends for reminding me this was possible. I would not be who I am today without you all by my side. Lastly, I dedicate this to all students with dyslexia and other disabilities that this research will help. You can do anything you put your mind to and overcome obstacles with drive and determination.

Table of Contents

Abstract ..... *iii*

Acknowledgements ..... *iv*

Dedication ..... *v*

Chapter 1: Introduction of Topic *1*

Introduction **1**

Background of Topic **1**

Historical Background 1

Theoretical Background 4

Societal Background 8

Problem Statement **9**

Purpose Statement **11**

Significance of the Study **12**

Theoretical Significance 12

Empirical Significance 13

Practical Significance 13

Research Questions **14**

Hypotheses **14**

Core Concepts **14**

Definition of Terms **16**

Chapter Summary **17**

Chapter 2: Literature Review *19*

Introduction **19**

Generalized Dyslexia **20**

Positive and Negative Characteristics of Dyslexia **21**

Dyslexia in Schools **24**

Utilizing Color to Aid Students with Dyslexia 26

Support for Students with Dyslexia 26

Dyslexia in Music **28**

Sight-reading **30**

Typical Instructional Methods for Sight-Reading **32**

How Dyslexia Could Affect Sight-Reading **34**

Sight-reading Practices in Choral Versus Instrumental Ensembles **36**

Choral Ensembles 36

Instrumental Ensembles 38

Collaboration of Music Education and Special Education **40**

The Woodwind Family and Upper Woodwind Specification **41**

Chapter Summary **43**

CHAPTER 3: Methodology *46*

Introduction **46**

Study Design **46**

Questions and Hypotheses **49**

Participants **49**

Researcher Positionality **51**

Data Collection Plan **53**

Procedures **56**

Data Analysis **58**

Trustworthiness **60**

Trustworthiness and Credibility 60

Transferability 61

Dependability 61

Confirmability 62

Ethical Considerations 62

Chapter Summary **63**

Chapter 4: Presentation of Findings ***66***

Introduction **66**

Results of Study **66**

Description of Study Participants **66**

Researchers Observation of Excerpt Execution by Participants **69**

Participant Processing of Excerpt **71**

Smaller or More Prominent Picture 73

Clusters 76

How Dyslexia Helped or Hurt Their Sight-reading Attempt 78

Participant Advice to Music Educators 79

Final Thoughts from Participants 81

Addressing Research Question 1 82

Theme 1: Realistic Accuracy of Execution 82

Theme 2: Pattern Recognition 82

Theme 3: Understanding Their Limitations 83

Addressing Research Question 2 84

Theme 4: Structuring of Rehearsals 84

Theme 5: Patience and Understanding 84

Theme 6: Music Alteration 85

Chapter Summary 85

Chapter 5: Conclusion 87

Introduction 87

Discussion of Findings 87

Participant Processing of Excerpt 87

Challenges in Sight-reading 88

How Dyslexia Helps or Hurts Sight-reading 89

Insight for Music Educators 90

Final Thoughts 90

Conclusion 91

Implications **94**

Practical 94

Empirical 95

Theoretical 96

Limitations **97**

Recommendations for Future Study **98**

Chapter Summary **101**

Bibliography ***104***

Appendix A: IRB Approval ***111***

Appendix B: Generated Excerpts for Research Study ***112***

Appendix C: Survey Questions ***114***

Appendix D: Consent Document ***115***

Appendix E: Survey Interviews ***120***

Chapter 1: Introduction of Topic

Introduction

This qualitative hermeneutic phenomenological research study seeks to gain dyslexic high school upper woodwind students' perspectives concerning their approach to sight-reading. What a student sees, processes, and emotes through their instrument can reveal what limitations or advantages their disability has on their musical abilities. Though dyslexia may hinder some students' capabilities to sight-read, others have the potential to excel because of their disability. Since every student with dyslexia has a very individualized perspective, it is imperative that this study not show a positive or negative bias despite dyslexia being considered a disability. This research study focuses on the perceptions of high school upper woodwind students with dyslexia concerning sightreading and what strategies to implement to mitigate or enhance the effects of dyslexia on upper woodwind players' sightreading abilities.

Background of Topic

Historical Background

The International Dyslexia Association (IDA) defines dyslexia as a specific neurobiological disability and suggests that fifteen to twenty percent of the world's population has some form of dyslexia.[1] Dyslexia is a language-based learning disability attributed to a cluster of symptoms that result in difficulties with specific language skills, particularly reading.[2]

Dyslexia is a recognized disability in the Individuals with Disabilities Education Act 2004 (IDEA), Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act

[1] International Dyslexia Association, "Dyslexia Basics," (accessed February 15, 2024), http://www.interdys.org/ewebeditpro5/upload/BasicsFactSheet.pdf.

[2] Ibid.

(ADA). These acts, however, address rights protecting students from discrimination, not guidance on cultivating an inclusive, individualized curriculum. Additionally, segregated classrooms became inclusive classrooms as they would now be required to welcome students with disabilities and special educators into their classrooms, thus creating an inclusive model.[3] Although this is landmark legislation for inclusivity, it can put some students in a situation that makes them uncomfortable and afraid to perform or read aloud in front of their peers due to self-consciousness of their disability.

Dyslexia causes difficulties with accurate and fluent word recognition and poor spelling and decoding abilities.[4] This results from a deficit in the phonological component of language that is often unexpected given the performance of other cognitive abilities and the provision of effective classroom instruction.[5] Secondary consequences may include problems with reading comprehension and reduced reading experience, which can impede the growth of vocabulary and background knowledge.[6]

Sight-reading is the method of immediately reading a previously unseen piece of music. Generally, students have between thirty and sixty seconds to execute a sight-reading excerpt. This differs from the music certain students see daily, as most of their ensemble music is generally rehearsed or studied. Thomas W. Goolsby describes sight-reading, "The [sic.] performing musician decides which aspects of the notation, sequence, and the combination that the notation

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[3] R. B. Lewis, et al, *Teaching Students with Special Needs in General Education Classrooms* (London, England: Pearson, 2017), 19.

[4] About Dyslexia," International Dyslexia Association, accessed January 31, 2024, https://dyslexiaida.org/definition-of-dyslexia.

[5] Ibid.

[6] Ibid.

will formulate, derived from the notation itself - all according to the performer's skill at processing the information, and on his knowledge of style, structure, and expression."[7]

Connecting the definitions of both sight-reading and dyslexia sheds light on why dyslexic music students could struggle with executing sight-reading. Decoding and interpreting a fresh piece of music with minimal preparation time before execution could cause dyslexic students to panic, lose focus, or feel defeated if a strategic plan is not in place to address the missing connection in cognitive processing.[8] They know that they may not achieve the same outcomes as their peers,[9] however, music students with dyslexia possess both the ability to thrive or struggle in music study due to the cognitive nature that dyslexia imposes. There is a plethora of previously conducted of literature regarding dyslexia and reading, and dyslexia and music notation, but there is very little literature that documents the effects of dyslexia in sight-reading, and even less targeting sight-reading in high school upper woodwind musicians with dyslexia.

There are two different perspectives on whether sight-reading is a teachable skill. On the one hand, some view sight-reading as a teachable skill that can improve with training and practice. Among other researchers, Jennifer Mishra has investigated cognitive factors that may correlate with sight-reading ability, especially those with predictive power. Musicians differ in their ability to sight-read; some researchers ascribe the ability to innate talent, while others investigate sight-reading as an acquired skill.[10] Mishra's study focuses on sight-reading being "a skill that can be studied and

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[7] Thomas W. Goolsby, "Profiles of Processing: Eye Movements during Sightreading," *Music Perception: An Interdisciplinary Journal* 12, no. 1 (1994): 98, https://doi.org/10.2307/40285757.

[8] Kimberly A McCord, "Moving Beyond 'That's All I Can Do:' Encouraging Musical Creativity in Children with Learning Disabilities," *Bulletin of the Council for Research in Music Education*, no. 159 (2004): 30, http://www.jstor.org/stable/40319205

[9] Ibid.

[10] Jennifer Mishra, "Factors Related to Sight-Reading Accuracy: A Meta-Analysis," *Journal of Research in Music Education* 61, no. 4 (2014): 453, http://www.jstor.org/stable/43900223.

perfected with consistent practice and implementing proper strategic plans for execution within the pedagogy."[11]

Researchers Gary E. McPherson and John McCormick reinforce Mishra's claim that sight-reading is a teachable skill. They found indications that the level of cognitive engagement during musical practice may provide an essential but often disregarded key to improving practice and refining a student's overall musical skills, including sight-reading.[12] Common strategies for aiding dyslexic music students reading music include cultivating a sight-reading book containing color coding of notes, exercises with bolder and thinner note heads, timed practices utilizing segmentation of measures and rhythmic figures, pitch reading exercises, and symbol discrimination.[13] It is unclear if these strategies will help mitigate or alleviate the struggles of sight-reading, so further study is needed to target the methodology and strategy to help students with disabilities excel at sight-reading with a limited duration.

Theoretical Background

Music educators work with various students in their general music classes and ensembles without fully disclosing each student's ability or disability. Educators rely on their training and skillsets to teach a broad range of students and deliver curricular instruction to achieve the highest impact and success. Elizabeth Heikkila and Andrew Knight highlight that "music educators can help those students who exhibit dyslexic characteristics because music is a unique sensory stimulus." Many feel intimidated due to a lack of knowledge and training in music education and

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[11] Jennifer Mishra, "Factors Related to Sight-Reading Accuracy: A Meta-Analysis," *Journal of Research in Music Education* 61, no. 4 (2014): 453, http://www.jstor.org/stable/43900223.

[12] Gary E. McPherson, and John McCormick. "Motivational and Self-Regulated Learning Components of Musical Practice," *Bulletin of the Council for Research in Music Education*, no. 141 (1999): 99, http://www.jstor.org/stable/40318992.

[13] Sylvie Herbert, et al, "A Case Study of Music and Text Dyslexia," *Music Perception: An Interdisciplinary Journal* 25, no. 4 (2008): 371-372, https://doi.org/10.1525/mp.2008.25.4.369.

the dyslexic student, however.[14] B.S Jaarsma et al. reinforce this perspective when they state that music teachers need help, highlighting the lack of communication between resource teachers and music educators regarding learning and the resulting lack of knowledge regarding others' long- and short-term goals.[15] For music educators to develop a strategy for true inclusiveness and understanding of their dyslexic musicians, a study aiming to gain the perspective of high school upper woodwind students with dyslexia concerning their approach to sight-reading is warranted. What a student sees, processes, and emotes through their instrument can reveal much regarding the limitations or advantages of their disability on their musical abilities.

Upper woodwind students traditionally play flutes, piccolos, oboes, clarinets, and soprano saxophones. As the violinists of the band, they traditionally face fast rhythmic lines containing copious amounts of technical lines and rhythmic obstacles. As students prepare music at their leisure for a band performance or a private lesson, such as a Weber or Mozart Concerto, they have more time to prepare at their own pace. Sight-reading, especially in high-pressure situations such as auditions and competitions, poses more of a challenge for dyslexic students. Adi Lifshitz-Ben-Basat and Leah Fostick highlight their study, citing that "rapid temporal processing was the main difficulty in rhythm, pitch, and spectrum appears to be the main difficulty of dyslexic musicians. Performance and execution of music was poorer on quicker exercises versus slower exercises."[16] Additionally, dyslexic students may struggle with sightreading because, with music studied gradually or daily, they can write in markings, color-code, and bracket individual lines, and they may notate any other helpful information

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[14] Elizabeth Heikkila, and Andrew Knight, "Inclusive Music Teaching Strategies for Elementary-Age Children with Developmental Dyslexia," *Music Educators Journal* 99, no. 1 (2012): 54, http://www.jstor.org/stable/41692697.

[15] B. S. Jaarsma, et al, "Dyslexia and Learning Musical Notation: A Pilot Study," *Annals of Dyslexia* 48 (1998): 138, http://www.jstor.org/stable/23767893.

[16] Adi Lifshitz-Ben-Basat, and Leah Fostick, "Music-Related Abilities among Readers with Dyslexia," *Annals of Dyslexia* 69, no. 3 (2019): 330, https://www.jstor.org/stable/48691716.

to assist in a more effortless learning experience.[17] Because of the nature of sight-reading, nothing may be marked or edited, so students have a narrow period and lack the written notational tools to assist them in these situations.

Challenges with dyslexia in reading involve seeing words and letters backward, jumbling letters and sentences, and comprehending the words scattered and displaced when memorizing.[18] Unsurprisingly, dyslexic music students experience similar challenges regarding reading and interpreting music. Ganschow et al. reveal that reading notes backward, perceiving stems upside-down, and seeing a musical or rhythmic sequence out of order is typical for dyslexic musicians.[19] It can be more complicated for some students dealing with the disability: Ganschow et al. continue to elaborate, "When (a dyslexic student) played a sequence of notes and was asked to sing them backward, she could not do so because she seemed to 'deal with the notes as a block.'"[20] Perceiving music notation as clusters is a reality for dyslexic music students, and deciphering music can be challenging when they experience this impediment. O'Brien Vance also discusses, "Students with directional difficulties may have trouble with the concept of the pitch being 'raised' or 'lowered.' They may find that it makes more sense when they follow the line of music with their finger while singing or studying it."[21]

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[17]Kate O'Brien Vance, "Adapting Music Instruction for Students with Dyslexia," *Music Educators Journal* 90, no. 5 (2004): 27, https://doi.org/10.2307/3400020.

[18] Frank R. Vellutino, "Dyslexia," *Scientific American* 256, no. 3 (1987): 35-36, http://www.jstor.org/stable/24979338.

[19] Leonore Ganschow, Jenafer Lloyd-Jones, and T. R. Miles, "Dyslexia and Musical Notation," *Annals of Dyslexia* 44 (1994): 190, http://www.jstor.org/stable/23769692.

[20] Ibid, 189.

[21] Kate O'Brien Vance, "Adapting Music Instruction for Students with Dyslexia," *Music Educators Journal* 90, no. 5 (2004): 30, https://doi.org/10.2307/3400020.

Joyce Eastlund Gromko examines all students playing woodwind instruments at four high schools. The participants did not present with dyslexia or any other ability or disability to their knowledge. Still, she documents, "Giving students logical strategies for figuring out the spatial and temporal dimensions embodied in the musical notation before they attempt to perform will likely improve their reading and musical performance."[22] With all this evidence that dyslexia could impede a student's ability to excel at sightreading, the justification of this study involves more outstanding merit, as any findings could develop a method for dyslexic students struggling with sightreading to have less difficulty in the future.

This disability, in some cases, may also enhance a student's sight-reading ability. Eide and Eide highlight, "Several published research studies support the idea that individuals with dyslexia show special talents for finding similarities and likenesses."[23] Suppose dyslexic students excel at identifying similarities: their disability could bode favorably for their sight-reading ability. Matthew H. Schneps indicates, "People with dyslexia can distribute their attention far more broadly than typical readers, successfully identifying letters flashed simultaneously in the center and the periphery for spacings much further apart."[24] This implies musicians with dyslexia could have an easier time looking at the oversized picture in sight-reading, such as key signatures, time signatures, and overall rhythmic patterns, which students without dyslexia tend to miss as they browse the excerpt. This is a positive attribute for examining sight-reading from the viewpoint of dyslexia positively influencing the student's musical journey.

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[22] Joyce Eastlund Gromko, "Predictors of Music Sight-Reading Ability in High School Wind Players," *Journal of Research in Music Education* 52, no. 1 (2004): 13, https://doi.org/10.2307/3345521.

[23] Brock L. Eide and Fernette F. Eide, *Unlocking the Hidden Potential of the Dyslexic Brain,* (New York, NY: Plume Books, 2023), 135.

[24] Matthew H. Schneps, "The Advantages of Dyslexia," Scientific American, Accessed February 8, 2023, https://www.scientificamerican.com/article/the-advantages-of-dyslexia.

Societal Background

Since dyslexia is a life-long disability, it is clear why dyslexic music students, on average, tend to experience challenges with reading music.[25] Students may require more time to learn and execute a piece of music than their colleagues, leading to a lack of confidence as they pursue various musical endeavors. Common perceptions that dyslexic students also experience include frustration, exacerbation, and struggling to discern notes on a staff, excelling at pattern recognition, utilizing working memory as an intensifier for interval depiction, and strength in analyzing style and character.[26] Exploring details of their disability's effect on reading and music is crucial to ascertaining how dyslexic students experience learning adequately.

One issue that educators experience is not having an awareness of individuals who have disabilities such as dyslexia residing in their classroom and struggling. Some students will not want to reveal their disability, making it more difficult for researchers and teachers to help them. McCord and Fitzgerald emphasize, "Most children with disabilities try to hide their disabilities and worry about other students making fun of them. The classroom must be a safe place where students can focus on learning to play an instrument without worrying about labels."[27] The more educators know about dyslexia's effect on students, the more the process will help them develop a sympathetic approach and apply valuable strategies. It will also help students feel more comfortable performing around their peers.

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[25] Kate O'Brien Vance, "Adapting Music Instruction for Students with Dyslexia," *Music Educators Journal* 90, no. 5 (2004): 28, https://doi.org/10.2307/3400020

[26] Brock L. Eide and Fernette F. Eide, *Unlocking the Hidden Potential of the Dyslexic Brain,* (New York, NY: Plume Books, 2023), 66-67.

[27] Kimberly McCord and Margaret Fitzgerald, "Children with Disabilities Playing Musical Instruments," *Music Educators Journal* 92, no. 4 (2006): 51, https://doi.org/10.2307/3401112.

The music classroom cultivates a broad range of abilities among students without disabilities. Inclusivity within the music classroom is imperative, as garnering a safe place to share music with other students is a beneficial outlet. Though dyslexia may potentially affect students differently, research must address what dyslexic high school upper woodwind band students experience in their music education. Some results could yield similar, well-documented outcomes, but some may enlighten the pedogeological and research communities with new impediments to troubleshooting. This study is structured to highlight the positive and negative ramifications of dyslexia in the music community.

This study will seek to obtain the perspectives of eight high school upper woodwind students nationwide to participate and garner a greater understanding of what they see and experience daily and when asked to sight-read. Having this information is beneficial not only for students with dyslexia and their educators but also for students who may be undiagnosed or be too afraid to be forthcoming with their disabilities. The benefit of tangible resources is the ability for anyone to access them, even anonymously. Whether these eight individuals realize it or not, their feedback and answers within the study could yield endless possibilities for future generations of dyslexic students, families, and community members.

Problem Statement

Though numerous studies exist regarding dyslexia and reading music, few have addressed this age group of upper woodwind high school students with this complexity of sight-reading. Sight-reading is crucial in high-school music students' development and musical independence, as auditions, competitions, and concert band music all require this skill.[28] Some dyslexic students experience deficits in both pitch and rhythm processing, making pieces like this hard to execute in

[28] William I. Bauer, "The Relationship Between Rehearsal Procedures and Contest Ratings for High School Bands," *Contributions to Music Education*, no. 20 (1993): 34, http://www.jstor.org/stable/24127329.

a small amount of time.[29] Additionally, sight-reading evinces several components of music literacy that may contribute to life-long music making, which teachers and researchers have historically considered a primary goal of music education.[30] Upper woodwind students who play flute, oboe, clarinet, and soprano saxophone often play complex musical passages to sight-read, as they are the "violins" of the band.[31] Additional research is necessary to address the gap between students with dyslexia and these quick-tempo sight-reading exercises. Sight-reading proficiency may affect student placement in ensembles, success at auditions and competitions, and musical self-esteem, which are critical to a student's continued music participation. Research also must examine dyslexic students who could excel at sightreading due to their dyslexia and develop strategies and exercises to aid and benefit other dyslexic students. The problem is that the literature has not fully addressed sight-reading regarding high school upper woodwind students with dyslexia and the technical caliber of music they sight-read.

Students with dyslexia present with cognitive issues regarding decoding and processing information. More specifically, G. Reid Lyon et al. mentions that dyslexia causes "difficulties with accurate and fluent word recognition and poor decoding abilities. These difficulties result from a deficit in the phonological component of language that is often unexpected about other cognitive abilities and the provision of effective classroom instruction."[32] John Rennie references

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[29] Marie Forgeard, et al. "The Relation Between Music and Phonological Processing in Normal-Reading Children and Children with Dyslexia," *Music Perception: An Interdisciplinary Journal* 25, no. 4 (2008): 388, https://doi.org/10.1525/mp.2008.25.4.383.

[30] Timothy A. Paul, "Sight-Reading Requirements at Concert Band Festivals: A National Survey," *Contributions to Music Education* 37, no. 1 (2010): 51, http://www.jstor.org/stable/24127268.

[31] Joseph Manfredo, "Albert Austin Harding and His Influence on the Development of the Instrumentation of the American Collegiate Wind Band," *Bulletin of the Council for Research in Music Education*, no. 125 (1995): 67, http://www.jstor.org/stable/40318726.

[32] G. Reid Lyon, et al. "A Definition of Dyslexia," *Annals of Dyslexia* 53, no. 1 (2003): 2, http://www.jstor.org/stable/23764731.

additional cognitive insight regarding dyslexia, stating "several lines of evidence further suggests that the root cause for much dyslexia is a problem with processing very rapidly changing sensory stimuli. Since students with dyslexia present with cognitive issues regarding these characteristics, sight-reading could be problematic in ensemble and individual practice settings, as it is generally limited to thirty to sixty seconds in an audition or competitive atmosphere.[33] The process of sightreading may be too brisk for some dyslexic students to handle, leading to difficulty in successfully executing this skill.

Purpose Statement

This qualitative hermeneutic phenomenological research study addresses the gap in the literature, exposing differing perceptions of high school upper woodwind students with dyslexia and their approach to sight-reading. Sight-reading is the unrehearsed performance of notated music, typically limited to thirty to sixty seconds of study before execution.[34] Eight participants fulfilling the target demographic of a high-school dyslexic flutist, clarinetist, oboist, or saxophonist will perform the following: sightread an etude generated by the software program Sight-Reading Factory; interview the student post-execution of the etude with a set of pre-determined questions generated for the study; be asked to offer insight as to what educators could to do better assist dyslexic musicians excel despite their disabilities; and have their respoines compiledto pinpoint strategies to air in curricular changes in approaches to music reading and sight-reading. The students participating in this study are as follows: a senior clarinetist from Georgia, a senior oboist from Georgia, a junior clarinetist from Georgia, a sophomore flutist from

[33] Alexandra A. Lauterbach, Yujeong Park, and Linda J. Lombardino, "The Roles of Cognitive and Language Abilities in Predicting Decoding and Reading Comprehension: Comparisons of Dyslexia and Specific Language Impairment," *Annals of Dyslexia* 67, no. 3 (2017): 213, https://www.jstor.org/stable/48693780.

[34] Marjaana Penttinen, and Erkki Huovinen, "The Early Development of Sight-Reading Skills in Adulthood: A Study of Eye Movements," *Journal of Research in Music Education* 59, no. 2 (2011): 197, http://www.jstor.org/stable/23019485.

Texas, a sophomore clarinetist from New Jersey, a freshman saxophonist from South Carolina, a freshman oboist from Florida, and a freshman clarinetist from Georgia.

Significance of the Study

Theoretical Significance

Sight-reading is standard practice within music education, as it is a part of daily music classes, auditions, and competitions, however, there exists a gap in the literature regarding how students with dyslexia experience different cognitive processes when being asked to execute a musical excerpt with a thin margin of time. Kenneth Saxon remarks, "A good sight-reader will keep their eyes moving forward and never backward, and those eyes must focus on the printed notes and constantly look ahead."[35] Dyslexic students experience a delay in ocular processing, return sweep inaccuracies, and frequent right-to-left scanning, which are oculomotor scanning disorders[36] that can cause great difficulty executing what Saxon describes above. This study ascertains a strategy to identify a successful implementation method so that this disability does not hinder their musical careers. Surveying to aid in extending the literature on dyslexia and music notation by honing in on a demographic of students who experience rapid sight-reading exercises daily will provide students with a potential resource for both students and teachers to utilize. Compiling results can also be a tangible resource for students to practice refining this skill set, aiding in more confidence and less anxiety about sightreading with peers and under high-pressure situations.

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[35] Kenneth Saxon, "The Science of Sight Reading," *American Music Teacher* 58, no. 6 (2009): 22, http://www.jstor.org/stable/43544823.

[36] Keith Rayner, "Eye Movements, Perceptual Span, and Reading Disability," *Annals of Dyslexia* 33 (1983): 168, http://www.jstor.org/stable/23769382.

Empirical Significance

Upper woodwind students in their high school years frequently sight-read swift tempos and technically challenging musical passages with little preparation time, putting strain or stress on students who process cognitive information differently. This study employs eight high school upper woodwind students with dyslexia to understand better what they experience when given a piece of music for the first time. Students will sight-read an etude, verbally describe what they experienced, and answer questions to formulate better what musicians with dyslexia encounter. That data will be collected and studied to ascertain what problem-solving tactics could aid students with this disability.

Resources and strategies to aid in understanding and executing sight-reading could be put in writing for students to utilize as they see fit. Possible tangible resources for students could include method books designed to help a student with dyslexia read and process information more accessible and written strategies in the text that students could study before having to sight-read. Escalating the realm of possibilities could even include Sight Reading Factory producing special sight-reading exercises for students with dyslexia to help them prepare for the live experience.

Practical Significance

Music educators strive to provide equal opportunities for all students to embrace and understand their curriculums. This study could serve as a resource for educators to embrace students with learning disabilities and help them feel more central in their classes. Additionally, this study may serve to garner a methodology by which students who struggle with sight-reading could articulate how they process sightreading, leading to a method to help them in the future or garner tips and tricks from students who thrive due to their dyslexia and what they latch on to in their execution of the excerpt. A better understanding of any one situation will provide further

information, documentation, and tangible resources on other factors that influence sightreading outcomes and assist educators in ascertaining a more thorough understanding of the traits of this disability.

Research Questions

RQ1: What are the perceptions of high school upper woodwind students with dyslexia concerning sight-reading?

RQ2: What strategies can teachers implement to mitigate or enhance the effects of dyslexia on upper woodwind players' sight-reading abilities?

Hypotheses

H1: Students with dyslexia experience tasks like sight-reading very differently, from cumbersome and challenging to excelling due to utilizing identifying patterns and processing the larger picture rather than the minute details. Sharing a disability does not equate to a similar cognitive output.

H2: Pattern recognition strategies will mitigate and enhance the effects of sightreading on a dyslexic high school student's sight-reading ability.

Core Concepts

The premise for teaching a student how to sight-read accompanies utilizing their time to search for similar rhythmic patterns and scalar similarities is one that is recited daily in applied instrumental pedagogy, such as a Baermann scale study for clarinetists. Sight-reading involves identifying major and minor scales, arpeggios, and chromaticism and dissecting rhythmic patterns that reappear. Being able to recognize and retain key signatures, time signatures, and syncopated and repetitive rhythmic figures, which students without disability tend to miss under pressure,

does not derail students who excel at identifying these features in their timed examination of the excerpt.

Since woodwind instruments traditionally face passages containing quick tempos, it is necessary to have a visual understanding of what they encounter to understand the obstacles students with dyslexia may experience.

Removed to comply with copyright: Sir Arthur Sullivan, "Pineapple Poll," based on The Bumboat Woman's Story, arr. and Charles Mackerras, (London: G. Alfred Publishing, 1951).[1]

The excerpt above captures the first clarinet part from *Pineapple Poll,* composed by Sir Arthur Sullivan and arranged by Charles Mackerras. With a tempo of quarter-note equals 132 beats per minute, the pacing of execution will be quite brisk. This band excerpt contains various rhythmical patterns such as sixteenth notes, grace notes, which are musical embellishments, and fluid thirty-second notes spanning a multiple-octave range of the instrument. Writings such as this make executing a passage of this magnitude have the potential to be a challenge for a dyslexic student to handle with a time constraint. Though there are identifiable scalar passages to latch on to, there is also an abundance of leaps and irregular patterns that pose a challenge. It is possible that a

student could look at this excerpt and immediately shut down, leading to a lapse in confidence and causing a student to lose motivation to continue with the audition or competition that they are performing in.

It would behoove students with dyslexia to pursue outlets to help combat anxiety experienced by sightreading. Propranolol, commonly referred to as a beta-blocker, is a prescription drug increasingly used by symphony and opera musicians to eliminate symptoms of performance anxiety. This medicine and other beta-blocking drugs compete with the adrenaline-like chemicals on cells and block physiological effects associated with anxiety, such as rapid heartbeat, tremors, and sweating.[37] Several professional musicians utilize this for performance anxiety daily, but this could be an effective tool to lessen the effects of anxiety caused by dyslexia. Primary care physicians are well-versed regarding the use of propranolol in these situations, and said physicians should directly prescribe it before any student utilizes these drugs.

Definition of Terms

1. (ADA) Americans with Disabilities Act: A law that prohibits discrimination against people with disabilities in several areas, including employment, transportation, public accommodations, communications, and access to state and local government programs and services.
2. Dyslexia: A specific learning disability that is neurobiological in origin; a language-based learning disability attributed to a cluster of symptoms resulting in people having difficulties with specific language skills, particularly reading.[38]

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[37] Jacquelyn Slomka, "Playing with Propranolol," *The Hastings Center Report* 22, no. 4 (1992): 13, https://doi.org/10.2307/3563017.

[38] International Dyslexia Association, "Dyslexia Basics," Accessed February 15, 2024, http://www.interdys.org/ewebeditpro5/upload/BasicsFactSheet.pdf

3. (IDA) International Dyslexia Association: A non-profit education and advocacy organization devoted to dyslexia-related issues.
4. (IDEA) Individuals with Disabilities Education Act 2004: A law that makes free appropriate public education available to eligible children with disabilities nationwide and ensures special education and related services.
5. Sight-reading: The unrehearsed performance of notated music, typically limited to thirty to sixty seconds of study before execution.[39]
6. Upper-Woodwind Instruments: A group of instruments belonging to the woodwind family; these instruments are higher-pitched and comprise the flute, oboe, clarinet, and saxophone, with auxiliary upper-woodwind instruments such as the piccolo, e-flat clarinet, and soprano saxophone.

Chapter Summary

Chapter One introduces and defines dyslexia and how it affects almost a fifth of the population worldwide. Inevitably, music educators teach many students with a wide range of abilities and disabilities, whether they know that student's presence or not. Music educators would benefit from a new conceptual teaching model that meets the increasing burden of their statutory responsibilities. Additional research is necessary to investigate how parents, professionals, and adolescents can collaborate to implement, plan, and evaluate academic and effective interventions for dyslexic students.[40]

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[39] Marjaana Penttinen, and Erkki Huovinen, "The Early Development of Sight-Reading Skills in Adulthood: A Study of Eye Movements," *Journal of Research in Music Education* 59, no. 2 (2011): 197, http://www.jstor.org/stable/23019485.

[40] Louise Long, et al, "Supporting Students with Dyslexia at the Secondary Level: An Emotional Model of Literacy," *Journal of Adolescent & Adult Literacy* 51, no. 2 (2007): 126, http://www.jstor.org/stable/40021842.

This chapter also discussed how copious studies focus on dyslexia and reading, as well as dyslexia and music notation. The gap in the literature concerns students with dyslexia's sight-reading skills at the high school level, which tends to be fast-paced and technically demanding. Students in high school also experience a more complex level of sight-reading, and upper woodwind students typically ensure the most difficult sight-reading passages, as they are the violins of the band. Gaining a greater understanding of this demographic of students is vital for the students to learn to enhance and mitigate the effects of sight-reading and for educators to have better strategies to assist dyslexic students in their musical endeavors.

Lastly, this chapter introduces the need for the qualitative hermeneutic phenomenological study and the demographic of its participants. It also introduces the study's methodology, implementation, and strategy for garnering results. There is significant evidence that this demographic of students lacks documentation in the literature, so this study has the potential to reveal groundbreaking ideas and strategies to aid educators and students in managing their disability while still excelling at music. This chapter highlights this study's potential for the music education community to continue to craft music education to be practical and tangible for all students, regardless of their disabilities.

Chapter 2: Literature Review

Introduction

Sight-reading is crucial for learning a musical instrument and advancing as a musician. From the time a student begins music, group lessons in school involve reading whole notes "at sight" and learning fingerings corresponding to what they read. Developing this particular skill and the ability to read music efficiently is typically among the main topics of musical tuition.[41] There are copious studies regarding strategic devices to help students excel at sight-reading, however, many do not consider the various disabilities that a student may possess, translating to a deficiency in developing this crucial skill.

The purpose of this qualitative hermeneutic phenomenological research study is to identify perspectives that have not yet been thoroughly explored and documented concerning the experiences and perceptions of high school upper woodwind students with dyslexia and identify the key factors in which they either struggle or excel in their sight-reading skillsets. Perspectives are needed to cultivate a strategy for music educators to offer these students ample opportunities and execution tactics that other students can possess more naturally. Music teachers need to have effective methods of helping their students become more accomplished sight-readers. Despite the oft-professed importance of sight-reading, there is a relatively limited understanding of the complex skill of reading and performing music at first sight or how to teach proficient sight-reading.[42]

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[41] Marjaana Penttinen and Erkki Huovinen, "The Early Development of Sight-Reading Skills in Adulthood: A Study of Eye Movements," *Journal of Research in Music Education* 59, no. 2 (2011): 197, www.jstor.org/stable/23019485.

[42] Christine R. Russell, "Effects of Pitch and Rhythm Priming Tasks on Accuracy and Fluency During Sight-Reading," *Journal of Research in Music Education* 67, no. 3 (2019): 253, https://www.jstor.org/stable/48595533.

Generalized Dyslexia

The field of education has constructed numerous vague, ambiguous, and nonvalidated descriptions of the dyslexia, despite the significant role a solid definition should play in the scientific and clinical understanding of it.[43] At first glance, the disability was considered a reading disability where words were jumbled out of order and failed to offer more than a blanket concept. This early definition did not provide objective guidelines and criteria for distinguishing individuals with dyslexia from those with other primary handicaps or generalized learning difficulties.[44] Over time, however, studies have offered more guidance to educators and people who suffer from this disorder to help them understand why this disability plagues them. One possibility is that people with dyslexia face impairments such as deficiencies in language, raising the question of problems in auditory processing. It could be that their auditory sensory, or echoic, memory is deficient, which would mean the auditory trace is dissipated faster in poor readers than in ordinary readers.[45]

Some scientists have taken a conflicting approach that suggests that reading disability may be associated with several different neurologic disorders, each of which underlies one or another of the fundamental processes involved in learning to read. Such a view implies an array of neurologic disorders characterized by visual deficits, language deficits, deficiencies in crossmodal transfer, and so forth. Although a reading disability may result from several factors, the cause in an otherwise normal child would seem more circumscribed.[46] Offering yet a third viewpoint, MacDonald Critchley views dyslexia as a "crisper and grammatically more flexible term, but it indicates that we are dealing with a

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[43] G. Reid Lyon, "Toward a Definition of Dyslexia" *Annals of Dyslexia* 45 (1995): 4, http://www.jstor.org/stable/23768173.

[44] Ibid, 4.

[45] Frank R.Vellutino, "Dyslexia," *Scientific American* 256, no. 3 (1987): 37, http://www.jstor.org/stable/24979338.

[46] Ibid, 38.

syndrome which is something more than an isolated defect in reading." He explains that it potentially "subsumes delay in learning to tell the time, muddled serial thinking transcending the letters of the alphabet, and gross inaccuracy in spelling, referencing dyslexia as a "specific spelling disability."[47]

It is clear that, though these definitions are from writings spanning the 1970s through the 1990s, pinpointing the source of dyslexia is an ongoing uncertainty that has plagued scientists and researchers for decades. A more modern approach from 2020 highlights that the challenge to science, educational practice, and social equity is that many academics, clinicians, teachers, lawyers, and parents consider dyslexia a diagnosable but often unrecognized or hidden condition encountered only by some individuals with severe decoding problems.[48] Students with dyslexia may be under the same category of disability, but there are an array of different symptoms and obstacles that students will experience.

Positive and Negative Characteristics of Dyslexia

Students do not have the same experience with dyslexia. Some suffer when it comes to reading comprehension while others utilize the disability and excel. Dyslexia is a genuinely individualized disability, and though students with dyslexia elicit similar behaviors, it is clear that not every student experiences the disability the same way. Identifying both the positive and negative attributes of the disability helps researchers and educators learn more about dyslexia, strengthening their ability to relate to their students.

It is essential to mention students' positive outcomes in their journey with dyslexia. One broader range approach some teachers have taken is to not over-associate students with dyslexia,

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[47] MacDonald Critchley, "Dyslexia," *The British Medical Journal* 1, no. 6003 (1976): 217, http://www.jstor.org/stable/20408417

[48] Julian G. Elliott, "It's Time to Be Scientific About Dyslexia," *Reading Research Quarterly* 55 (2020): S62, https://www.jstor.org/stable/48587604.

making them feel a sense of normalcy with their peers. Teachers and parents hold significantly lower educational expectations for students with a learning disability than they do for students who do not fall into this category. These lowered expectations come with labeling, and students also have lowered expectations for themselves. When labeling is not associated with a student, they are more confident in their abilities and can excel despite their disability.[49]

Another advantage students with dyslexia excel positively in the classroom is how their disability affects the way their brain processes information. Researchers have found that dyslexic individuals have increased right-hemispheric processing. At first glance, this would be a negative attribute since this could cause difficulty reading and reading at a slower pace,[50] however, heavy right-hemispheric processing has other advantages for learners. The right hemisphere activates broader advantages, such as more distant word definitions, synonym and antonym relationships, irony and humor, and identifying underlying themes. Though activation may still be slower, it helps the student comprehend the holistic concept sooner, such as ascertaining joke punchlines, stories, social cues, inconsistencies, and metaphors.[51] Some of these characteristics are beyond a student's age and maturity, and their ability to potentially excel at some of these attributes helps to provide a positive outlook on their disability.

Though this disability can have positive characteristics for students with dyslexia and their reading capabilities, there is also an array of negative characteristics associated with dyslexia. Students with dyslexia tend to struggle with reading and spelling and possess phonological problems.

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[49] Dara Shifrer, "Stigma of a Label: Educational Expectations for High School Students Labeled with Learning Disabilities," *Journal of Health and Social Behavior* 54, no. 4 (2013): 475, http://www.jstor.org/stable/43186869.

[50] Brock L. Eide and Fernette F. Eide, *Unlocking the Hidden Potential of the Dyslexic Brain,* (New York, NY: Plume Books, 2023), 36.

[51] Ibid, 39.

Furthermore, adults with dyslexia can struggle with verbal long-term memory and arithmetic.[52] Students also suffer from what Samuel T. Orton called strephosymbolia, or "twisted symbols, where there is confusion in recalling the direction of reversible letters, such as b and d, and will reverse symbols by reading 'on' for 'no;' 'left' for 'felt,' and 'snow' as 'sown.' Reversal in syllables is also possible, with students with dyslexia reading 'who saw' for 'how it was.'"[53] There are additional issues regarding students with dyslexia and word association and verbalization. A student's verbal performance can be marred by the inability to name an item properly, also known as anomia. Students may say 'that kitchen thing' for the stove or 'that office thing' for the desk. Anomia could also hinder the ability to name a numeral correctly: another dyslexic characteristic is difficulty in arithmetic. Anomia may also be involved in the instability of naming orientation symbols.[54] With all these characteristics associated with the dyslexic brain, it is no wonder some students suffer academically with this particular disability.

In some cases, educators will encounter students who are both gifted and dyslexic, so creativity is an important domain to foster. Knowledge of a student and their individualized earning strengths will complement what teachers already know is highly effective: a multisensory approach in a therapeutic climate that is structured, sequential, cumulative, and thorough. Teachers overlook the ability of bright dyslexic children to think independently, elaborate a storyline, express their feelings in drawings, put themselves intuitively into another pair of shoes, and understand the internal workings of things.[55]

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[52] Wim Tops, et al., "Identifying Students with Dyslexia in Higher Education," *Annals of Dyslexia* 62, no. 3 (2012): 187, http://www.jstor.org/stable/23764671.

[53] Dorothea V. Kaschube, "Dyslexia: A Language Disorder," *Anthropological Linguistics* 14, no. 9 (1972): 341, http://www.jstor.org/stable/30029116.

[54] Ibid, 344.

[55] Edith (Dee) Bird LeFrance, "The Gifted/Dyslexic Child: Characterizing and Addressing Strengths and Weaknesses," *Annals of Dyslexia* 47 (1997): 164, http://www.jstor.org/stable/23768098.

Teachers are responsible for enhancing students' educational experiences and exposing their gifts so that they genuinely thrive inside and outside the classroom.

Dyslexia in Schools

With years of confusion surrounding the cause of dyslexia, teachers have spent decades lacking concrete information on the inclusion of students with dyslexia and how to incorporate them into curriculums without drawing attention to their disability. Despite the prevalence of dyslexia, numerous people around the globe remain undiagnosed, untreated, and silently grapple with the disability. [56] If a student is undiagnosed and unaware of their disability, they can not ask for help or may suffer by being labeled as "less advanced." With this in mind, it is also important to strategize how teachers can identify students potentially struggling with the disorder unbeknownst to them.

The first step to students with dyslexia excelling in the classroom is firm communication and collaboration with teachers and parents. Being communicative when something does not seem right with the student will, in the long run, be beneficial to them, however, as one parent speaks of her son's experience, this is easier said than done. This parent says the following in this regard:

> Dealing with learning disabilities or other handicaps creates reactions in those affected as if a serious illness were present. I have no qualifications for dealing with the psychological implications of illness; on this issue, however, had I known years ago the impact that dyslexia can have on families, I think I would have become a better parent or at least could have reduced friction and anxiety at home and in school for my child.[57]

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[56] Julian G. Elliott, "It's Time to Be Scientific About Dyslexia," *Reading Research Quarterly* 55 (2020): S63, https://www.jstor.org/stable/48587604.

[57] Leonard J. Hartwig, "Living With Dyslexia: One Parent's Experience," *Annals of Dyslexia* 34 (1984): 314, http://www.jstor.org/stable/23769525.

Parents are just as unprepared to handle this disability, so proper identification strategies need to be implemented to look for signs of dyslexia from a young age, ensuring student success.

Research has proven that researchers and educators disagree staunchly on assessing and working with students with dyslexia. One article points to a fascinating framework between the perspectives of the medical field or a handful of scholars, the "medical perspective," and other scholars and educators, the "educational perspective." Table 1 below shows contrasting viewpoints in each perspective approach and opinions regarding students with dyslexia and their roles in the educational system.

Table 1. Medical Perspective vs. Educational Perspective

Medical Perspective	Educational Perspective
Search for a single etiological factor.	Seek a combination of causes.
Greater focus on language-related areas.	More considerable emphasis on reading skills.
More focused on a blanket concept.	Focused on multiple concepts.
Focuses chiefly on disabled children.	Focused on adjusting to an inclusive curriculum.

Source: Janet W. Lerner, "A Thorn by Any Other Name: Dyslexia or Reading Disability," *Elementary English* 48, no. 1 (1971): 79, http://www.jstor.org/stable/41386842.

Though most educators are more like-minded regarding their approach to working with students with dyslexia, it is clear that not every mindset shares the same ideals and approaches to the tutelage of students with this ability.

Identifying students with dyslexia has been more successful in the modern climate, but they are still on the latter side of their educational journeys. In 2000, approximately 17% of U.S. school-age children fell into the category of a person with dyslexia. When a comprehensive evaluation indicates a diagnosis of dyslexia, teachers have taken steps such as offering reading assignments in audio formats,

providing extra time for tests and homework, recording lessons, and even customizing learning aids with digitalized software.[58] Although the incorporation and execution of lessons in schools have improved, especially with the age of technology, too many students are still not being diagnosed early enough. Further research must address this problem for students, parents, and students alike.

Utilizing Color to Aid Students with Dyslexia

Studies suggest that incorporating color into lessons can aid students with dyslexia with reading comprehension and overall success in the classroom. First, adding color to instructional materials increases students' attention to the curricular material, increasing their overall focus. Other studies in visual processing provided evidence that color stimuli result in more neural activity than achromatic stimuli. This may reinforce the learning process, suggesting that problems occur in learning when different cortex areas stimulate simultaneously and more neural networks become involved.[59] The color does not have to be evident to the entire class, as textbooks, materials, articles, and designated homework are provided for students with dyslexia to utilize privately. Having resources like this readily available in the classroom can lead to increased success for students who grapple with this disability.

Support for Students with Dyslexia

Students with dyslexia can feel a wide range of emotions as they process the individualized characteristics of their disability. Students with dyslexia are often the target of bullies, especially if their condition is more elevated and evident to their peers. Bullying and academic struggles could result in low self-esteem. It might be helpful to gently remind a student with dyslexia struggling in class that the

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[58] Michael E. Bratsis, "Health Wise: Helping Students Cope With Dyslexia," *The Science Teacher* 83, no. 4 (2016): 12, http://www.jstor.org/stable/44159472.

[59] George L. Rogers, "Effect of Colored Rhythmic Notation on Music-Reading Skills of Elementary Students," *Journal of Research in Music Education* 44, no. 1 (1996): 16,. https://doi.org/10.2307/3345410.

condition does not mean they cannot achieve academic success.[60] Positive reinforcement from educators, peers, and family will help students with dyslexia garner a greater sense of confidence and excel in their classes.

Since not all educators are well versed in how to handle students with dyslexia, some educators still cling to a blanket approach in incorporating students with disabilities into their curriculums. This disadvantages students, as they may feel uncomfortable speaking up or contacting the educator if there is a problem. Teachers would benefit from a new conceptual model for teaching that meets the increasing burden of their statutory responsibilities. Additional research is necessary to investigate how parents, professionals, and adolescents can collaborate to implement, plan, and evaluate academic and effective interventions for this group of students.[61] Administrators need to be mindful of this fact and should support the implementation of professional development workshops to help educators support their students with disabilities.

There must also be an emotional factor that educators need to consider. Empathy accomplishes much in gaining a student's trust, especially if they view their disability as a vulnerability. Results from the small-scale survey supported these arguments, suggesting that students with dyslexia internalize feelings of failure as a result of their dyslexia and not as a result of their lack of effort or commitment. Therefore, teachers must address and explore the negative perceptions held by students and the positive resources and offer an empathetic and encouraging support system for them.[62] Having an educator indicate that there is full support behind the student instills the confidence a student with dyslexia may need to excel and not focus on their vulnerabilities.

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[60]Michael E. Brastis, "Health Wise: Helping Students Cope With Dyslexia," *The Science Teacher* 83, no. 4 (2016): 12, http://www.jstor.org/stable/44159472.

[61] Louise Long et al., "Supporting Students with Dyslexia at the Secondary Level: An Emotional Model of Literacy," *Journal of Adolescent & Adult Literacy* 51, no. 2 (2007): 126, http://www.jstor.org/stable/40021842.

[62] Ibid, 131.

Dyslexia in Music

Given the struggles that students with dyslexia experience with reading, neurological processing, and word processing, the disability can affect reading music. Thankfully, studies continue to target younger music students with developmental dyslexia and how music educators have been able to incorporate this demographic of students into their classrooms.

Developmental dyslexia is an unexpected reading difficulty in children and adults who otherwise possess the intelligence, motivation, and schooling necessary for accurate and fluent reading.[63] Understanding how the mind of a student with developmental dyslexia processes information allows music educators to curtail both teaching and classroom arrangements. Since students with developmental dyslexia may struggle with concentration, appropriate classroom placement is crucial to ensuring their success. For example, they placed a child with developmental dyslexia next to a robust and helpful singer in their general music class. Through this minor adjustment in placement, the musically strong child can assist his or her peer with musical activities, lyric memorization, classroom procedures, and instrument care.[64]

The next step to ensuring success for students with dyslexia is to present materials to them with their disability in mind. Some key factors to aid in student success are making the text visible and enlarging it for added legibility, printing on colored paper since black and white paper could cause clusters or glare, and color coding notes and lyrics.[65] An educator must remember that every student with dyslexia will process music differently, so offering an abundance of

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[63] W.A. Lishman, "Developmental Dyslexia," *Journal of Neurology, Neurosurgery & Psychiatry* 2003;74**:**1603, https://jnnp.bmj.com/content/74/12/1603.

[64] Elizabeth Heikkila and Andrew Knight, "Inclusive Music Teaching Strategies for Elementary-Age Children with Developmental Dyslexia," *Music Educators Journal* 99, no. 1 (2012): 56, http://www.jstor.org/stable/41692697.

[65] Ibid, 56.

troubleshooting strategies will ensure the educator is structuring the proper methodologies for the student. Table 2 below lists successful practical adaptations that educator Kate O'Brien Vance enacted in her classroom to assist students with dyslexia.

Table 2. Vance's classroom adaptations for students with dyslexia.

Classroom Adaptations by Vance
Break tasks down to the simplest components necessary for the student, even if you must start with sitting correctly. Add only one idea or task at a time.
Copy Music onto colored paper. Utilize a different color per song.
Use teaching materials that introduce new concepts and skills with color-coding and include clear definitions and instructions. Books with drawings or photos relevant to a new idea or song may be beneficial.
Make recordings of songs available for students to listen to.
Be very clear when the student is doing the right thing. Positive reinforcement is encouraged.
Sing or play along at lessons so the student can compare his or her notes and rhythms with yours.
Repetition is key. Teach the student to review skills, concepts, or challenging parts a few more times than he or she might want to.
If the student is becoming frustrated, change activities for a minute or two to help regain concentration.
Whenever possible, work with the student individually, outside of, or instead of a large group, even if the teaching session is shorter.
In band or orchestra, help the student choose the correct instrument for his or her strengths.
Teachers should be specific and kind in their self-criticism.
When all else fails, ask the student what he or she thinks the problem might be, and try to find the solution together.

Source: Kate O'Brien Vance, "Adapting Music Instruction Students with Dyslexia," *Music Educators Journal* 90, no. 5 (2004): 29, https://doi.org/10.2307/3400020.

Though this list is an excellent compilation, educators should continue to add techniques they have found work for students with dyslexia and expand upon it. The more data gathered, the better the outcome for students with this specific disability.

In the 1990s, a considerable body of research outside music suggested that using color in instructional materials can improve student performance and retention. Still, little research supported this theory concerning reading music notation. George L. Rogers drew attention to this fact and made some key observations that were very helpful to students with dyslexia. By color coding notes, it color increases students' attention to the musical material that they are reading. He points out that studies in visual processing provide evidence that color stimuli result in more neural activity than achromatic stimuli and may reinforce that learning is facilitated when stimulating different areas of the cortex simultaneously and more neural networks are involved.[66] As research propelled into 2016 and beyond, there was more evidence that the role of color coding and music reading for dyslexic music students was consistently successful. Studies continuously determined the correct parameters and algorithms for brightness contrast and color difference to improve the readability of a text.[67] More studies are needed to improve the way that color coding could benefit musicians with dyslexia.

Sight-reading

Sight-reading is the method of immediately reading a previously unseen piece of music. Students have between thirty and sixty seconds to execute a sight-reading previously unseen excerpt immediately provided. This differs from the music students see daily, as most of their ensemble music is generally rehearsed or studied. A performing musician decides which aspects

[66] George L. Rogers, "Effect of Colored Rhythmic Notation on Music-Reading Skills of Elementary Students," *Journal of Research in Music Education* 44, no. 1 (1996): 16, https://doi.org/10.2307/3345410.

[67] Baingio Pinna and Katia Deiana, "On the Role of Color in Reading and Comprehension Tasks in Dyslexic Children and Adults," *I-Perception*, *9*(3). (2018): 26, https://doi.org/10.1177/2041669518779098.

of the notation, sequence, and the combination that the notation will formulate, derived from the notation itself. All of this is according to the performer's skill at processing the information and his knowledge of style, structure, and expression."[68]

There are two schools of thought concerning whether sight-reading is a teachable skill. Researchers have investigated cognitive factors that may correlate with sight-reading ability, especially those with predictive power. Musicians differ in their ability to sight-read; some researchers ascribe the ability to innate talent, while others investigate sight-reading as an acquired skill.[69] Other researchers have identified indications that cognitive engagement during musical practice may provide an essential but often disregarded key to improving practice and refining a student's overall musical skill, including sight-reading.[70]

Those who believe that sight-reading skill sets improve with practice recommend beginning with a small daily increment and slowly boosting the practice routine to ten, twenty, or even thirty minutes per day. When a student sight-reads, there is somewhat more significant eye strain and an increased tax upon the motor processes of the brain than when the student has had the same before him multiple times and glances at it merely to refresh his memory.[71] Physical breaks are necessary to build into practice time to ensure proper pacing and avoid burnout in students trying to perfect their sight-reading skills.

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[68] Thomas W. Goolsby, "Profiles of Processing: Eye Movements during Sightreading," *Music Perception: An Interdisciplinary Journal* 12, no. 1 (1994): 98, https://doi.org/10.2307/40285757.

[69] Jennifer Mishra, "Factors Related to Sight-Reading Accuracy: A Meta-Analysis," *Journal of Research in Music Education* 61, no. 4 (2014): 453, http://www.jstor.org/stable/43900223.

[70] Gary E. McPherson, and John McCormick. "Motivational and Self-Regulated Learning Components of Musical Practice," *Bulletin of the Council for Research in Music Education*, no. 141 (1999): 99, http://www.jstor.org/stable/40318992.

[71] Watson Lyle, "Sight-Reading," *The Musical Times* 66, no. 993 (1925): 1000, http://www.jstor.org/stable/911439.

Some researchers do not believe that sight-reading is a skill that can be taught or perfected. Boris Goldofsky states, “Sight reading cannot be taught. Some pianists are good at sight-reading, while others are not. The result of my teaching sessions indicated that people who were gifted at sight-reading improved, and people who seemed ungifted did not.”[72] A study conducted with students over ten weeks of sight-reading practicing exercises yielded a surprising result. The results showed that students did not appear to improve musical performance across the ten weeks on three essential sight-reading indicators examined: extra notes, missing notes, and beat adjustment, however, the cumulative practice did predict improvement in RMS accuracy. The limited findings do not support the long-held belief that partaking in informal sight-reading activities will improve overall sight-reading performance.[73]

Though there are conflicting viewpoints about whether sight-reading is a teachable skill, researchers and educators agree that it is crucial to music education and development. Sight-reading allows one to study music literature and create a multi-styled and multifunctional playlist. In this regard, sight-reading is critical to the musician’s performing skills.[74] Whether or not a student excels or is natural at sight-reading, it is a facet of their musical journey that they will inevitably face in their musical education journeys.

Typical Instructional Methods for Sight-Reading

There are fundamentals that music educators and private instructors follow, though most music educators develop their strategies and techniques for helping students learn how to sight-

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[72] Theodore Wolf, "A Cognitive Model of Musical Sight- Reading," *J Psycholinguist Res* 5, (1976): 152, https://doi.org/10.1007/BF01067255

[73] Katie Zhukov, “Experiential (informal/non-formal) Practice Does Not Improve Sight-Reading Skills.” *Musicae Scientiae*, *21*(4), (2017): 427, https://doi.org/10.1177/1029864916684193.

[74] Anna Adamyan, “Sight-reading as an Important Factor in the Professional Growth of Future Music Teachers,” Revista Vórtex, Curitiba, v.8, n.2, (2020):15, https://www.proquest.com/openview/87e12b0438b5650c846bc47083918e0e/1?pq-origsite=gscholar&cbl=2032699.

read proficiently. One strategy to apply immediately is introducing sight-reading as a fun skill in music and avoiding a negative association with sight-reading. Introducting the skill set as difficult discourages students at the beginning of their musical education, potentially giving them a false sense of competency before beginning their sight-reading journey. One idea for younger students is to turn sight-reading into a game or fun challenge that does not embrace mistakes but urges students to get to the end of a marathon despite what happens in their singing or technical reading. This would be the same encouragement a coach would give a runner if they got a late start or stumbled; it is imperative to see how well a student makes it through the exercise without stopping. Studies found that this technique increased their sight-reading skill, and students celebrated making it through the exercise.[75]

Another fundamental teaching strategy music educators use to teach sight-reading is an immediate shift of focus from music as a whole to attention to rhythmic detail. Studies indicate that rhythmic proficiency leads to higher sight-reading scores among students across all age groups.[76] Exercises such as rhythmic clapping, rhythmic detection, and saying and associating rhythmic patterns with words such as "coconut" for triplet figures provide positive outcomes for students across all grade levels. Though simplistic, these rhythmic exercises can potentially influence their sight-reading development.

One last strategy that music educators commonly utilize is pacing and identification exercises. Regarding pacing, students immediately progress into reading music due to anxiety, excitement, or enthusiasm. Encouraging pacing exercises can offset students jumping into reading

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[75]Martha Evans Osborne, et al., "The Idea Bank: Teaching Sight-Reading," *Music Educators Journal* 62, no. 7 (1976): 63, https://doi.org/10.2307/3395033.

[76] Charles A. Elliott, "The Relationships among Instrumental Sight-Reading Ability and Seven Selected Predictor Variables," *Journal of Research in Music Education* 30, no. 1 (1982): 13, https://doi.org/10.2307/3344862.

a piece of music without complete mental preparation. Breathing exercises, counting to a designated number, and students closing their eyes are just a few examples of how they can mentally pace themselves before diving into sight-reading.

Once a student has mastered pacing, music educators focus on identifying standard features of sight-reading that students overlook under pressure. These features include time signature, key signature, dynamics, and articulation. Having students physically circle or highlight these features in their music for practice can help them learn to identify these features first in their sight-reading and make them more likely to execute them despite anxiety or other factors that can hinder sight-reading outcomes.[77]

How Dyslexia Could Affect Sight-Reading

It is important to note how dyslexia could affect students and what they experience during the process. Decoding and interpreting a fresh piece of music with minimal preparation time before execution could cause dyslexic students to panic, lose focus, or feel defeated without a strategic plan to address the missing connection in cognitive processing.[78] For some students, sight-reading could present several obstacles that prevent them from sight-reading at the level of some of their colleagues. Studies have revealed that common issues that students with dyslexia experience are reading notes and stems backward, perceiving stems upside-down, and seeing a musical or rhythmic sequence out of order.[79] Some additional characteristics experienced are

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[77] Gary E. McPherson, "Factors and Abilities Influencing Sightreading Skill in Music," *Journal of Research in Music Education* 42, no. 3 (1994): 228,. https://doi.org/10.2307/3345701.

[78] Kimberly A McCord, "Moving Beyond 'That's All I Can Do:' Encouraging Musical Creativity in Children with Learning Disabilities," *Bulletin of the Council for Research in Music Education*, no. 159 (2004): 30, http://www.jstor.org/stable/40319205

[79] Leonore Ganschow, Jenafer Lloyd-Jones, and T. R. Miles, "Dyslexia and Musical Notation," *Annals of Dyslexia* 44 (1994): 190, http://www.jstor.org/stable/23769692.

having to “deal with notes as a block" when deciphering a chord.[80] Perceiving music notation as clusters is a reality for many students with dyslexia, and being able to read music can be challenging when they experience this roadblock. Lastly, students with dyslexia may have trouble with the concept of the pitch being “raised" or "lowered." They may find that it makes more sense when they follow the line of music with their finger while singing or studying it.”[81]

It should not come as a surprise that dyslexia has the potential to hinder sight-reading fluency in some students; however, some students excel at sight-reading despite their disability. Several published research studies support the idea that individuals with dyslexia show unique talents for finding similarities and likenesses.”[82] Students with dyslexia could apply this to their sight-reading approach, distributing their attention far more broadly than typical readers. This could lead to successfully identifying letters flashed simultaneously in the center and the periphery for spacings much further apart.”[83] This implies dyslexic musicians could have an easier time focusing on other aspects of sight-reading, such as key signatures, time signatures, and overall rhythmic patterns, which students without dyslexia tend to miss as they browse the excerpt. It is always interesting to see how disabilities can bring out positive attributes and make students more resilient overall in their musical execution.

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[80] Ibid, 189.

[81] Kate O’Brien Vance, “Adapting Music Instruction for Students with Dyslexia,” *Music Educators Journal* 90, no. 5 (2004): 30, https://doi.org/10.2307/3400020.

[82] Brock L. Eide and Fernette F. Eide, *Unlocking the Hidden Potential of the Dyslexic Brain,* (New York, NY: Plume Books, 2023), 135.

[83] Matthew H. Schneps, “The Advantages of Dyslexia,” Scientific American, Accessed February 8, 2023, https://www.scientificamerican.com/article/the-advantages-of-dyslexia.

Sight-reading Practices in Choral Versus Instrumental Ensembles

Choral Ensembles

Though sight-reading is universal, different ensembles approach it in various ways. Identifying practices from choral and instrumental ensembles is crucial to studying their consistency and the best choices for each ensemble. Though one approach may not be traditional in a choral ensemble, learning about other practices could be cross-implemented and vice versa. The more approaches for sight-reading are accumulated, the more strategies music educators can enact in classrooms, giving students more opportunities for success.

Sight-reading in choral ensembles is considered essential, just like instrumental ensembles emphasize. It is a practice implemented in everyday classwork, competitions, and auditions. Sight-reading enables the singers to save time learning repertoire, allowing them more time to perfect their skill sets, providing ease to the rehearsal process, achieve a higher level of music-making in a shorter amount of time, and accomplish more difficult or newly composed music.[84] Although choirs can excel at sight-reading as a group, if an individual cannot sight-read at the pace of their colleagues, it could stunt growth and cause the ensemble to struggle as it progresses to learning more difficult pieces more rapidly. Still, even perfecting sight-reading on an individual level, it is ultimately up to the director to cultivate best practices for successfully improving the sight-reading ability of the entire choral ensemble.

Choral directors' methodology to instill higher caliber sight-reading skills in their ensembles varies. Some practices are utilized more than others, however. First, music reading competence is enhanced if teachers provide rhythmic and tonal vocabularies. Next, A consistent, clear, and accurate definition of measure signatures is imperative for universal ensemble understanding. All measure

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[84] Rachel Carlson, "Sight-Reading Insights From Professional Choral Singers: How They Learned and Implications for the Choral Classroom," *The Choral Journal* 60, no. 1 (2019): 11, https://www.jstor.org/stable/26870060.

signatures should be defined or explained thoroughly to the ensemble by the director, leaving no one in doubt. The other essential skill for music reading literacy is tonal or pitch accuracy.[85] Choir directors seem universally to endorse the blanket approaches outlined above as a fundamental starting point for enhancing sight-reading success within their ensembles.

Aside from the basics, other educators and professional singers have offered their opinions on strategies to aid in a choral ensemble's sight-reading growth. Jo-Michael Schiebe emphasizes more specific techniques, such as softening singing to increase listening capabilities, introducing the desired tempo at the onset, and addressing pitch immediately.[86] Joseph Flummerfelt stresses that a robust inner pulse is vital for initial reading success in choral ensembles. He also emphasizes that if the text is not in English, a translation should be provided to understand how the human gesture relates to the musical work.[87] Each educator and pedagogue will approach reading with an ensemble from different angles. Still, all inherently want the same result for their ensembles: to strengthen the ensemble from the core to promote successful sight-reading practices.

After conducting a study in the Richland County schools in Columbia, South Carolina, Rose Dwiggins Daniels yielded two variables that merit mentioning. The first variable showed that affluent students who had more access to musical enrichment sight-read than those from more rural and underserved districts. Another variable was the attitude of the chorus teacher toward sight-reading instruction in the high school choir. The attitude the teacher brings to the teaching of sightreading is of

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[85] James A. Middleton, "Develop Choral Reading Skills," *Music Educators Journal* 70, no. 7 (1984): 31-32, https://doi.org/10.2307/3400842.

[86] Jason Paulk, "Perspectives on Sight-Reading Choral Repertoire: Conversations with Rodney Eichenberger, Joseph Flummerfelt, Ann Howard Jones, Jo-Michael Scheibe, and Dennis Shrock," *The Choral Journal* 45, no. 3 (2004): 29, http://www.jstor.org/stable/23555409.

[87] Ibid, 28.

greater significance to developing sight-reading ability.[88] Though this is likely not new or surprising information to have yielded, the reality of her statements persists. Educators should consider enhancing sight-reading practices in their curricular approaches.

Instrumental Ensembles

Like choral ensembles, instrumental ensemble directors will have their own strategies to implement effective sight-reading techniques in their ensembles. Though not every approach will be the same, instrumental ensemble directors must have a systematic plan to ensure their students' success. Instrumental ensembles face sight-reading in competition settings and their classrooms, so identifying the best approaches for their student composition is critical to success.

A recent study identified that sight-reading was the make-or-break factor in scoring impact in preparation for instrumental ensemble competitions. It showed that 61 percent of errors were due to rhythmic inaccuracies, 15 percent to articulation errors, and 14 percent to pitch.[89] These are the three fundamental factors that the majority of directors focus on when it comes to the fundamentals of sight-reading. Some other tactics and methodologies can also be effective. Still, William I. Baur stresses that "Priorities need to be established, and an emphasis on the fundamentals of balance and intonation, along with the consistent utilization of a counting system for rhythm during rehearsals, appears to increase the chances of receiving a higher level of success."[90] To put a more thorough and individualized approach to sight-reading practices in instrumental ensembles, perfection of the core fundamentals is crucial.

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[88] Rose Dwiggins Daniels, "Relationships among Selected Factors and the Sight-Reading Ability of High School Mixed Choirs," *Journal of Research in Music Education* 34, no. 4 (1986): 288, https://doi.org/10.2307/3345261.

[89] William I. Bauer, "The Relationship Between Rehearsal Procedures and Contest Ratings for High School Bands," *Contributions to Music Education*, no. 20 (1993): 35, http://www.jstor.org/stable/24127329.

[90] Ibid, 36.

Research has unveiled several successful tactics for enacting and refining the core fundamentals and applying them to instrumental programs. One study found that regarding rhythm, high-wind players within their groups practiced reading rhythms by clapping rhythmic patterns and tapping the beat before playing. After 14 weeks, the experimental group significantly improved their rhythmic sight-reading.[91] The same study yielded successful results when individuals in ensembles chanted their respective parts; they perceived the sound of the rhythmic figures within their part before playing on their instruments.[92] This makes much sense if examined from a broader neurological perspective. Studies have indicated some students' sight-reading abilities and scores on reading comprehension tests, aural discrimination of rhythmic patterns, and spatial-temporal reasoning tests can be comparable.[93] The connection to reading comprehension is reasonable because, like text, students read music notation left to right, and the visual scan's speed and accuracy are necessary to comprehend the information. Suppose students develop specific strategies for figuring out the spatial and temporal dimensions embodied in the musical notation before they attempt to perform. In that case, they will likely improve their sight-reading as an ensemble.[94]

Both choral and instrumental ensembles take similar and individualized approaches to perfecting sight-reading as a group. Sight-reading is vital to the final score and ranking when competing in various competitions. Including music sight-reading at state contests in secondary schools suggests that the ability to read and play with speed and accuracy is an essential indicator of musical

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[91] Joyce Eastlund Gromko, "Predictors of Music Sight-Reading Ability in High School Wind Players," *Journal of Research in Music Education* 52, no. 1 (2004): 7, https://doi.org/10.2307/3345521.

[92] Ibid, 13.

[93] Carol M. Hayward and Joyce Eastlund Gromko, "Relationships among Music Sight-Reading and Technical Proficiency, Spatial Visualization, and Aural Discrimination," *Journal of Research in Music Education* 57, no. 1 (2009): 27, http://www.jstor.org/stable/40204946.

[94] Joyce Eastlund Gromko, "Predictors of Music Sight-Reading Ability in High School Wind Players," *Journal of Research in Music Education* 52, no. 1 (2004): 14, https://doi.org/10.2307/3345521.

achievement.[95] This particular skill set is not just an individual skill crucial to musical development but one that bleeds over into garnering a communal consistency in skill within large ensembles.

Collaboration of Music Education and Special Education

The music education and special education communities could collaborate to help students with dyslexia thrive in core and musical classroom settings. Both education demographics set students with disabilities up for success, and working together to achieve this could be crucial. This seems like a likely pairing and easily accessible, but meeting times and organizing the collaboration could be difficult due to the nature of the educators' responsibilities. Administrative support must be strong enough to coordinate both departments to help cover classes and arrange collaborations to benefit the students.[96]

Once the administration has arranged a collaboration, a plan for the two departments to aid each other in student success begins. An excellent first step would be for both departments to meet at the beginning of the year to recognize which students may need accommodation and specialized attention. Meeting as early as possible in the new school year will also help the music educator plan what accommodations and materials will be required, how to implement them properly, and even be in touch with middle and high school music educators to help them prepare for students who will eventually move up into their programs.[97] The more people that work together to provide a seamless and comfortable experience for students with disabilities, the more at ease these students will feel pursuing their education.

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[95] Carol M. Hayward and Joyce Eastlund Gromko, "Relationships among Music Sight-Reading and Technical Proficiency, Spatial Visualization, and Aural Discrimination," *Journal of Research in Music Education* 57, no. 1 (2009): 26, http://www.jstor.org/stable/40204946.

[96] Kimberly McCord and Emily H. Watts, "Collaboration and Access for Our Children: Music Educators and Special Educators Together," *Music Educators Journal* 92, no. 4 (2006): 28, https://doi.org/10.2307/3401109.

[97] Ibid, 30.

Another way this collaboration could help students in music education classes is to enlist the help of paraprofessionals. Paraprofessionals can be instrumental in promoting learning for students with disabilities in music classes and ensembles. Paraprofessionals accompanying students to music classes are a source of information and ideas and can relay suggestions between the special education and music educators. The paraprofessional can also share how classroom dynamics affect the student with a disability by identifying key factors such as limited vocal abilities, struggles with reading music, and other traits the music educator should know. They can also support the music educator's teaching and actively engage students in classroom activities.[98] That extra support system can be vital for both the student and the educator. It can provide core and music educators with insight into a student's classroom progress, overall attitude and emotional state, and suggestions on supporting students with disabilities better.

The collaboration between special education and music educators can be an asset to the school, students, and educators. Seeking administrative support is the key to making this collaboration a reality. Once secured, the collaboration is revisited annually not only to prepare new students matriculating through the program but also to gather ideas and strategies that were effective and what strategies were not to strengthen students with disabilities' chances for success in the long term.

The Woodwind Family and Upper Woodwind Specification

Musical instruments have four families of instruments: the brass family, string family, percussion family, and woodwind family. Each family possesses an individualized characteristic in which they share a commonality of sound production and timbre on said instrument. The woodwind family comprises the flute, oboe, clarinet, saxophone, bassoon, and extended auxiliary counterparts. The woodwind family evolved at different times in history, and the earliest ancestors influenced these

[98] Ibid, 30.

instruments to evolve into the woodwind family that is known today. The flute laid the foundation for all woodwinds, resulting in instruments like the recorder, the chalumeau, the oboe, the bassoon, and the clarinet. The saxophone was invented in Belgium during the 1840s by Adolph Sax, a musician who played flute and clarinet and was the son of an instrument manufacturer. Sax noticed a missing middle ground between brass and wood instruments, leading to the creation of the saxophone.[99] Woodwinds are instruments that utilize air and vibrations to produce a sound, whether by a reed or vibration within the head joint of a flute. From a physicist's perspective, a woodwind instrument designation comes from the length of its air column and is adjusted using a sequence of tone holes that are opened or closed in various combinations to determine the desired notes. The player supplies compressed air to the instrument's reed system, which functions dynamically as a flow controller. On the downstream side of this controller, we find an adjustable air column normally terminated by some bell.[100]

Since the 1700s, the woodwind family has evolved tremendously in terms of design and technical mechanisms, offering more to the players who perform on them. Early in their inception, winds tended to be rather soft-spoken and fundamentally relatively unstable. The flutes and recorders of the day had a rather charming dove-like sound, with limited resources in dynamic level, tone color, and range of pitch.[101] Modern-day modifications to all woodwind instruments offer stability and dramatic capabilities that both the instrument and the performer can accomplish. Conductor George Szell wrote, "Composers have long singled out woodwind instruments for important solo melodies, the cleverest use being Prokofiev's Peter and the Wolf, in which they each portray a different character in

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[99] Sage Music, "The Reverberhent History of Woodwinds," (accessed June 13, 2024), https://www.sagemusic.co/blog/reverberant-history-woodwinds/#.

[100] Benade, Arthur H. Benade, "Woodwinds: The Evolutionary Path Since 1700," *The Galpin Society Journal* 47 (1994): 65, https://doi.org/10.2307/842663.

[101] Ibid, 73.

the fairytale. Prokofiev emphasized their highly individual sounds: the oboe's nasal "'quackiness' for the duck, the clarinet's suavity for the cat, the flute's fluttery airiness for the bird, and the bassoon's buzzy humor for the grandfather. But in most other compositions, woodwind players try to smooth over their colorful characteristics to blend more seamlessly with their colleagues."[102] This family is versatile in playing several colorful roles within the band and orchestral settings.

This paper aims to focus on students with dyslexia who play the upper woodwind instruments, which include the piccolo, flute, oboe, clarinet, soprano saxophone, and alto saxophone. The sound production on woodwind instruments indicates the instrument's length and size. Typically, upper woodwind instruments are more petite, causing their pitch tendency to be higher than the more prominent members of their family. Though not always the case, upper woodwinds also play in treble clef, whereas bassoon and bass clarinet (sometimes) play in bass clef and the lower registers. They also primarily are given more simplistic melodies, encompassing the bassline of the band or orchestra. The upper woodwind instruments are typically the "violins of the band" and must maintain a more virtuosic standard regarding technical lines.[103] Woodwind students must incorporate technical exercises and method books into their practice routines to refine their technique and achieve these technical lines.

Chapter Summary

Chapter 2 introduces a broad range of literature detailing many facets of the basis for this project. The initial definition of dyslexia expanded to focus on generalized dyslexia, dyslexia in schools, the positive and negative attributes associated with dyslexia, and how dyslexia can potentially

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[102] Marcia Hansen Kraus, "The Woodwind Section" In *George Szell's Reign: Behind the Scenes with the Cleveland Orchestra*, 27, University of Illinois Press, 2017, https://doi.org/10.5406/j.ctt1w6tdwm.7.

[103] Joseph Manfredo, "Albert Austin Harding and His Influence on the Development of the Instrumentation of the American Collegiate Wind Band," *Bulletin of the Council for Research in Music Education*, no. 125 (1995): 67, http://www.jstor.org/stable/40318726.

impact music. Dyslexia could influence students in reading and music in different ways despite some similar symptoms and characteristics that students can exhibit.

After thoroughly introducing the elements of dyslexia, defining sight-reading promoted the importance of this skill concerning musical performance and overall musical ability. Sight-reading was then paired with the disability and pinned against the characteristics of dyslexia to create the positive and negative attributes the disorder could play in executing sight-reading in music. Being a disability that can display an array of differing problems and positive traits, this section focused on a more individualized approach to sight-reading rather than a group of individuals.

Understanding how music educators teach sight-reading is essential, as students may not all absorb information the same way. Focusing on resilience and recovery by playing an exercise through associating games with learning, rhythmic exercises, pacing strategies, and commonly forgotten factors under pressure has the potential to help the vast majority of students in their sight-reading development. Music educators strive to educate the highest number of students with their strategic implementation plans, however, students who possess a disability may require a different strategic methodology to aid in their success and development.

Both choral and instrumental ensembles have separate strategies for managing sight-reading tactics. This chapter focused on both groups and their approaches to improving sight-reading. Though each group exhibited some similarities, each ensemble and instructor dictated individual facets to ensure the success of their students for concerts, performances, and competitions. Overall, this chapter highlights sources that set out the foundation of studies that have been executed in the past more broadly. Identifying the established literature and exposing the gap in the literature regarding this specific topic justifies the need for expanded research regarding high school upper woodwind students with dyslexia and how to help them better approach and execute sight-reading.

Identifying a collaboration between special education and music educators can be instrumental in a student's overall success. Being abreast of what students may need extra attention and resources, as well as how to prepare a curriculum better to incorporate a specific disability, will ensure the student has an easier time. Enlisting the help of paraprofessionals where available can be an extra set of eyes and ears for educators to utilize. This will help them better understand progress, attitude, and learning capabilities. This collaboration with special education will also enlighten educators on how to support these students emotionally and confidently and how to garner better empathy to interact with these students. Students with disabilities may have built up vulnerabilities and insecurities that they associate with their disability, so having a solid backing of support from educators and structuring professional development to focus on curriculum modifications will benefit the student immensely.

This study aims to work with students with dyslexia who perform on upper woodwind instruments. Identifying and differentiating the woodwind family from the other instrument families and further deciphering the instruments that fall into the upper woodwind family is crucial to the success of this study. Executing technical and fast-paced excerpts will help provide insight to educators, researchers, and students with dyslexia on how to approach sight-reading music of this caliber.

CHAPTER 3: Methodology

Introduction

A growing number of competitions, auditions, and full ensemble rehearsal techniques continue to emphasize the skill of sight-reading. Though music educators have incorporated tactics into their curriculums to aid in their students developing this skill set, students with dyslexia are often not factored into these standardized curriculums, or educators fail to understand or lack the training to aid students possessing this disability. Crafting an inclusive curriculum that allows all students, including those with disabilities, to benefit from sight-reading exercises and development is crucial to both student success and the music program's success. High school programs suffer if students with dyslexia have been neglected or disenfranchised from perfecting this essential musical skill, and without garnering evidence on how students with dyslexia process sight-reading, their efforts will continue to remain stagnant.

This chapter provides an overview of the study's methodology by depicting its design and addressing the research questions and hypotheses that will guide it. Additionally, it discusses the study's participant setting, participant selection and guidelines, data collection method, and procedures that the eight participants will be subject to in garnering the most accurate insight into their process regarding sight-reading. This chapter concludes with a discussion of the study's data compilation strategy and the ethical guidelines the researcher will follow to lessen the gap in this critical research topic.

Study Design

This qualitative hermeneutic phenomenological research study seeks to obtain information from participants and highlight the researcher's interest as a dyslexic upper woodwind clarinetist. The qualitative research design was selected for this study to help gain insight into the processes involved in the co-constructions of meaning, lived experiences, cultural rituals, and oppressive

practices.[104] The qualitative method aims preeminently at clarification, interpretation, and, to a certain degree, explanation.[105] Though prior studies have followed a similar design regarding sight-reading practices and how to improve upon the skill set, none target this particular demographic.

One example is Pamela Pike's philosophy that sight-reading can be taught and enhanced with strategies such as chunking and segmentation with consistent practice.[106] Pike's qualitative study yielded positive results with the general demographic of students studied. Still, the limitations of her research design yielded a too broad of a base of students and lacked focus on an older demographic, which means that sight-reading tends to be more challenging. Following Pike's study was Jennifer Mishra's qualitative study, which yielded results similar to Pike's. At the end of her study, she highlights that if and when a small group of variables can be found consistently to predict sight-reading, teachers may be able to use this knowledge to teach the complex skill of sight-reading more effectively.[107] Finding this consistent variable is difficult to pinpoint, and even more so for students with dyslexia. Kate O'Brien Vance dug into this topic as a researcher with dyslexia herself, pointing out that little information is available about adapting music instruction for students with dyslexia in a way that provides a more prosperous and less stressful musical experience.[108] Her study pinpoints strategic methods to help students with dyslexia excel, such as a broader focus on rhythm and enhancing motor

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[104] Joshua D. Atkinson, "Qualitative Methods," In *Journey into Social Activism: Qualitative Approaches*, 65, Fordham University Press, 2017, http://www.jstor.org/stable/j.ctt1hfr0rk.6.

[105] J. W. Heyink and T.J. Tymstra, "The Function of Qualitative Research," *Social Indicators Research* 29, no. 3 (1993): 293, http://www.jstor.org/stable/27522699.

[106] Pamela D. Pike, "SIGHT-READING STRATEGIES: For The Beginning And Intermediate Piano Student: A Fresh Look At A Familiar Topic," *American Music Teacher* 61, no. 4 (2012): 24, http://www.jstor.org/stable/43540075.

[107] Jennifer Mishra, "Factors Related to Sight-Reading Accuracy: A Meta-Analysis," *Journal of Research in Music Education* 61, no. 4 (2014): 463, http://www.jstor.org/stable/43900223.

[108] Kate O'Brien Vance, "Adapting Music Instruction for Students with Dyslexia," *Music Educators Journal* 90, no. 5 (2004): 27, https://doi.org/10.2307/3400020.

skills.[109] There was a limitation with this form of research: the participants in their study demographic were too broad and did not address the scope in which this study aims to target. With this limited scope, research can not adequately address and resolve the issues that music educators have regarding standardized curriculums, as this curriculum disenfranchises students with disabilities.

Hermeneutic research is a qualitative method that interprets texts, communications, and human interactions through interpretation. It centers on meanings not being self-evident but constructed and interpreted within specific historical, cultural, and personal contexts. The main focus of hermeneutics is on understanding the context and the historical background of the text to arrive at a valid interpretation.[110] It is essential to garner a personal approach and context from each participant, as though each will share the disability of dyslexia: not every person experiences the disability the same way. The personalized nature of the interaction during the study will help understand their experiences and build a strategy to serve others in the dyslexic musical community better. Compiling their positive and negative experiences can only enhance research and the teachability of their disability.

Finally, phenomenological research is an approach that seeks to describe the essence of a phenomenon by exploring it from the perspective of those who have experienced it. Choosing a phenomenological research methodology requires the scholar to reflect on the philosophy they embrace.[111] The researcher deems this the most essential part of selecting this topic, as a dyslexic clarinetist who struggled with sight-reading in high school. Not only will this study garner the perspectives of current students' positive and negative experiences with sight-reading, but the

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[109] Ibid, 30.

[110] Samuel Boerboom, "Hermeneutics," In *The SAGE Encyclopedia of Communication Research Methods,* SAGE Publications Vol. 4, (2017): 649, https://doi.org/10.4135/9781483381411.

[111] Brian E. Neubauer, et al., "How Phenomenology Can Help Us Learn from the Experiences of Others," *Perspectives on medical education* vol. 8, 2 (2019): 92, doi:10.1007/s40037-019-0509-2.

researcher's input and experiences will be vital to crafting a strategy to raise awareness and enhance the teachability of this essential musical skill for students with disabilities.

Questions and Hypotheses

RQ1: What are the perceptions of high school upper woodwind students with dyslexia concerning sight-reading?

RQ2: What strategies can teachers implement to mitigate or enhance the effects of dyslexia on upper woodwind players' sight-reading abilities?

H1: Students with dyslexia experience tasks like sight-reading very differently, from cumbersome and challenging to excelling due to utilizing identifying patterns and processing the larger picture rather than the minute details. Sharing a disability does not equate to a similar cognitive output.

H2: Pattern recognition strategies will mitigate and enhance the effects of sightreading on a dyslexic high school student's sight-reading ability.

Participants

The researcher enlisted the help of eight participants who fit the study's demographic criteria. The researcher chose this number based on the specificity of this limited demographic and Creswell's suggestion that a reasonable sample size for a phenomenological study may range from 3 to 25 participants.[112] Participants can be from any part of the United States. They can join the study in person at my home or virtually to ensure confidentiality and to provide a comfortable environment for the participants. A partnership with copious private music teachers and music educators assisted in recruiting and enrolling students to participate. Most private instructors have more personal relationships with their students, and parents and students can disclose disabilities

[112] J. W. Creswell, *Qualitative Inquiry & Research Design: Choosing among Five Approaches* (Thousand Oaks, CA: SAGE Publications, 2013), 115.

such as dyslexia, and they feel more comfortable in a private setting. The criteria to participate in this study are as follows:

1. Each participant must be high-school-aged at the time of study.
2. Each participant must play an upper woodwind instrument such as flute, oboe, clarinet, or saxophone.
3. Each student must be diagnosed with dyslexia.

Meeting these three criteria will produce the most accurate results and strengthen data reliability, ensuring the highest caliber of results and data will be documented and collected.[113] The researcher will select all study participants to ensure the study is accurately represented and the most vital participant qualifications are met. Participants in this study will be anonymous, without disclosing their names, race, or specific age. Except for their instrument, gender, grade in school, and state of residency, participants in the study from this point forward will be identified as follows:

Participant 1.

Participant 2.

Participant 3.

Participant 4.

Participant 5.

Participant 6.

Participant 7.

Participant 8.

[113] Rafat Rezapour Nasrabad, "Criteria of Validity and Reliability in Qualitative Research," *Journal of Qualitative Research in Health Sciences* 6, no 4 (2018): 494.

With the help of relationships within the private instructor community, social media, flyers, and verbal correspondence, the study was introduced to a wide range of potential participants throughout the United States. On all platforms, the researcher's contact information is readily accessible, giving participants access to apply and enroll in the study if all qualifications are met.

Researcher Positionality

The researcher's motivation for conducting this study is to give students with dyslexia more tools and strategies to better approach sight-reading. As someone who struggled with sight-reading, the researcher hope this study can help the next generation of woodwind musicians feel confident in all aspects of their developmental musicianship. The researcher's interpretive framework comes from Creswell's idea that in qualitative research, a problem that poses a gap in the literature needs to be studied in a natural setting for the most realistic and accurate collection of data, and data collection is both inductive and deductive and establishes patterns or themes.[114] This is crucial to her study, as observing students with the same disability as she does interpret sight-reading in a natural setting can help establish a pattern of what strategies can be put in place to help students develop a firmer grasp on the skill set. Dyslexia is a disability many share; everyone interprets and sees things differently, so sharing commonalities through this study can help structure curricular teachings for students with dyslexia.

Ontology is the theory of what is,[115] and the researcher's ontological assumptions come from a place of being and having been in the same place that the participants may be in. Realistically, music educators can assume that a student with dyslexia is having problems, but

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[114] J. W. Creswell, *Qualitative Inquiry & Research Design: Choosing among Five Approaches* (Thousand Oaks, CA: SAGE Publications, 2013), 44.

[115] Uriah Kriegel, "Two Defenses of Common-Sense Ontology," *Dialectica* 65, no. 2 (2011): 177, http://www.jstor.org/stable/42971246.

knowing and understanding what potentially occurs in the moment of sight-reading is something that needs to be documented for those who do not have this disability.

The resaercher's epistemological assumption is that she has fundamental beliefs about dyslexia and its potential impact on students' sight-reading, and this study aims to validate and substantiate these beliefs. Jane Maitland-Gholston states that educational problems will never be fully solved without understanding epistemology and consistent means and ends for education in general.[116] The researcher agrees with this statement, and hopefully this study can lessen the gap in the literature on dyslexia and sight-reading.

Since axiological assumptions can also consider a researcher's worldview and personal experiences and can influence the questions asked in this study, the researcher tends to do just this with how the survey of questions (see Appendix C) was formulated. Researchers have underscored the importance of beliefs that have informed research and tend not to write about them as often as they should.[117] The researcher agrees with this and hope this can positively influence this study.

The researcher's role as a human instrument is two fold: one as an educator and one as a fellow dyslexic upper woodwind musician. She is an educator and researcher who wants to contribute to the research on the subject, however, students may not openly want to participate, especially when it concerns a disability. The very act of taking the time and effort to convince potential respondents to participate in surveys or studies helps the researcher communicate the

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[116] Jane Maitland-Gholson, "The Holmes Report: Epistemological Assumptions That Impact Art Teacher Assessment and Preparation," *Studies in Art Education* 30, no. 1 (1988): 52, https://doi.org/10.2307/1320651.

[117] Pertti Alasuutari, et al., *The SAGE Handbook of Social Research Methods* (Thousand Oaks, CA: SAGE Publications, 2009), 15.

value of the study.[118] As someone who shares this disability with the participants, the researcher supports and encourages them to collect the most thorough and accurate data possible.

The participants will be a mix of my private clarinet students and students of colleagues from around the country. The researcher's role at the study locations, whether at home or online, is to make the student feel comfortable, answer any questions, and collect the most accurate data from their participation. Though sight-reading was always tricky because of my dyslexia, the data will speak for itself, and no personal bias is present.

Data Collection Plan

The data collection plan will consist of an initial observation of the participants executing the excerpt provided and a survey of questions in a one-on-one interview setting. Observations of the participants are crucial to seeing and hearing how well the excerpt is executed and to watch body language, eye motions, and their rapidness or slowness in approaching the excerpt. Visible and knowable activities, such as witnessing or capturing them, help substantiate and describe their behaviors so that they can be named and categorized.[119]

Survey collection, especially in an interview setting, provides a genuine and intimate opportunity to collect data personally. This kind of data is collected to produce actionable insights and knowledge that prompt a response, even if that response is a further reflection.[120] Since the researcher has personal experience with this disability, the survey questions have been written with the utmost intent of providing both educators and students with dyslexia methodologies for the successful and consistent implementation of sight-reading. These surveys will be specific and

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[118] Mick P. Couper, "The Future Modes of Data Collection," *The Public Opinion Quarterly* 75, no. 5 (2011): 902, http://www.jstor.org/stable/41345916.

[119] Melissa Gregg and Dawn Nafus, "Data," In *Keywords for Media Studies*, edited by Laurie Ouellette and Jonathan Gray, 5:55–58. NYU Press, 2017 57, https://doi.org/10.2307/j.ctt1gk08zz.20.

[120] Ibid, 57.

not seek to have participants answer any follow-up questions. The primary advantage of surveys is that the data are relatively easy and inexpensive to collect, enter, and analyze.[121] Participants will strictly adhere to pre-formulated questions. At the end of the survey, the researcher will ask the students if they have anything additional to contribute to the study.

Within this study, the researcher has crafted eleven survey questions (see Appendix C) to ask the participants after they perform their excerpts. Five questions that are crucial to the study are as follows:

1. What was your perception of notes, stems, and lines on the staff?
2. Did notes present as clusters at any point in your sight-reading?
3. Did you tend to focus on smaller segments or the larger picture while sight-reading?
4. Do you believe your dyslexia helped your sight-reading in any way?
5. Do you believe your dyslexia hurt your sight-reading in any way?

These questions will help inform the researcher how dyslexia plays a part in reading music and how the student processes sight-reading with a time limit attached to it. Each question is posed to help garner and formulate a method to help understand how this disability affects students with dyslexia and how music educators can help them thrive at this skill. Clusters, note stem shifts, and focusing on patterns are common findings in music reading[122], so the frequency with which students experience this must be understood. At the same time, sight-reading a fresh piece of

[121] Amy J. Baker and Benjamin J. Charvat, "Surveys." In *Research Methods in Child Welfare*, 190, Columbia University Press, 2008, http://www.jstor.org/stable/10.7312/bake14130.16.

[122] Frank R. Vellutino, "Dyslexia," *Scientific American* 256, no. 3 (1987): 35-36, http://www.jstor.org/stable/24979338.

music can help students gain beneficial insight into their disabilities and processes. Several students struggle with sight-reading, but others accredit their dyslexia as useful to the skill.[123]

Participants were given thirty seconds to perform an excerpt explicitly generated for their instrument before they answered survey questions, (see Appendix B) to sight-read. Generating an excerpt for this study guarantees that no student would have seen it before, ensuring the most accurate results. Decoding and interpreting a fresh piece of music with minimal preparation time before execution could cause students with dyslexia to panic, lose focus, or feel defeated without a strategic plan to address the missing connection in cognitive processing.[124] Sight-reading is crucial in high-school music students' development and musical independence, as auditions, competitions, and concert band music all require this skill.[125] The research must incorporate this into the study to gain perspective from observing this in a live setting.

It is crucial to the study's success to gain expert execution and survey questions verbatim for the most substantial results. The researcher documented everything on her laptop and recorded the session to ensure complete accuracy for all participants. Visible and knowable activities, such as witnessing or capturing them, help substantiate and describe their behaviors so that they can be named and categorized.[126] All data was stored on the researcher's laptop, which is password-protected for confidentiality purposes.

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[123] Brock L. Eide and Fernette F. Eide, *Unlocking the Hidden Potential of the Dyslexic Brain,* (New York, NY: Plume Books, 2023), 135.

[124] Kimberly A McCord, "Moving Beyond 'That's All I Can Do:' Encouraging Musical Creativity in Children with Learning Disabilities," *Bulletin of the Council for Research in Music Education*, no. 159 (2004): 30, http://www.jstor.org/stable/40319205

[125] William I. Bauer, "The Relationship Between Rehearsal Procedures and Contest Ratings for High School Bands," *Contributions to Music Education*, no. 20 (1993): 34, http://www.jstor.org/stable/24127329.

[126] Melissa Gregg and Dawn Nafus, "Data," In *Keywords for Media Studies*, edited by Laurie Ouellette and Jonathan Gray, 5:55–58. NYU Press, 2017 57, https://doi.org/10.2307/j.ctt1gk08zz.20.

Data saturation occurs in qualitative research when the researcher experiences a redundancy in the answers that participants provide: no new information is gleaned from the participants, signaling the need to end data collection.[127] Determining the saturation point is challenging because researchers have information on only what they have found. They further argue that researchers' judgment and experience typically determine the stopping point for an inductive study.[128] Looking for consistency in responses for each demographic of students with dyslexia who view sight-reading positively or negatively will ensure saturation has been achieved.

Procedures

Before beginning the study**,** the researcher obtained approval in defense of the topic and approval from Liberty University's Institutional Review Board (IRB) (see Appendix A). Through relationships and partnerships with private instructors and music educators, recruitment through email, social media, and advertising began, and the screening process to ensure the best outcome for the study. When communicating with potential participants, the study was explained thoroughly to both participants and their parents, as well as the requirements of participants and the criteria that the participants must meet to be a part of the study. The requirements are as follows:

1. Each participant must be high-school-aged at the time of study.
2. Each participant must play an upper woodwind instrument such as flute, oboe, clarinet, or saxophone.
3. Each student must be diagnosed with dyslexia.

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[127]Patricia I. Fusch and Lawrence R. Ness, "Are we there yet? Data Saturation in Qualitative Research," The Qualitative Report 20, no. 9 (2015): 1408, https://doi.org/10.5590/josc.2018.10.1.02.

[128] Greg Guest, et al., "A simple method to assess and report thematic saturation in qualitative research," PLoS ONE 15(5) (2020): 0232076, https://doi.org/10.1371/journal.pone.0232076

If the participants meet all three requirements for the study, they signed consent documents (see Appendix D) to participate. The consent form outlines all elements of the study, including a synopsis of the study's purpose, the requirements of the participants, how their privacy is protected throughout the process during and after their participation in the study, and the level of risk they are assuming of their involvement. Once all parties signed the consent documents, the participant as officially enrolled in the study. This process continued until the researcher has found eight participants. Once all eight participants enroll, the recruitment stopped, and the study began at the participant's earliest convenience.

Data collection for this study included a three-step process, all recorded with student and parent consent. Students meteither at the researcher's home or on a virtual platform in a private setting and set up their instruments before beginning the study. Whether in-person at the researcher's house or virtual, the researcher ensured the privacy and confidentiality of all participants. Students are first provided an excerpt (see Appendix B) specifically generated for their instrument to execute, with thirty seconds of preparation time to study it. After thirty seconds, the student performs the generated excerpt for their instrument without stopping. Next, each participant will be asked the same eleven survey questions (see Appendix C) and have their responses recorded for accuracy and precision. Each survey question was crafted to align with the study's goal of lessening the gap in the research on this topic and adequately addressing the research questions. Lastly, students are asked for any other commentary they would like to add about their experience to enhance the study. Once these steps occur, the participant's portion of the survey will end and be securely kept for data analysis. Each participant is recorded from the time they begin performing their excerpt until the interview's conclusion for accuracy and reliability of results. After the eighth participant's study concludes, data collection ended.

Data Analysis

Before analyzing collected data, the researcher reviewed all documented notes and surveys and re-watch all interviews to ensure complete and thorough data accuracy. Revisiting the recordings is essential, as a crucial piece of data could have been overlooked and missed. Data analysis can begin once the researcher has assembled an accurate account of all interviews.

Data analysis can be cumbersome and time-consuming: Margaret D. describes it as assembling a jigsaw puzzle.[129] The researcher used thematic analysis to examine the data closely and identify common themes such as topics, ideas, and patterns that occur repeatedly within the surveys. The thematic analysis involves a six-step process: transcription, identification of keywords, coding, theme development, conceptualization, and development of a conceptual model.[130] Step three, coding, is an essential data analysis technique. Codes are assigned to segments that capture the data's core message, significance, or theme.[131] With coding, creating a qualitative codebook is a helpful step, as it can assist in highlighting consistent elements of the study. The study will be strengthened if participants have answers from their surveys that accompany these themes. Content analysis such as this amplifies verbiage and themes that are readily identifiable in data.[132] Theophilus Azungah depicts a successful process that the researcher will follow to organize these codes: "The researcher groups data that conveyed similar meaning to

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[129] Margaret D. LeCompte, "Analyzing Qualitative Data," *Theory Into Practice* 39, no. 3 (2000): 146, http://www.jstor.org/stable/1477546.

[130] Muhammed Naeem et al., "Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research," *International Journal of Qualitative Methods* (2023) 22, https://doi.org/10.1177/16094069231205789.

[131] Ibid, 22.

[132] Theophilus Azungah, "Qualitative Research: Deductive and Inductive Approaches to Data Analysis." *Qualitative Research Journal* 18, no. 4 (2018): 385, https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/qualitative-research-deductive-inductive/docview/2133411195/se-2.

higher-level nodes through triangulation of interviews and documents to generate first-order descriptive codes. Having established the first-order categories, the next phase of the analysis involved identifying links among the first-order categories to group them into theoretical distinct second-order themes."[133] The researcher initially attempted to highlight themes in the data and then generate a second tier of information.

Data synthesis combines and evaluates data from different research studies to conclude a body of evidence. This process can help researchers to identify patterns, validate hypotheses, and make discoveries while sparking new knowledge and applications within the research.[134] Using the knowledge out there, this study aims to lessen the gap and specify more tactics to approach sight-reading for students with dyslexia. Thematic analysis is a method for identifying, analyzing, organizing, describing, and reporting themes found within a data set.[135] The thematic analysis provides the opportunity for an ample amount of data, which can leave the researcher with a copious amount of information. The researcher implemented an inductive vs. deductive thematic analysis of her study. The researcher has garnered a theory for the study and has selected participants to deduct that theory. Utilizing thematic analysis will aid in offering insight and explanations for what students with dyslexia see and process as they sight-read a fresh piece of music.

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[133] Ibid.

[134] "Data Synthesis," Information for Authors, Collaboration for Environmental Evidence, last modified June 25, 2023, https://environmentalevidence.org/information-for-authors/8-data-synthesis/.

[135] Lorelli S. Nowell, et al., "Thematic Analysis: Striving to Meet the Trustworthiness Criteria," *International Journal of Qualitative Methods* Volume 16: 2, https://us.sagepub.com/en-us/journals-permissions.

Discourse Analysis is a term that is used for the examination and analysis of speech and writing.[136] The analysis of such conversations is to understand patterns in social life by asking why certain words or phrases were used, the patterns observed in social practices such as taking turns during conversation, and understanding sequences in how they communicate. This is vital for the researcher and the success of this study, as the participants' ability to openly vocalize their experience is the key to garnering the answers needed to be successful. Their thoughts and processes can only be experienced internally, so gaining knowledge through conversation will be critical.

Trustworthiness

Trustworthiness and Credibility

First, the Trustworthiness or rigor of a study refers to the degree of confidence in the data, interpretation, and methods used to ensure its quality.[137] This essential facet will be highlighted in this study as the researcher will increase the reliability of the data gathered. The most important criterion is the study's credibility, the confidence in its truth, and the findings.[138] One reliable approach to ensuring both trustworthiness and credibility is to implement member checking, a technique for exploring the credibility of results.[139] During this process, the researcher conducted a participant review to ensure that the data collected accurately depicts what the participant recited accurately. If the participant disagrees with any part of the recorded

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[136] Lokasundari Vijaya Sankar, “Discourse Analysis,” Principles of Social Research Methodology, (2022): 405, https://doi.org/10.1007/978-981-19-5441-2_28.

[137] Lynne M. Connelly, "Trustworthiness in Qualitative Research," *Medsurg Nursing* 25, no. 6 (2016): 435, https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/trustworthiness-qualitative-research/docview/1849700459/se-2.

[138] Ibid, 435.

[139] Courtney McKim, “Meaningful Member-Checking: A Structured Approach to Member-Checking,” *American Journal of Qualitative Research* Vol 7, No 2 (2023): 41, https://doi.org/10.29333/ajar/12973.

information, changes are immediately implemented for the most accurate results. The researcher also implemented triangulation, defined as the combination of findings from two or more approaches to provide a more comprehensive picture of the results than either approach could do.[140] Having both an executed excerpt and a survey with pre-determined questions will help the researcher gather ample data for the study results. Individuals were recruited through relationships with the researcher's colleagues throughout the United States, as they have garnered a personal relationship with them and attest to their honesty and reliability as participants.

Transferability

The concept of transferability describes how qualitative researchers focus on their participants and their stories without saying this is everyone's story. Researchers support the study's transferability by providing a rich, detailed description of the context, location, and people studied and being transparent about analysis and trustworthiness.[141] Though the researcher has mentioned that dyslexia is a disability, it is also an individualized disability, as every participant will experience the study differently. It is vital to cater to the participants and their study time to provide specific results spanning very individualistic participants.

Dependability

Dependability refers to the degree of consistency, reliability, and stability of findings and interpretations throughout the research process.[142] Though some tactics for ensuring dependability

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[140] Roberta Heale and Dorothy Forbes, "Understanding Triangulation in Research," *Evidence-Based Nursing*16:98 (2013): https://doi.org/10.1136/eb-2013-101494.

[141] Lynne M. Connelly, "Trustworthiness in Qualitative Research," *Medsurg Nursing* 25, no. 6 (2016): 435, https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/trustworthiness-qualitative-research/docview/1849700459/se-2.

[142] Ibid, 435.

require an outside source, the researcher will not enlist the help of an outside reviewer due to confidentiality. Instead, accurate and thorough data analysis and triangulation will be enacted.

Confirmability

Confirmability is the neutrality or the degree to which the findings are consistent and can be repeated. Qualitative researchers keep detailed notes of all their decisions and their notes as the study progresses.[143] The researcher conducted peer debriefing sessions to prevent biases from only one person's perspective on the research. Checking and rechecking the data, as well as listening back to the recordings of all participant interactions, will also help confirmability of the study's findings.

Ethical Considerations

Ethical procedures ensure this study's validity, accuracy, and confidentiality. Acquiring approval of the study topic and permission to work with the live subjects from Liberty University's Institutional Review Board (IRB) (see Appendix A) must be done before data collection can begin and the study participants become involved. After this is secured, screening participants to ensure the utmost accuracy of this study is required, ensuring that each participant meets all three criteria set forth by this study. Consent is obtained from both the parent and participant through a consent document (see Appendix D). The consent document outlines all applicable points, such as the study's purpose, the participants' requirements, how a participant is protected via confidentiality procedures, and the risks associated with the study. Parents and participants are notified of compensation and the withdrawal procedures from the study. This can be at any point in the study, even if the participant contributed their portion of the live or virtual participation documented.

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[143] Ibid, 436.

Confidentiality will be ensured to all participants by each participant having a label associated with their study and data. Participants will not have information disclosed, such as their names, sex, age, and location, except their descriptions in chapter one. Each participant will be numerically paired with Participant 1 through Participant 8 throughout the study and in the data collection, analysis, and findings. All data will be stored on a computer that is password protected to ensure no data and confidentiality of the participants are leaked or misplaced throughout this study. If participants wish to discontinue their involvement with the study, their data is destroyed immediately. After three years, the files are destroyed for all other participants involved in the study.

Chapter Summary

This qualitative hermeneutic phenomenological research study aims to understand better how high school upper woodwind students with dyslexia perceive sight-reading and observe their approach to executing this skill set. Crucial to this qualitative hermeneutic study is the recruitment of eight students meeting all the criteria outlined in this study: a high school student with dyslexia who plays flute, oboe, clarinet, or saxophone. Data for this study is collected by executing a pre-generated excerpt for them to perform, answering survey questions, and collecting any additional insight from the participants they wish to disclose to benefit the study. All interviews are recorded to ensure the data's accuracy. The researcher will proceed with very methodical ethical guidelines to protect the participant's privacy and confidentiality.

This chapter also highlights how students are recruited for this study and the procedures the study will follow for proper and thorough execution. Each participant is screened to ensure that they meet all the criteria for participation in the study. The study can commence once eight participants are identified and consent by signing the consent document (see Appendix D).

The participants participated in a three-step process recorded with student and parent consent. Students met either at the researcher's home or on a virtual platform in a private setting and set up their instruments before beginning the study. Whether in-person at the researcher's house or virtual, the researcher ensured the privacy and confidentiality of all participants. Students sight-read an excerpt (see Appendix B) and, after thirty seconds, then performed the excerpt. Next, each participant answered eleven survey questions (see Appendix C), and their responses were reported for accuracy and precision. Lastly, students were asked for any other commentary they would like to add about their experience that could enhance the study. Once these steps are executed, the participant's portion of the survey will end and be securely kept for data analysis. Each participant is recorded from the time they begin performing their excerpt until the interview's conclusion for accuracy and reliability of results. This process is repeated eight times for each participant, and after this, data analysis will begin.

This chapter also outlines steps for data analysis, stressing that organization, pattern recognition between participants, and special attention to data that differs between participants are all crucial portions of the data studied. Remembering to re-read the interview notes and listen to all recordings to ensure no data was left out of the documentation is essential to providing the most accurate and thorough results possible to the study. The data analysis utilizes techniques such as coding, thematic analysis, discourse analysis, and triangulation to ensure the most specific and consistent findings. Once all of the steps conclude, the study can discuss its findings, giving information to help lessen the gap in the literature about this vital subject in music and music education. The research questions in Chapter One and the hypotheses are reiterated to ensure the study aims to address them thoroughly and completely, yielding the most successful outcome.

This chapter provides a thorough account of this study's methodologies by describing the study's design and what participants experience. With the research questions guiding this study, the researcher will follow these procedures fully and thoroughly without compromising the validity and accuracy of the results or the participants' confidentiality. Trustworthiness and ethical considerations are taken very seriously when executing this study. Chapter Four will thoroughly describe the study's results and findings.

Chapter 4: Presentation of Findings

Introduction

All students will learn to excel in a variety of musical skill sets. Students with dyslexia are not an exception, and studying how they may excel at sight-reading is crucial. This qualitative hermeneutic phenomenological study aims to identify the perspectives of high school students with dyslexia and their approach to sight-reading. After the return of consent forms, participants executed excerpts specifically generated for their instruments and participated in interviews via a list of survey questions either in person or via Zoom video conferencing. This study was conducted to address the gap on this subject. This chapter will present the study's results and conclude with a discussion of the study's results and themes.

Results of Study

Results were compiled after the execution of one eight-measure sight-reading excerpt and eleven pre-generated survey questions conducted via an interview format. They were analyzed and studied via recording and text analysis for an accurate assessment of the responses of the eight participants. This process included sorting and categorizing concepts based on open coding of participants' words and phrases and observing their body language and execution of the excerpts. The specific classification of data was established by patterns of categories for each question and by how each student approached the excerpt. This was followed by the development of generalized themes and direct interpretation of other emergent themes observed in the study.

Description of Study Participants

The study was comprised of eight high school upper woodwind students with dyslexia. The study observed these eight participants sight-read a pre-generated excerpt for their instrument, followed by a survey of eleven questions conducted in interview format. After the study, participants were

allowed to add commentary that they believed would benefit the study. The average age of participants was approximately 15.5 years old, ranging from 14 to 17 years. Participants played upper woodwind instruments; there were four clarinetists, two flutists, one oboist, and one saxophonist. All participants were public school students residing in the United States, ranging from freshmen to seniors in high school. This is seen in Table 3 below.

Table 3. Participant Demographics

Participants	**Grade**	**Instrument**	**Age**
1	Freshman	Clarinet	14
2	Senior	Clarinet	17
3	Sophomore	Flute	15
4	Junior	Clarinet	16
5	Senior	Oboe	17
6	Freshman	Saxophone	14
7	Sophomore	Clarinet	15
8	Freshman	Flute	15

Participant 1 is a freshman clarinetist from a rural district in Georgia. He started playing the clarinet in fourth grade and has been taking private lessons since then. He has dyslexia and experiences challenges with sight-reading, consistently receiving lower scores on sight-reading in auditions and competitions.

Participant 2 is a senior clarinetist from a prominent city in Georgia. She began her clarinet studies in the sixth grade and enrolled in private lessons as she entered high school. Diagnosed with dyslexia, she feels that they are competent sight-readers, but her disability forces them to exert extra concentration to do so. She has scored well on sight-reading in competitions and auditions and will pursue a music career.

Participant 3 is a sophomore flutist from rural Texas. She started flute in the fifth grade and has been in private lessons since beginning flute. She feels her sight-reading is a problem but tends to execute sight-reading better than perceived in auditions and competitions. She has tried exercises such as color coding to assist with sight-reading but feels that it has been unsuccessful.

Participant 4 is a clarinetist from a prominent city in Georgia. He has been playing the clarinet since the sixth grade and started private lessons in the tenth grade. He is the only participant in the study who believes his dyslexia diagnosis helps with their sight-reading skill and believes the disability benefits him in both competitions and auditions regarding sight-reading.

Participant 5 is a senior oboist from a rural town in Georgia. She has played the oboe since sixth grade and started private lessons last year. Since beginning their instrument, she has struggled with sight-reading, which she attributes to her dyslexia diagnosis. Her scores have not been consistent in auditions and competitions, but in the past year, she has been able to focus and improve her skills.

Participant 6 is a freshman saxophonist from a prominent city in South Carolina. He has been playing since the sixth grade and started private lessons in the eighth grade, however, he lacks confidence in his sight-reading abilities, which affects their confidence. He has produced average sight-reading scores in competitions and auditions in the past.

Participant 7 is a sophomore clarinetist from New Jersey. She has been playing the clarinet since the fourth grade and began private lessons upon entering high school. She perceives sight-reading as neutral, not too complicated, and not too tricky, though her sight-reading scores in the past have been lower than anticipated.

Participant 8 is a freshman oboist from a prominent city in Florida. He began studying the oboe in sixth grade and private lessons this year as he entered high school. He was diagnosed with dyslexia

at a young age and has struggled with reading and sight-reading. He feels that his disability slows down his ability to process new information they read, and sight-reading is affected due to this.

Researchers Observation of Excerpt Execution by Participants

Excerpts presented to participants were generated randomly from the online program Sight-Reading Factory for their specific instruments. Flute, oboe, clarinet, and saxophone had different excerpts, but they were designed to be equally complicated. Participants were allotted thirty seconds each to study the excerpt before attempting a performance. All eight participants began their portion of the study with this step. None of the eight participants in the study executed the sightreading perfectly in terms of rhythm and note accuracy. As with sight-reading at competitions and district and all-state auditions, the researcher gave each participant an anonymous score regarding their execution. Table 4 below depicts the researcher's findings.

Table 4. Participant's Excerpt Execution Scores

Participants	**Grade**	**Instrument**	**Score (out of 10)**
1	Freshman	Clarinet	5
2	Senior	Clarinet	9
3	Sophomore	Flute	6
4	Junior	Clarinet	8
5	Senior	Oboe	7
6	Freshman	Saxophone	7
7	Sophomore	Clarinet	6
8	Freshman	Flute	5

The researcher evaluated each participant out of ten points based on their sight-reading execution. The eight participants' average sight-reading score was 6.63/10. Participant 2 presented the

highest sight-reading score, while Participants 1 and 8 posted the lowest scores. Participant 2 is a senior, while Participants 1 and 8 are freshmen, and one could hypothesize that given the lack of exposure to the difficulty level of sight-reading, they had a more challenging time. Based on Question 1 in their surveys (see Appendix C), however, Participant 1 assessed sight reading as a 4/10, so it was perceived to be on the more accessible side. Tabel 5 below is a chart depicting participant answers to Question 1, the excerpt's difficulty level.

Table 5. Question 1 Answers

Participants	**Grade**	**Instrument**	**Score (out of 10)**
1	Freshman	Clarinet	4
2	Senior	Clarinet	8
3	Sophomore	Flute	8
4	Junior	Clarinet	7
5	Senior	Oboe	8
6	Freshman	Saxophone	6
7	Sophomore	Clarinet	7
8	Freshman	Flute	7

Though students with dyslexia can potentially identify all that is correct with their sight-reading, their disability may give them a false sense of confidence in what went well. Participant 1 identified the excerpt as having only a 4/10 regarding difficulty; he had one of the weakest sight-reading executions of the participants. Participant 1 stated, "I feel that my articulation and rhythms went well while performing the excerpt." The researcher deemed that both lacked competency and consistency, leading to a researcher-assessed sight-reading score of 5/10.

Participant 2 was the most skilled sight-reader of the participant group, achieving a researcher-assessed score of 9/10. Participant 2 remarked, "I think I got all the notes right in the excerpt."

The researcher found that there were times that Participant 2 mentally rearranged notes on the staff, playing the notes above or below the line or space that was intended. Participant 7 remarked, "The key signature was not bad, and it felt like an F major variation." Though this participant could decipher the key and pick out patterns within the excerpt, she was not consistent with the accuracy of her notes. She ended up deviating from the key when executing the excerpt. The prevalence of participant perception of accuracy instead of the realistic execution presents an emerging theme of inconsistency of participant perception. Students with dyslexia could feel that an excerpt is going well, not realizing they are deviating from what is written to a greater extent than considered.

Participant Processing of Excerpt

Before study participants executed the excerpt provided in the study, they were allotted thirty seconds to study it in the manner that they deemed beneficial. The researcher observed each participant before asking their approaches to process the excerpt on question 2 of the survey (see Appendix C). The researcher noticed a consistency in body language in fingering notes, air playing, tapping their foot, and rapid eye movements from assessing the excerpt quickly. Though not typical for sight-reading, the researcher was particularly struck by the rapidness of eye movements and connected it to cognitive processing. Jamie Madell and Sylvie Hebert have referenced that if particular features of musical structure affect reading performance in a task, such as transcription from memory, then the cognitive processes underlying this task must occur to perform it.[144] Through this study, the researcher strives to ascertain the cognitive process methodologies to help all students with dyslexia have a better chance to achieve excellence at sight-reading.

[144] Jamie Madell and Sylvie Hébert, "Eye Movements and Music Reading: Where Do We Look Next," *Music Perception: An Interdisciplinary Journal* 26, no. 2 (2008): 160, https://doi.org/10.1525/mp.2008.26.2.157.

A consistent trait among the participants was checking for three key elements: time signature, key signature, and scaler patterns. These are standard practices taught at the inception of music education but depict observing more of the large picture than the smaller picture of sight-reading. The smaller picture indicates examining note by note rather than stepping back and looking for scale and arpeggiated patterns. Matthew H. Schneps indicates, "People with dyslexia can distribute their attention far more broadly than typical readers, successfully identifying letters flashed simultaneously in the center and the periphery for spacings much further apart."[145] This implies that musicians with dyslexia could have an easier time looking at the oversized picture in sight-reading, such as key signatures, time signatures, and overall rhythmic patterns, which students without dyslexia tend to miss as they browse the excerpt. These students, on average, tend to focus more on individual notes and are concerned about performing as many notes correctly as possible.[146]

The researcher received various responses when asked how participants processed the excerpts in their allotted thirty seconds. Participant 1 mentioned that he "Concentrated on air playing, as well as the key signature, notes, and scale rhythms and patterns. Participant 3 stated, "I tried to focus on the faster rhythms first as they are more problematic, but I made sure to focus on the key signature and time signature first." Participant 5 stated, "First, I checked the time and key signatures. Then, I tried to look at the easier rhythms overall since more were in recognizable scale patterns. Then, I shifted to harder ones until time ran out."

[145] Matthew H. Schneps, "The Advantages of Dyslexia," Scientific American, Accessed February 8, 2023, https://www.scientificamerican.com/article/the-advantages-of-dyslexia.

[146] Ibid.

Table 6 below depicts the responses of all eight participants regarding whether they utilized pattern recognition within their sight-reading process and the specific kind of patterns they used.

Table 6. Pattern Utilizationcx

Participants	Scales	Arpeggios	Chromatic
1	Yes	Yes	No
2	Yes	No	Yes
3	Yes	No	No
4	Yes	Yes	Yes
5	Yes	No	Yes
6	Yes	No	No
7	Yes	No	No
8	Yes	Yes	Yes

100% of participants utilized scaler pattern recognition, 50% utilized chromatic pattern recognition, and 37.5% utilized arpeggio pattern recognition. This theme is consistent with dyslexic students perceiving vital elements in the more prominent picture of sight-reading, such as key signatures, time signatures, and scaler patterns to aid in sight-reading execution. The researcher cross-examined this over a week with 10 of their non-dyslexic students and observed that 7 out of 10 missed the key signatures, and 9 out of 10 were hyper-focused on individual notes rather than patterns. Pattern recognition could be a positive element for students with dyslexia concerning future sight-reading strategies they can implement.

Smaller or More Prominent Picture

The participants' awareness of a smaller or more prominent picture conflicted with some of their answers, though they unanimously utilized scaler pattern recognition. This lead the researcher to believe that not all participants processed their methodologies as they thought. Participant 2, the most skilled sight-reader of the group, stated that she "concentrated on smaller segments but recognized

familiar rhythmic and scaler patterns." Table 7 below is a chart of survey responses regarding focus perceptions from Question 8 (see Appendix C).

Table 7. Segment Focus

Participant	**Smaller or More Prominent Segment Focus**
1	More Prominent
2	Smaller
3	More Prominent
4	More Prominent (at first) Smaller (end)
5	More Prominent
6	More Prominent
7	Both
8	Smaller

Students need to understand how information is processed, and consistent recognition is pertinent to the success of this skill set. When asked about segment focus, Participant 6 stated, "I focused on smaller segments, but I do not think it worked for me very well." Participants 4 and 7 utilized both segment focus ideas, seeking patterns at the beginning of their allotted thirty seconds and focusing on smaller segments closer to the end of their time limit. Participant 8 focused on smaller segments, but the researcher's observation of his execution parallelled the lowest score, a 5/10. The researcher found that the data and information gathered in this study show that students with dyslexia are much more successful executing excerpts if they perceive the more prominent concept within their processing time rather than focusing on smaller segments, deeming this an advantage of their disability. Pattern recognition is familiar and comfortable and aids in more successful execution.

Struggles in Sight-reading

Though pattern recognition is a helpful tool for students with dyslexia, sight-reading can still be very cumbersome. Identifying common weaknesses among the participants is essential to structuring a successful plan to better approach those hurdles. Question 4 of the survey asked students to describe their challenges while executing the excerpt (see Appendix C). Table 8 depicts the most reported obstacles and the frequency with which students experienced them.

Table 8. Sight-reading Problematic Areas

Participants	**Rhythms**	**Faster Notes**	**Rests**
1	Yes	Yes	No
2	Yes	Yes	Yes
3	Yes	Yes	No
4	Yes	Yes	No
5	Yes	Yes	No
6	No	No	No
7	No	Yes	No
8	Yes	Yes	Yes

The three most commonly communicated obstacles that participants experienced were rhythm, faster notes, and execution of rests. Rhythms were problematic for 75% of participants, faster notes were problematic for 88% of participants, and accurate counting of rests was difficult for 25% of participants.

Participants provided multiple responses to this. Participant 1 stated, “I struggled with accidentals and faster notes, the 16th note triplets, and the ability to process individual notes.” Participant 2 remarked, "It was hard figuring out where the rests and note values landed, especially in the faster triplet sections.” Participant 6 reiterated Participant 2’s perspective: "The rests were fast and awkward, and the quicker notes gave me trouble.” The most striking quote came from Participant 3 when she stated, “The 16th notes blended, and I had trouble playing them under pressure. It feels

overwhelming when notes get faster." Though these categories can be problematic for any musician, a consistent trend emerged: rhythmic patterns and faster notes are complex for the participants to process when given a time limit, as sight-reading typically does. The feeling of being overwhelmed was mentioned a few times in the survey, which altered how participants processed rests and faster rhythms, likely losing internal subdivision calculations.

A more comprehensive range of studies on music notation and dyslexia have shown students reporting difficulty recognizing individual notes within chords and, therefore, found reading music frustrating. They also reported seeing written music as "just a bunch of dots on the page," which required them extensive time to code musical notation.[147] This study elevates the level of complexity specific to upper woodwind instruments, which play high-speed and complex rhythmic patterns regularly in bands and orchestras. Faster note groupings seem to be the most significant variable, giving students trouble, and students with dyslexia who cannot decipher them clearly could be the culprits.

Clusters

With faster note groupings giving all participants the most trouble throughout the study, it is crucial to figure out the cause of the struggle. Faster note groupings in music have multiple stems, including sixteenth notes, sextuplets, and thirty-second notes. Typically, the more stems that are on the staff, the trickier they can be to decipher. The seventh survey question focused on asking participants if any notes presented as "clusters" in any way (see Appendix C). 100% of the participants experienced some cluster of notes within the study. Clusters in music can come in the form of numerous notes grouping on top of one another, notes causing a blurring effect, or seeing multiple notes around one central note head. Studies have found that the activation pattern for reading musical symbols and letters

[147] Leonore Glasgow, et al., "Dyslexia and Musical Notation," *Annals of Dyslexia* 44 (1994): 192, http://www.jstor.org/stable/23769692.

is different across the brain. They have confirmed that the brain processes pitch (spatial information) and rhythm (symbol recognition) differently.[148]

Asking the participants about experiencing clusters helped them put a name to something they did not know how to verbalize. The research received various responses concerning participants experiencing clusters while they sight-read. Participant 3 mentioned, "Yes, a cluster is a good word for what I saw when attempting to sight-read the 16th notes." Participant 4 stated, "I saw them at first, but in my processing time, I tried to space them out mentally to make reading the exercise easier." Participant 5 revealed they "had always called them blurs, but clusters are a better word for what they saw." To have all participants unanimously experience clusters, blurs, or notes that blended aligns with students with dyslexia struggling to sight-read faster passages. Upper woodwind musicians must grapple with this frequently, so formulating an approach to combat clusters in music reading could be key.

In standard reading, studies have found that dyslexic students needed 32% larger fonts to reach their maximum reading speed compared to ordinary readers at the same level of word reading. The positive effects of the size of written music were profound for dyslexic students, as they made four times as many mistakes as normal reading children in the samples printed on the average size for sheet music. In contrast, in the largest-sized samples, dyslexic children made only one and a half times as many mistakes as non-dyslexic children.[149] When Participant 4 referenced taking extra time to mentally space out the notes before performing, that undoubtedly took time away from the larger picture of the sight-reading exercise. Upper woodwind students with dyslexia could benefit from

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[148] Jennifer Mishra, "How the Brain Reads Music: The Evidence for Musical Dyslexia," *Neuroscience News* (2021): 2, https://neurosciencenews.com/musical-dyslexia-17971/.

[149] Nanke Flach,, et al., "Effects of the Design of Written Music on the Readability for Children with Dyslexia," *International Journal of Music Education* 34 (2014): 10, 10.1177/0255761414546245.

having more prominent music to read off of, increasing their accuracy and minimizing the effects of note clusters in their sight-reading. With a unanimous finding such as this, it should be something to study further to see if students would have a more accurate sight-reading execution with this more significant musical notation.

How Dyslexia Helped or Hurt Their Sight-reading Attempt

Prior studies have shown that students with dyslexia can struggle or thrive in their sight-reading abilities. It is important not to disenfranchise the idea that a disability can bode favorably for a skill set. Questions 9 and 10 of the survey (see Appendix C) that the participants answered asked whether they believed that their dyslexia helped or hurt their sight-reading in any way. Table 9 shows a compilation of their answers depicting simple "yes" or "no" responses.

Table 9. Positive and Negative effects of Dyslexia on Sight-reading

Participants	Help Sight-Reading	Hurt Sight Reading
1	No	Yes
2	Yes	Yes
3	No	Yes
4	Yes	Yes
5	No	Yes
6	Yes	Yes
7	No	Yes
8	No	Yes

From the survey, 100% of participants stated that their disability hurt some sight-reading element, however, 37.5% attributed their dyslexia to have helped them in another way regarding their sight-reading execution. Participants 2 and 4 mentioned that they "believe dyslexia forces me to concentrate harder." Participant 7 elaborated, "Concentrating harder makes them not take elements for granted within a sight-reading exercise." Being mindful of elements that they struggle with, some participants

counter their struggles with elevated levels of concentration to deflect the adverse effects that their disability can possess over their skill sets.

100% of the participants did state that their disability impacted their sight-reading ability negatively. Participant 1 found that "individual notes were tough to make out and process, especially being timed." Participant 2, who attributed her disability to aiding in their execution in one way, stated that "focusing on note heads and utilizing extra concentration may have caused them to lack focus in other elements of the sight-reading." Participant 3 stated that "dyslexia causes rhythms and notes to blur together." Analyzing data from all eight participants led to a few sub-themes regarding elements that may have hurt their sight-reading: blurs/clusters, the inability to process rhythms under pressure or under a time limit, and not having enough time to make observations or study the etude.

Because dyslexia is an individualized disability, it affects every person differently. All participants acknowledged that some element was detrimental to their sight-reading abilities, but each one described their experiences with slightly different phrasing. Identifying these sub-themes, however, is an excellent first step to linking negative experiences and finding a methodology to help students who experience this daily. Researchers consistently seek ideas to lessen the effect that dyslexia has on reading, and sight-reading is no different. This is a positive revelation for understanding what students process and can be managed positively.

Participant Advice to Music Educators

In a classroom setting, students may feel uncomfortable confiding in teachers regarding their disabilities. They also may be afraid to ask for accommodation and offer suggestions that may benefit them out of respect for authority. The researcher wanted to probe the participants' minds more to ascertain if they would provide advice to music educators if given the opportunity regarding sight-reading and their dyslexia. Question 11 of the survey (see Appendix C) asks them to deliver just that,

and all participants were willing to answer the question honestly and candidly. Participant 1 stated, "Personally, please do not throw as much music at me at once. Make rehearsals run in chunks, so I am not overwhelmed and shut down." Participant 2 remarked, "I would just ask for patience, as I do not do this on purpose, and taking a step back to process the material [in rehearsal] is helpful and welcome. Participant 3 spoke about their teacher, stating, "I feel like they get frustrated when we can't nail something the first time. The understanding that we all have our limitations and to be understanding would help." Participant 4 offered their advice as someone who does well at sight-reading. "We like to be challenged just as much as students without dyslexia. If I could write or color more in my music during class, that would help me greatly." Participant 5 remarked, "I wonder if my teacher would structure rehearsals to be more specific so I do not mess up from having to learn or read too much at once." Participant 6 suggested "varying our music with some difficult and some easier selections to help those of us who do not learn as quickly." Participant 7 stated, "I know sight-reading is necessary, but maybe more fundamentals on patterns and scales could help everyone have a better chance to sight-read at a higher level." Participant 8 suggested that "maybe more practice with those of us who need extra help with sight-reading could be good." Though students could verbalize their thoughts in their own words, a few overlapping points stand out from these statements. First, music educators should structure rehearsals in smaller increments per rehearsal to enable all students with dyslexia or other disabilities to learn the music more successfully. Delineating measures to focus on daily rather than assigning an entire piece could make students less overwhelmed and put them in a better position to execute the piece and learn it without being discouraged.

Teaching to the individual, especially to students with dyslexia or other disabilities, is crucial for setting them up for success. Patience and understanding go a long way for students challenged with sight-reading and are essential to being an efficient and professional educator. Frustration with students

can limit progress instead of motivating them. Educators must recognize their students' limitations and understand they are performing their best.

Final Thoughts from Participants

After the eleven pre-written survey questions concluded, participants were asked if they wanted to share anything else that could benefit the study from a high school upper woodwind student with dyslexia or any suggestions for increasing the pedagogy of teaching sight-reading to students with dyslexia. Participant 1 stated, “I think it would be great to have different colored notes or be able to color or highlight my music in class.” Participant 2 stated, “I think it is essential to know that some of us have trouble reading notes outside of the notes on the staff as they are difficult to decipher.” Participant 3 thanked the researcher for involving them in the study and asked if any helpful techniques regarding students with dyslexia and sight-reading were discovered to let them know. Participant 4 stated that “we [students with dyslexia] like to be challenged just as much as students without dyslexia. If I could write or color more in my music during class, that would greatly help.” Participant 5 did not wish to add any additional comments. Participant 6 asked, “Would it be possible also to recommend blowing up music so that notes are spaced out a bit more?” Participant 7 thanked the researcher and hoped their participation helped the outcome of the study. Participant 8 stated, “I want to be able to write in my music more, as that helps me.”

A common theme documented by the participants was being able to write or color in their music to help them assess notes and other characteristics more readily. Music educators can discourage using color and pens, primarily if they use original music copies. Providing copies that students can write on and color will aid in their learning the music at a faster pace, which will hopefully translate to the identification of rhythmic themes more accessible and will help their sight-reading skills improve.

Addressing Research Question 1

RQ1: What are the perceptions of high school upper woodwind students with dyslexia concerning sight-reading?

With all of the above data, the perceptions of high school upper woodwind students with dyslexia can vary. Still, themes and subthemes emerged through conducting the sight-reading excerpt and survey questions. The participants recognized some themes, while others could not recognize their ability to perceive an accurate assessment regarding their execution.

Theme 1: Realistic Accuracy of Execution

Garnering high school students' perceptions can help identify a critical lack of fundamentals regarding rhythm, scale knowledge, and primary subdivision. Some participants were able to gauge a realistic perception of their execution against what the researcher was able to assess, however, in the case of Participant 1 stated that the sight-reading excerpt was on the more accessible side, with a 4/10 for difficulty when, in reality, they were one of the weakest sight-readers in the study. Every participant expressed some positive attributes and negative aspects regarding how they performed the excerpt, which gives the researcher a glimpse into a dyslexic student’s processing.

Theme 2: Pattern Recognition

The eight participants' perceptions pointed to pattern recognition as a crucial part of successfully executing their sight-reading excerpt. They could assess the more prominent picture regarding the excerpt, observing qualities such as key signatures, time signatures, and patterns within the music to assist in their processing. Utilizing major scale patterns, chromatic patterns, and arpeggios shifted their focus from individual notes to the broader picture, helping the exercise

become a more manageable task. These findings also display excellent core fundamentals from the music programs of all participants, as their theoretical knowledge was advanced.

Theme 3: Understanding Their Limitations

A revealing observation of this study was the participants' unanimous admittance to seeing clusters when presented with a faster rhythm or a musical notation possessing multiple stems. Though each participant may perceive the cluster slightly differently, it was an identifiable roadblock in their ability to execute these rhythmic figures, especially when seen for the first time or if the exercise is attached to a time limit. This led the researcher to note that the perceptions of students with dyslexia need to utilize a particular process to mentally separate clusters before continuing with the excerpt. The researcher also experiences clusters, matching the participant's demographic as an upper woodwind musician with dyslexia.

The perceptions expressed in this study coincide with the original hypothesis outlined in Chapter 1.

H1: Students with dyslexia experience tasks like sight-reading very differently, from cumbersome and challenging to excelling due to utilizing identifying patterns and processing the larger picture rather than the minute details. Sharing a disability does not equate to a similar cognitive output.

H2: Pattern recognition strategies will mitigate and enhance the effects of sightreading on a dyslexic high school student’s sight-reading ability.

This study produced a majority of participants who struggle with sightreading, but in the case of Participant 4, they believed that their disability enhanced their skill set. Possessing dyslexia does not mean the outcome of executing skill sets will be identical. However, common themes among the participants were prevalent, leading to useable data to help formulate a strategy

to help music educators make sight-reading easier for students with dyslexia. Pattern recognition was helpful for 100% of participants despite stating that each utilized a different type of scale pattern. Examining the excerpt as the more prominent picture helped students mitigate problematic areas and enhance their execution of the excerpt.

Addressing Research Question 2

RQ2: What strategies can teachers implement to mitigate or enhance the effects of dyslexia on upper woodwind players' sight-reading abilities?

Question 11 of the survey asked participants to offer advice to help music educators better understand what students with dyslexia perceive regarding musical notation and sight-reading (see Appendix C). Gaining these perspectives from participants will give music educators a fair amount of insight to structure their curriculums and pedagogy to cater to students with dyslexia.

Theme 4: Structuring of Rehearsals

Participants stated that music educators should assign specific music sections to practice instead of the whole piece. This could help them maintain the same pacing as their colleagues. Some strategies that coincide with this are assigning excerpts and balancing the difficulty of repertoire expected in a given concert or semester. Structuring the semester to be more specific and detailed will make dyslexic students more comfortable learning the music and seem less daunting.

Theme 5: Patience and Understanding

Participants stressed that simply having empathy and understanding for their disability goes a long way in making them feel comfortable in a particular environment. When music educators do not present with a specific condition, it is easy to get frustrated or not recognize the accommodations students may need to succeed. Music educators must be transparent and

communicative with students with disabilities to determine their needs. Some students may require more time, breaks, or even more rigorous challenges to feel like an inclusive class member. Dyslexia is a very individualistic disability that causes each student to respond to elements of sight-reading and musical skills differently. Recognizing this facet is integral for any music educator to garner an inclusive classroom.

Theme 6: Music Alteration

Most participants stated that to avoid clusters or misidentification of reading notes on the wrong lines and spaces, having music educators enlarge music would be beneficial. Students with dyslexia may eventually be able to dissect clusters over time mentally, but a more prominent notation would be helpful. Other participants wanted to apply color to their music to help them learn and process the material better. Coloring and notating scales and other helpful passages could aid in learning music faster and slowly, helping elevate their sight-reading skills. Allowing students to have copies rather than original parts will significantly solve this problem for the educator and the student.

Chapter Summary

The findings from the sight-reading excerpt execution and survey-led interviews explored the perceptions and experiences of eight high school upper woodwind students with dyslexia. They described their experiences in detail, from processing the excerpt to executing it. Each participant was asked to evaluate the difficulty level of the excerpt and provide an opinion on what went well and what was a struggle for them.

Once they could analyze how the execution of the excerpt was for them, the eight participants had the opportunity to speak about their overall processing of musical skill utilized. Participants were asked about their perceptions of pattern recognition regarding scales, arpeggios,

and chromatic lines. They talked about whether they could interpret the excerpt in a larger or smaller picture and identify problematic elements in the music, such as clusters, rhythmic patterns, or counting of rests. Their perceptions were also enlightened when they could not identify what they saw with a label until words such as “clusters” were asked of them, helping them garner a greater understanding of things they experienced but could not communicate openly. Studies are not just for the researcher but for the participants to be able to understand their disability more intimately as well.

Students were then asked to describe whether they felt their dyslexia helped or hurt their sight-reading of the excerpt in any way. Though all felt that their disability affected some element of their sight-reading negatively, some participants attributed it to enhancing their skill set. Whether they perceived their dyslexia by helping them concentrate harder or identify some aspects of the music, the benefit of a disability can not be overlooked.

The participants were able to offer advice to music educators on how they could better understand their students' musical perceptions of music notation and sight-reading. Participants identified patience and understanding, structuring rehearsals in smaller chunks, and alterations to musical notation as beneficial for their disability. This study addressed both research questions, and the initial hypothesis was not rejected.

Chapter 5 addresses the participants' insights related to each research question more intimately and provide a broad summary of the study and its findings. The findings' implications will be discussed to identify critical information learned and how these may be applied to music educators' curriculums and teaching strategies for students with dyslexia.

Chapter 5: Conclusion

Introduction

This qualitative hermeneutic phenomenological study captures the perceptions of eight high school upper woodwind students with dyslexia and their various approaches to sight-reading. Though dyslexia is a defined disability, the eight participants demonstrated that dyslexia is anything but standardized. The researcher sought to gain the perspective of high school upper woodwind students with dyslexia concerning their approach to sightreading. What a student sees, processes, and emotes through their instrument can reveal much regarding the limitations or advantages their disability has on their musical abilities. This study includes the intricacies of this disability regarding participants' process of sight-reading and how individualistic each experience could be while garnering similar results and evidence that could aid in assisting students with dyslexia and music educators to understand the disability better.

Discussion of Findings

The researcher investigated numerous findings, which were particularly interesting considering her experience as a dyslexic musician. The findings address the gap in research by expanding upon a specific and narrow demographic of students with dyslexia, which will help highlight methods to facilitate learning and refine the skill set. The evidence provided insight into what students with dyslexia endure and their cognitive processes when sight-reading.

Participant Processing of Excerpt

The researcher observed participants studying the excerpt and their body language. While assessing the excerpt, the researcher noticed consistent body language in fingering notes, air playing, tapping their feet, and rapid eye movements. The rapidity of eye movements was particularly interesting as it is often connected to cognitive processing, as documented by G. Reid Lyon et al., who

mentioned that dyslexia causes "difficulties with accurate and fluent word recognition and poor decoding abilities. These difficulties result from a deficit in the phonological component of language that is often unexpected about other cognitive abilities and the provision of effective classroom instruction."[150]In addition to body language, there was a universal focus on three critical elements of the excerpt: time signature, key signature, and scaler patterns. These are standard practices taught at the inception of music education but depict broader observation rather than narrower engagement with sight-reading. The more narrowed approach involves examining the music note-by-note rather than examining for scale and arpeggiated patterns. Students with dyslexia excel at observing the characteristics of excerpts such as time signature, key signature, and scaler patterns rather than more minor note examinations, confirming the research that Eide and Eide highlighted when they stated, "Several published research studies support the idea that individuals with dyslexia show special talents for finding similarities and likenesses."[151]

Challenges in Sight-reading

The researcher found that specific faster rhythmic patterns are problematic for the participants to process when presented with a time limit, which is standard with sight-reading. Participants experiencing overwhelming feelings leading to disengagement stemming from restricted time limits altered how participants processed rests and faster rhythms, likely ignoring internal subdivision calculations. Additionally, this study elevated the level of complexity specific to upper woodwind instruments, which play high-speed and complex rhythmic patterns regularly in bands and orchestras. Faster note groupings seemed to have been the most significant variable, presenting all participants

[150] G. Reid Lyon, et al. "A Definition of Dyslexia," *Annals of Dyslexia* 53, no. 1 (2003): 2, http://www.jstor.org/stable/23764731.

[151] Brock L. Eide and Fernette F. Eide, *Unlocking the Hidden Potential of the Dyslexic Brain,* (New York, NY: Plume Books, 2023), 135.

with the most difficulty throughout the study. These note groupings comprise multiple stems, including sixteenth notes, sextuplets, and thirty-second notes. Typically, the more stems on the staff, the more challenging it is to decipher.

Another struggle directly related to faster rhythmic structures is clustering in music. Clusters can assume the form of multiple notes overlapping, eliciting a blurring effect, or various notes around one central note head, which 100% of participants identified experiencing. Some participants identified occurrences but could not describe their experience until this study mentioned a note cluster. Though students with dyslexia excel at extensive pattern recognition, they still experience difficulties with these rhythmic patterns due to slower cognitive processing and perceiving clustered notes, as deciphering the core note that the music intended can be complex.

How Dyslexia Helps or Hurts Sight-reading

Students with dyslexia experience challenges with or thrive in their sight-reading abilities. Without disenfranchising the idea that a disability can bode favorably for a skill set, participants spoke about whether they believed that their dyslexia helped or impeded their sight-reading. One hundred percent of participants attributed their dyslexia to impeding their sight-reading, but 37.5% attributed their dyslexia to having helped them in different ways.

Being conscious of elements with which they experience difficulties, some participants counter their challenges with increased levels of concentration to deflect the adverse effects that their disability can possess over their skill sets.[152] Participants, however, named certain elements that may have impeded their sight-reading due to their dyslexia, such as blurs/clusters, the inability to process rhythms under pressure due to a time limit, and insufficient time to process the excerpt thoroughly. Because

[152] Kathleen A. Corrigall and Laurel J. Trainor, "Associations Between Length of Music Training and Reading Skills in Children," *Music Perception: An Interdisciplinary Journal* 29, no. 2 (2011): 148, https://doi.org/10.1525/mp.2011.29.2.147.

dyslexia is an individualized disability, it affects every person differently. Margaret Byrd Rawson mentions, "Dyslexia is known for its uniqueness, and the differences are personal."[153] All participants acknowledged that some elements were detrimental to their sight-reading abilities. Still, each described their experiences with slightly different phrasing, leading to positive revelations for understanding students with dyslexia and their perceptions.

Insight for Music Educators

Students may feel uncomfortable confiding in teachers about their disabilities. They may also be afraid to ask for accommodation and offer suggestions that may benefit them out of respect for authority. The researcher wanted to explore participants' minds to see if they could provide insight for music educators. Some key takeaways point to music educators structuring rehearsals and choosing specific measures to focus on instead of assigning an entire piece, teaching to the individual, patience, and giving students a challenge who excel at sight-reading due to their disability. These points are often held inside for students with disabilities, but garnering this insight will be beneficial as educators craft their curriculums.

Final Thoughts

The participants' perspectives are essential to this study's success. After the survey questions, participants provided any other thoughts or insights that would benefit the study. A common theme among participants was the desire to write or color their music to facilitate better assessing notes and characteristics. Providing copies on which students can write and color will aid in learning the music faster, hopefully translating to the identification of rhythmic themes more accessible and will help their sight-reading skills improve. This reinforces prior research done by Elizabeth Heikkila and Andrew Knight when they describe, "Some key factors to aid in student success are making the text visible

[153] Margaret Byrd Rawson, "The Many Faces of Dyslexia," *Annals of Dyslexia* 36 (1986): 181, http://www.jstor.org/stable/23769412.

and enlarging it for added legibility, printing on colored paper since black and white paper could cause clusters or glare, and color coding notes and lyrics.[154] Music educators must recognize disabled students' needs; minor curricular adjustments may ensure student success.

Conclusion

This study aims to address the gap in the literature regarding sight-reading and students with dyslexia. Though previous researchers conducted research that addressed the subject, these studies were often too broad and lacked the details necessary to help the dyslexic musical community. By garnering the perspectives of dyslexic high-school upper woodwind students, the literature will provide meaningful solutions for students, parents, and educators.

Previous studies have found that decoding and interpreting a new piece of music with minimal preparation time could cause dyslexic students to panic, lose focus, or feel defeated without a strategic plan to address the missing connection in cognitive processing.[155] Though there is a plethora of literature regarding dyslexia and reading and dyslexia and music notation, minimal literature documents the effects of dyslexia in sight-reading and even less targeting sight-reading among dyslexic high school upper woodwind musicians. This study demonstrated that the cause of student panic or loss of focus during sight-reading was attributed to music notation appearing as clusters, causing difficulty deciphering music notation, especially in faster rhythmic sections. The strategic plan garnered from this study applies pattern recognition from studying the more prominent picture aspects of the excerpt, such as scales, arpeggios, and chromatic figures, rather than focusing on individual notes. By concentrating on scaler patterns, students with

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[154] Heikkila, Elizabeth, and Andrew Knight. "Inclusive Music Teaching Strategies for Elementary-Age Children with Developmental Dyslexia." *Music Educators Journal* 99, no. 1 (2012): 56, http://www.jstor.org/stable/41692697.

[155] Kimberly A McCord, "Moving Beyond 'That's All I Can Do:' Encouraging Musical Creativity in Children with Learning Disabilities," *Bulletin of the Council for Research in Music Education*, no. 159 (2004): 30, http://www.jstor.org/stable/40319205

dyslexia have a recognizable source to focus on rather than taking the time to dissect individual notes. Scales are routine and a regular part of practice routines, so recognizing scales in sight-reading could alleviate the struggle of studying each note. This is crucial for students and music educators, as it supports documented literature that sight-reading can be overwhelming and cause students to lose focus. This also demonstrates that students with dyslexia can lack the cognitive ability to decipher notes due to note clusters, which is monumental for advancing tactics to combat dyslexia and sight-reading.

Previous studies have also revealed different concepts about whether sight-reading is a teachable skill. Jennifer Mishra has investigated cognitive factors that may correlate with sight-reading ability, especially those with predictive power. Musicians differ in their ability to sight-read; some researchers ascribe the ability to innate talent, while others investigate sight-reading as an acquired skill.[156] Mishra's study focuses on sight-reading being "a skill that can be studied and perfected with consistent practice and implementing proper strategic plans for execution within the pedagogy."[157] This study has paralleled Mishra's theory by implementing pattern recognition and by gaining insight into methods that will help students with dyslexia thrive, such as color coding their music, providing students copies of music that incorporate generous spacing between notes to avoid clusters, and structuring rehearsal techniques to be more targeted. This compliments Sylvie Herbert's study, which encourages color coding of notes, exercises with bolder and thinner note heads, timed practices utilizing segmentation of measures and rhythmic figures, pitch reading exercises, and symbol discrimination.[158] Students with dyslexia should be aware of what strategies they can practice to

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[156] Jennifer Mishra, "Factors Related to Sight-Reading Accuracy: A Meta-Analysis," *Journal of Research in Music Education* 61, no. 4 (2014): 453, http://www.jstor.org/stable/43900223.

[157] Ibid.

[158] Sylvie Herbert, et al, "A Case Study of Music and Text Dyslexia," *Music Perception: An Interdisciplinary Journal* 25, no. 4 (2008): 371-372, https://doi.org/10.1525/mp.2008.25.4.369.

combat struggles with dyslexia in the music classroom. Kate O'Brien Vance outlines some beneficial strategies that students can use to mitigate the effects of dyslexia. These include breaking musical tasks down into smaller segments, copying music onto colored paper, making recordings for students to listen to, repetition of tasks or rhythmic figures, and changing activities temporarily if the student experiences frustration or loses concentration.[159]

This study's results do not support claims that sight-reading is not teachable. Boris Goldofsky states, "Sight reading cannot be taught. Some pianists are good at sight-reading, while others are not. The result of my teaching sessions indicated that people who were gifted at sight-reading improved, and people who seemed ungifted did not."[160] The participants agreed that pattern recognition, accompanied by accommodations such as color coding, more prominent music, and more time, facilitates developing this skill set. The junior and senior students improved their sight-reading skills by nearly fifty percent throughout the year by implementing these techniques, and the audition scores they produced reinforced these statements. With the right tools, information, and methods, sight-reading is a teachable skill even students with disabilities can improve, as researchers Gary E. McPherson and John McCormick found. They state, "The level of cognitive engagement during consistent practice may provide an essential but often disregarded key to improving practice and refining a student's overall musical skills, including sight-reading.[161]

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[159] Kate O'Brien Vance, "Adapting Music Instruction Students with Dyslexia," *Music Educators Journal* 90, no. 5 (2004): 29, https://doi.org/10.2307/3400020.

[160] Theodore Wolf, "A Cognitive Model of Musical Sight- Reading," *J Psycholinguist Res* 5, (1976): 152, https://doi.org/10.1007/BF01067255

[161] Gary E. McPherson, and John McCormick. "Motivational and Self-Regulated Learning Components of Musical Practice," *Bulletin of the Council for Research in Music Education*, no. 141 (1999): 99, http://www.jstor.org/stable/40318992.

For students with dyslexia to consistently improve their sight-reading skills, educators must be well-versed in three basic facts regarding the disability. First, music educators need to understand that dyslexia is a disability that is very individualistic, and not every student processes things the same way. Students with dyslexia are unique individuals, and acquiring knowledge of what each student will need will help facilitate their success. Second, music educators must research what dyslexic students experience while sight-reading. Understanding that clusters in music can be limiting is essential, and stressing pattern recognition to all students, even those without dyslexia, can produce an inclusive learning environment to maximize excellence. Lastly, providing students with the accommodations needed to aid their disability is crucial. Allow students to color, write, and enlarge passages of music if required, and offer more time to absorb the material. Adding color to instructional materials increases students' attention to the curricular material, increasing their overall focus. Other studies in visual processing provided evidence that color stimuli result in more neural activity than achromatic stimuli. This may reinforce the learning process, suggesting that problems occur in learning when different cortex areas stimulate simultaneously and more neural networks become involved.[162] More understanding and flexibility on a music educator's part could be drastically beneficial for a student with dyslexia.

Implications

Practical

Music educators strive to provide equal opportunities for all students. This study focuses on educators embracing students with dyslexia and helping them feel more integrated in their music classes. Additionally, this study provides a more specific methodology by which students who experience difficulties with sight-reading could articulate how they process sight-reading.

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[162] George L. Rogers, "Effect of Colored Rhythmic Notation on Music-Reading Skills of Elementary Students," *Journal of Research in Music Education* 44, no. 1 (1996): 16,. https://doi.org/10.2307/3345410.

The study participants offered specific perspectives to support music teachers in facilitating learning among dyslexic students. Crucial to dyslexic student success is home and school-based support, such as professional development workshops for educators, educators specializing in dyslexia to work with students, and providing social resources for families.

Participants offered excellent insight into what music educators can do to mitigate the challenges associated with students with dyslexia and sight-reading. Participant 4 stated, " If I could write or color more in my music during class, that would greatly help." Participant 5 stated, "I wonder if my teacher would structure rehearsals to be more specific so I don't mess up from having to learn too much music at once." Participant 7 remarked, "Would it be possible to suggest [to my teacher] to enlarge music so notes are spaced apart a bit more?" The administration must be willing to support their educators financially and schedule-wise for any accommodations requested. Parents must be willing to be open with educators about their child's needs and shortcomings. Parents must also vocalize the need for extra sets of challenges for students who thrive due to their disability. Curriculums and educational philosophies should target individuals and assess their needs, which is vital to student success in this ever-changing climate.

Empirical

Upper woodwind students in their high school years frequently sight-read swift tempos and technically challenging musical passages with little preparation time, putting strain or stress on students who process cognitive information differently. Previous resources and strategies to aid in understanding and executing sight-reading suggested the use of method books designed to help a student with dyslexia read and process information more accessible and written strategies in the text that students could study before having to sight-read, and programs such as Sight Reading Factory producing special sight-reading exercises for students with dyslexia to help them

prepare for the live experience.

Though research has addressed sight-reading and dyslexia, it was necessary to narrow the demographic and target students playing more technically challenging passages, such as upper woodwind high school musicians. Still, it yielded more specific examples of the perceptions of high school upper dyslexic students, such as pattern utilization, observing note clusters in faster passages, and, in some instances, reading the notes on the wrong line or space of the staff. Indeed, practicing sight-reading outside of class with reading method books or practicing by generating exercises on the Sight Reading Factory is still heavily encouraged, however, it was necessary to garner results with higher levels of specificity, giving music educators insight into how to craft curriculums to utilize these techniques for students with disabilities and better prepare them to teach to the individual rather than a generic classroom standard. Curriculums should list specific repertoire that ranges in ability levels. They should also provide inclusive materials so students can alter music to make it more accessible to their cognitive process as they execute sight-reading.

Theoretical

A gap exists in the current literature regarding how dyslexic students experience different cognitive processes when asked to execute a musical excerpt with a thin margin of time. Kenneth Saxon pointed out that cognitively, a proficient sight-reader will keep their eyes moving forward and never backward, and those eyes must focus on the printed notes and constantly look ahead.[163] Studies also found that dyslexic students experience a delay in ocular processing, return sweep inaccuracies, and frequent right-to-left scanning, which are oculomotor scanning disorders.[164]

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[163] Kenneth Saxon, "The Science of Sight Reading," *American Music Teacher* 58, no. 6 (2009): 22, http://www.jstor.org/stable/43544823.

[164] Keith Rayner, "Eye Movements, Perceptual Span, and Reading Disability," *Annals of Dyslexia* 33 (1983): 168, http://www.jstor.org/stable/23769382.

This study identifies successful implementation methods such as mental examination of a larger picture rather than hyper-focusing on small intricate notes and rhythms. Participants struggled with clusters and note recognition on the staff when focusing on small, intimate exercise details.

This study produced evidence that when studying the large picture, students with dyslexia can identify scaler patterns, which help guide them through rhythms and patterns more successfully, offsetting the potential for cognitive blocks such as clusters. Pattern utilization keeps a student's eyes consistently moving from left to right, offsetting the ocular delays that can occur in a study to mental processing. This cognitive theory offers a realistic glimpse into what students with dyslexia experience while sight-reading. This study honed in on techniques to better offset the natural tendencies dyslexia can produce, and educators should implement these techniques to achieve the highest level of student success.

Limitations

This research study followed a qualitative hermeneutic phenomenological approach with a few limitations. One of the main limitations experienced in this research was a small sample of eight participants. Despite the participants offering an abundance of beneficial data through the survey interview questions and executing the excerpt provided, the findings in this research might vary if a larger pool of participants were to participate that fit this narrow demographic. The researcher ensured that the questions posed to the research participants were relevant to the study objectives and that participants met all criteria to provide the most accurate results. In addition, participants were willing to be candid regarding their disability and participate in this study for the good of other students who experience the same struggles but can not vocalize it at this stage. This heavily specific demographic provides an opportunity for students, families, and music educators to understand students with

dyslexia better, as well as their actions, cognitive processing of sight-reading, and the opportunities and challenges they face both inside and outside the classroom.

Another research limitation is that the pre-written survey questions influenced some responses from the participants. Participants in this study might have offered specific responses as they wanted to seem advantageous to the study, even if one particular question did not pertain to them. To address this slim yet possible limitation, the researcher thoroughly conducted member checking and a participant review to ensure that the data collected accurately depicts what the participant recited accurately. If the participant disagreed with a statement, or their recap answers varied significantly from their original response, the data would have been discounted and implemented for the most accurate results. Thoroughly getting all eight participants with member checking guaranteed that the findings in this research are credible and reliable.

This research can be improved by utilizing an elevated level of empirical data and slightly changing its execution. Though sufficient empirical data was found throughout the study, a different delivery method for the survey questions would produce more data. Though observation of the etudes and the evidence garnered from that experience was beneficial, perhaps the participants should have verbalized their experiences for raw, unbiased, and uninfluenced data to be collected. The participants could have mentioned something unique that the researcher would have never projected.

Recommendations for Future Study

The results of this study are overwhelmingly beneficial for the dyslexic musician community. There is a strong need for policy change in how districts and schools view students with dyslexia as well as students who possess other disabilities. The evidence gathered from this study points to the need for families, educators, and administrators to collaborate to ensure that students with disabilities have access to everything they need to succeed in the classroom. The future of their success in music is

not asking why they need something, but rather, what and how much to make their skill set meet proficiency. The researcher also found that educators must realize that dyslexia is a very individualistic disability, and just because one student processes music notation and sight-reading one way does not mean that the next student they teach with dyslexia will respond and need the same accommodations. Letting students vocalize what they need and what they experience will sculpt its segue into crafting an inclusive curriculum and environment for that student. Educators must be kind, patient, and willing to let the student reach out.

The researcher has the following recommendations to implement strategies to address the issues that students with dyslexia face, as depicted in this paper. The first recommendation is for music educators to practice sight-reading in class and utilize some of the techniques found to be beneficial in this study. Scaler pattern recognition, reinforcement of time and key signatures, and cognitive processing exercises can quickly be incorporated into the mainstream curriculum to benefit all students, including students with dyslexia. This ensures that students with dyslexia will create the solid skill sets they should look for in their allotted sight-reading time and give students who do not have dyslexia insight into a new way to focus on sight-reading.

Another strategy the researcher recommends is structuring music rehearsals with targeted music sections and assigning various difficulty levels to their programming. Assigning an entire piece of music for students who grapple with a disability such as dyslexia could be overwhelming for them to complete. Providing sections of the music to focus on ensures that students have a more realistic chance to practice and learn the music since their music load would have lessened. Giving students a variety of repertoires will make learning the music more manageable and expose them to various artists and pieces that have yet to be previously explored, and benefit students and educators.

Lastly, it is necessary to provide the appropriate accommodations for students with dyslexia concerning any resources they may need in the classroom. This study reflected that students with dyslexia must write on their music, color code, and enlarge music for easy reading. Applying these techniques to their music could help them recognize patterns and rhythmic structures more efficiently, increasing their music-reading and sight-reading skill sets. If a music educator only uses originals, give the students with dyslexia the option of making a copy so that they can alter what is needed to thrive better during rehearsal. In addition, if a student with a disability feels overwhelmed, reinforce that taking a step back and processing the information is acceptable. Giving students time to compose their emotions and cognitive processing of the music could ensure success for students with dyslexia.

This study addressed the gap in the literature concerning dyslexia and sight-reading. By selecting a narrow demographic of students who met three separate criteria to participate, the researcher ensured they would collect concise data to further the knowledge base. The researcher chose to target high school upper woodwind students with dyslexia, who experience more technical lines in both band and audition sight-reading. Garnering their insights and experiences will help students and educators to provide strategies and methodologies to help mitigate and enhance the effects of their dyslexia on sight-reading.

Despite addressing the gap in the literature, there is always room for further study. Further studies should work with beginning music students and how they sight-read for the year to ascertain what they experience while learning to play their instruments. Working with the youngest musicians could prove beneficial for the research and add to the strategies that this study found, but apply them at a younger age so that students could increase their skill sets earlier. Additionally, whatever age group participates in a study should include open-ended questions. A participant not led by a series of questions could prove not to be influenced by those questions but by what they truly feel and

experience when they sight-read a piece of music. There are many strategies to implement when it comes to collecting data and finding out new information. Researchers must determine the best implementation source for the most accurate and current data. The researcher conducted their study with the idea that this study would produce concise and detailed information, which it confirmed.

In addition to implementing a more open-ended approach to collecting data from participants, researchers can also find other ways to ensure reliability and enhance the validity of the research findings for future studies. One strategy would be to enroll additional students in the research and open it up to high school students who play any musical instrument, not just woodwinds. Since the researcher chose such a specific demographic, they could only enlist eight participants. Though the findings were similar, the researcher wonders if a larger pool of participants would have shown more variation in experiences and cognitive processing of sight-reading. Though not as often in woodwind players, brass, percussion, and lower woodwinds experience technical lines in the repertoire that could bode problematic in sight-reading, especially in an audition or competition setting. Opening the pool to them would still limit the study to high school students with dyslexia but with a larger pool to work with.

Chapter Summary

The researcher's goal in conducting this study was to gain the perspective of high school upper woodwind students with dyslexia concerning their approach to sightreading. The data confirmed that what a student sees, processes, and emotes through their instrument can reveal much regarding the limitations or advantages of their disability on their musical abilities. Additionally, this study verified that even when students share a diagnosis as dyslexic, their experiences vary greatly in what they perceive and process when reading music and sight-reading. Additionally, just because a student has dyslexia does not mean they cannot excel in skills such as sight-reading.

This study collected a wide range of data to help students with dyslexia, their families, and educators better understand what students with dyslexia experience and how to help them mitigate and enhance the effects of dyslexia when sight-reading. This study revealed that not all students accurately perceive how they execute music, and an educator must reinforce sight-reading exercises to highlight what needs improvement so the student is aware. Students may believe they read a particular note on a line or a space but could see the wrong note.

This study demonstrated that students with dyslexia excel at seeing the larger picture and identifying scaler patterns, time, and key signatures. It also revealed that when students with dyslexia try to examine the more minor characteristics, such as faster notes and rhythms, they can see clusters, or the notes can blend on the incorrect lines and spaces. Some students with dyslexia may also perceive a variation of noteheads and stems differently in their processing of an excerpt.

This study showcased that though many students with dyslexia can struggle with sight-reading, some students attribute their disability to enhancing their skill sets. Some attribute increased concentration and time management utilization as benefits of their disability. Still, one hundred percent of the participants in this study admitted that their dyslexia contributed to an element of difficulty when sight-reading the provided excerpt. This study reinforced that dyslexia is a very individualistic disability, and music educators need to be mindful of this as they work with students with disabilities.

This study also helped gather perspectives from students with dyslexia to offer advice and strategies to music educators so that they could better understand the disability and develop a more inclusive classroom. Music educators should be empathetic and mindful of students with disabilities but also respectful of their wishes. Teachers should honor a student's request for a challenge when they request one. If a student needs time to step back and process and digest information, that warrants the same acknowledgment from educators for the benefit of the student.

In addition, this study revealed reasonably easy techniques that music educators can use to help students with dyslexia in the classroom. Participants offered some attainable suggestions for color coding, writing more in their music, and enlarging music to help process notes more easily. Just because a student possesses a disability does not mean that they cannot thrive. Music educators have the tools and the knowledge from this study to make every classroom inclusive for all students. Understanding what students with dyslexia experience is crucial for success and a well-rounded curriculum.

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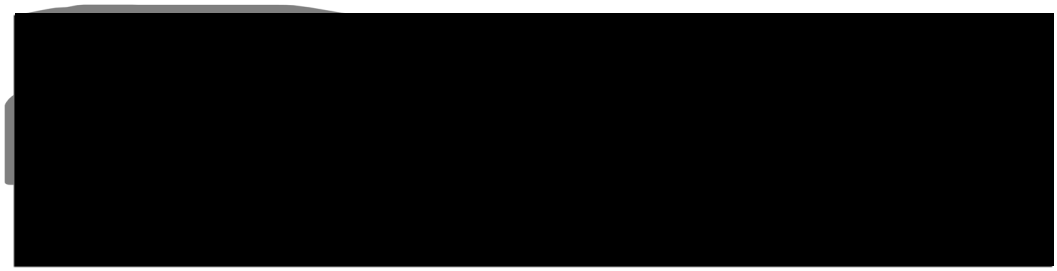
Appendix A: IRB Approval

Date: 7-22-2024

IRB #: IRB-FY23-24-2111
Title: Perspectives of Upper Woodwind High School Students with Dyslexia and their Approach to Sight-reading
Creation Date: 6-4-2024
End Date:
Status: Approved
Principal Investigator: Kristen Spiridon
Review Board: Research Ethics Office
Sponsor:

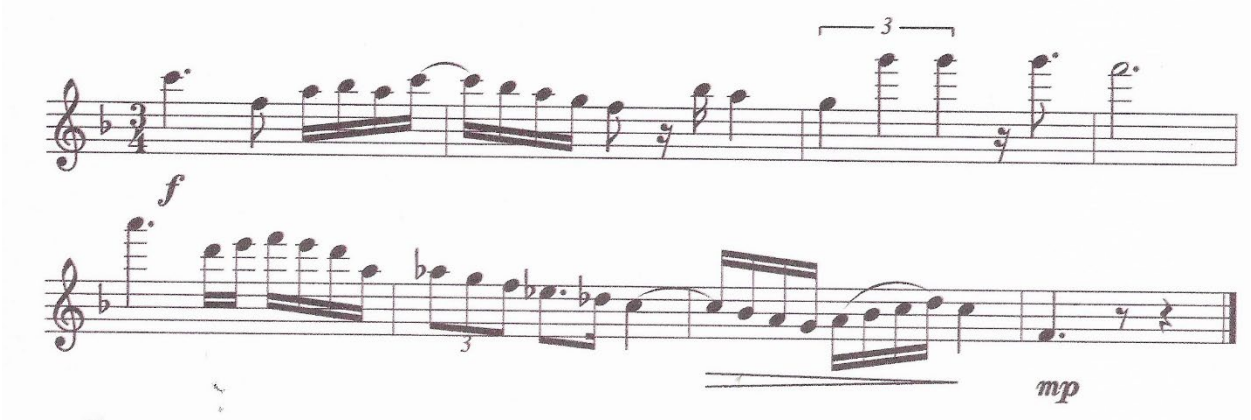
Study History

Submission Type	Review Type	Decision
Initial	Expedited	Approved



Appendix B: Generated Excerpts for Research Study

FLUTE



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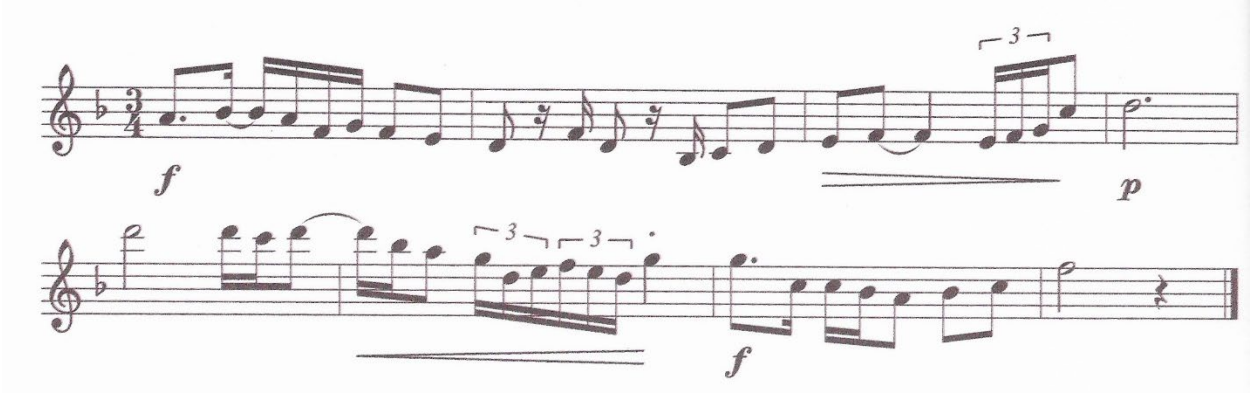

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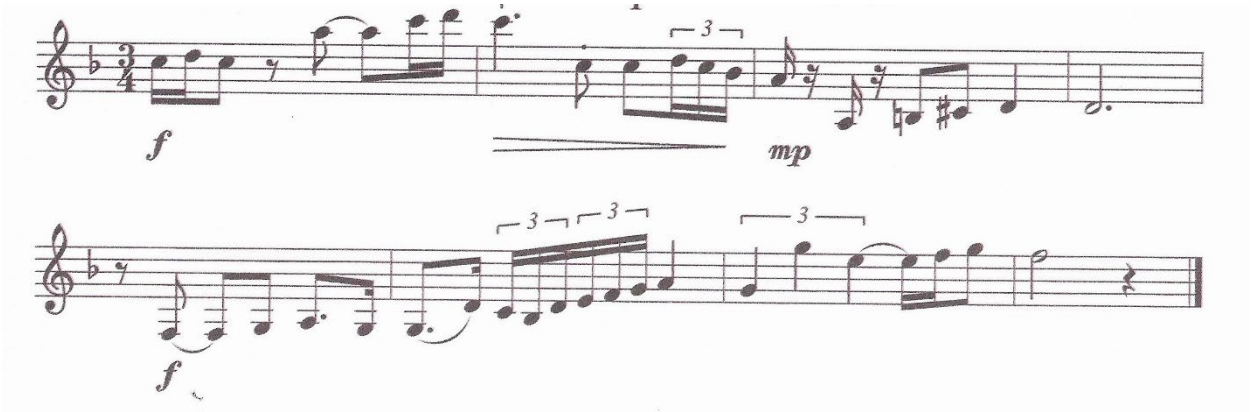
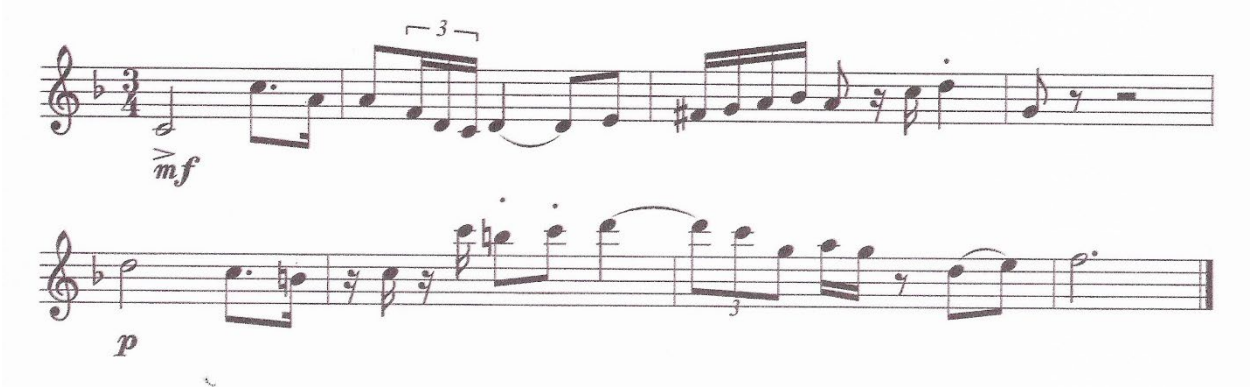


ALTO SAXOPHONE



Appendix C: Survey Questions

1. What was the difficulty level of this excerpt on a scale of 1-10?
2. How did you process the excerpt in your allotted 30 seconds?
3. What did you think went well as you were performing the excerpt?
4. What did you struggle with while performing the excerpt?
5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
6. What was your perception of notes, stems, and lines on the staff?
7. Did notes present as clusters at any point in your sight-reading?
8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
9. Do you believe your dyslexia helped your sight-reading in any way?
10. Do you believe your dyslexia hurt your sight-reading in any way?
11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?

Appendix D: Consent Document

Title of the Project: Perspectives of Upper Woodwind High School Students with Dyslexia and their Approach to Sight-reading.

Principal Investigator: Kristen Spiridon Sanders Doctoral Candidate, School of Music, Liberty University

Key Information about the Research Study

Your child is invited to participate in a research study. To participate, they must be a high school upper woodwind instrumentalist with dyslexia from anywhere in the United States. Participation in this study is voluntary.

Things you should know:

- The purpose of the study is to garner a better understanding of what students with dyslexia experience as they execute sight-reading. Further study is needed to help craft strategies to mitigate and promote the effects of this disorder. If you choose to participate, you will be asked to sight-read an excerpt of music, verbally explain what you experienced in the execution of the excerpt, and answer a short interview of questions that I will dictate to gain additional insight. This will take approximately 30 minutes.
- Taking part in this research project is voluntary. You do not have to participate, and you can stop at any time.

Please read this entire form and ask questions before deciding whether to participate in this research.

What is the study about and why are we doing it?

The purpose of the study is to gain a better understanding of what students with dyslexia experience as they execute sight-reading. Students with dyslexia process sight-reading in different

ways, so having input can help craft techniques and strategies to both mitigate and leverage the effects that this disorder can cause.

What will participants be asked to do in this study?

If you agree to allow your child to be in this study, I will ask her or him to do the following:

1. Students will be given an excerpt and allotted 30 seconds to study it. (30-60 seconds)
2. The student will then execute the excerpt in front of me. (30 seconds)
3. Afterwards, the student will verbally explain what they experienced during their sight-reading experience, sharing positive and negative attributes. (5-10 minutes)
4. I will then ask a series of questions on a pre-generated survey for the student to answer. (15 minutes)

From arrival to completion, the student should expect to spend a total of 30 minutes, including assembling and disassembling their instruments.

How could participants or others benefit from this study?

Participants will increase their knowledge and skills as a result of participating in this study. Benefits to society include cultivating a greater understanding of what students with dyslexia experience when they sight-read music and developing useful techniques to assist both thriving and struggling students with sight-reading tasks.

What risks might participants experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be kept confidential by replacing names with numbers.
- Interviews will be conducted in a location where others will not easily overhear the conversation.
- Participants will increase their knowledge and skills as a result of their participation.
- Data will be stored in a password-locked computer. Only the researcher will have access to the data. After three years, all electronic records will be deleted.

How will participants be compensated for being part of the study?

Participants will be compensated for participating in this study. After the interview is completed, participants will receive a $50 Amazon gift card for their time and effort.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to allow your child to participate will not affect your or his or her current or future relations with Liberty University. If you decide to allow your child to participate, she or he is free not to answer any question or withdraw at any time without affecting those relationships.

What should be done if a participant wishes to withdraw from the study?

If you choose to withdraw your child from the study or your child chooses to withdraw, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw her or him or should your child choose to withdraw, data collected from your child will be destroyed immediately and will not be included in this study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Kristen Spiridon Sanders. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] You may also contact the researcher's faculty sponsor, [redacted]

Whom do you contact if you have questions about rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, [redacted]

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you are agreeing to allow your child to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to allow my child to participate in the study.

The researcher has my permission to audio/video record this study.

_____

Printed Child's/Student's Name

_____

Parent/Guardian's Signature Date

_____

Minor's Signature Date

Appendix E: Survey Interviews

Survey Questions: Participant 1

What was the difficulty level of this excerpt on a scale of 1-10? *4*

1. How did you process the excerpt in your allotted 30 seconds?
   I concentrated on air playing and the key signature, notes, and scale rhythms and partterns.

2. What did you think went well as you were performing the excerpt?
   My articulation and rhythms, picking out scale patterns.

3. What did you struggle with while performing the excerpt?
   Accidentals and faster notes: 16th note triplets and the ability to process individual notes.

4. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes! It was very helpful to look for scales and arpeggios.

5. What was your perception of notes, stems, and lines on the staff?
   I saw notes on the wrong lines or spaces at times.

6. Did notes present as clusters at any point in your sight-reading?
   Yes! In faster sections like the 16th note triplets, it was like notes blended together.

7. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   Larger picture.

8. Do you believe your dyslexia helped your sight-reading in any way?
   I am unsure. Maybe not.

9. Do you believe your dyslexia hurt your sight-reading in any way?
   Yes, individual notes are very hard to make out and process, especially being timed.

10. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    For me personally, not to throw as much music at me at once. Make rehearsals in chunks so I am not overwhelmed and then shut down.

Additional feedback: I think it would be good to have different-colored notes or to be able to color or highlight my music.

Survey Questions: Participant 2

1. What was the difficulty level of this excerpt on a scale of 1-10? *8*

2. How did you process the excerpt in your allotted 30 seconds?
   I was trying to set a tempo, but as the rhythms got harder, it made it more challenging to stay consistent.

3. What did you think went well as you were performing the excerpt?
   I think that I got all of the notes correct.

4. What did you struggle with while performing the excerpt?
   Figuring out where the rests and note values landed, especially in the faster triplet sections.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes, I thought back to recognizable patterns from my band music and could decipher them. Scales and chromaticisms specifically.

6. What was your perception of notes, stems, and lines on the staff?
   Normal

7. Did notes present as clusters at any point in your sight-reading?
   Yes! When notes got quicker, especially 16th note triplets…they all tended to blend together.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   Smaller Segments.

9. Do you believe your dyslexia helped your sight-reading in any way?
   Yes, it forced me to focus more on where note heads were.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    Yes, focusing on the noteheads caused me to not focus on other elements.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    I would just ask for patience, as I do not do this on purpose, and taking a step back to process the material is helpful and welcome.

Additional feedback: Outside of leger lines are difficult to decipher.

Survey Questions: Participant 3

1. What was the difficulty level of this excerpt on a scale of 1-10? *8*

2. How did you process the excerpt in your allotted 30 seconds?
   I tried to focus on the faster rhythms since they are more problematic, but I made sure to focus on key and time signatures first.

3. What did you think went well as you were performing the excerpt?
   Because I practice scales so often, I feel like I was able to pick them out and use them to play the excerpt.

4. What did you struggle with while performing the excerpt?
   The 16th notes blended together, and I had trouble playing them under pressure. It feels overwhelming when notes get faster.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes, scale passages.

6. What was your perception of notes, stems, and lines on the staff?
   I think they were normal in my opinion.

7. Did notes present as clusters at any point in your sight-reading?
   Yes, cluster is a good word for what I saw when I would attempt to sight-read the 16th notes.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   Larger, as I focused on scale patterns and key signatures to make sure I could be as rhythmically accurate as I could.

9. Do you believe your dyslexia helped your sight-reading in any way?
   Not especially.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    Yes, I have trouble processing faster rhythms. They just all blend together.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    I feel like they get frustrated when we can't nail something the first time. The understanding that we all have our limitations and to be understanding would help.

    Additional comments: *Thank you for doing this! If you discover any helpful techniques, please let me know!*

Survey Questions: Participant 4

1. What was the difficulty level of this excerpt on a scale of 1-10? *7*

2. How did you process the excerpt in your allotted 30 seconds?
   I looked for familiar rhythms and patterns that I had seem before, as well as checked the key signature. I also fingered the notes to check for alternate fingerings.

3. What did you think went well as you were performing the excerpt?
   I thought it was a successful run because I got a lot of the notes and rhythms.

4. What did you struggle with while performing the excerpt?
   I am pretty sure I jumped the longer note values as I was more focused on the faster ones.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes, all of them!

6. What was your perception of notes, stems, and lines on the staff?
   There are times that I see notes on what I think are the correct lines and spaces, but I am actually off by one in either direction. I am sure that happened once or twice.

7. Did notes present as clusters at any point in your sight-reading?
   At first, but in my processing time, I tried to space them apart mentally to make reading the exercise a bit easier.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?

Larger at first, and then in the last half of the alotted time, smaller.

9. Do you believe your dyslexia helped your sight-reading in any way?
   I really do. I tend to do well at sight-reading, and it forces me to be extra cautious and pay extra attention to all of the details.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    Sometimes knowing if I am reading the correct line or space can be problematic.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    We like to be challenged just as much as students without dyslexia. If I could write or color more in my music during class that could help me a lot.

Survey Questions: Participant 5

1. What was the difficulty level of this excerpt on a scale of 1-10? *8*

2. How did you process the excerpt in your allotted 30 seconds?
   First I checked the time signature and key signature. Then I tried to look at the easier rhythms overall first since there were more recognizable patterns. Then the harder ones until time ran out.

3. What did you think went well as you were performing the excerpt?
   I think that I counted very well and recognized rhythms from band music and scale exercises well.

4. What did you struggle with while performing the excerpt?
   Faster notes have always given me trouble. I never feel like I have enough time to process them under pressure.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes I did, I saw scales and chromatic scales. I do not see arpeggios well.

6. What was your perception of notes, stems, and lines on the staff?
   I think they were okay.

7. Did notes present as clusters at any point in your sight-reading?
   I always called them "blurs" but clusters are a better word for them so yes I believe so.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   Larger, smaller is overwhelming.

9. Do you believe your dyslexia helped your sight-reading in any way?
   I think the only way that it maybe helped was making me focus extra hard.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    Yes, I see the clusters and feel like I do not get to process things as easily as my friends do.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    I wonder if my teacher would structure rehearsals to be more specific so I don't mess up from having to learn or read too much at once.

    Additional comments: *None that I can think of.*

Survey Questions: Participant 6

1. What was the difficulty level of this excerpt on a scale of 1-10? *6*

2. How did you process the excerpt in your allotted 30 seconds?
   My teachers have always told me to look at time signatures, key signatures, rhythms and then notes. I followed their advice.

3. What did you think went well as you were performing the excerpt?
   It was really hard, so I am not sure much went well. I played in the correct key.

4. What did you struggle with while performing the excerpt?
   The rests were fast and awkward and the faster notes gave me trouble.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   A little with scales, but the etude seemed to bounce around a lot.

6. What was your perception of notes, stems, and lines on the staff?
   Okay, I have trouble reading notes above the staff.

7. Did notes present as clusters at any point in your sight-reading?
   I think in the faster passages they did, they all kind of stuck together.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   Smaller segments, but I don't think it worked for me very well.

9. Do you believe your dyslexia helped your sight-reading in any way?
   No.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    Everything seems to blend together, and I struggle to do things in a quick manner feeling that I can't read things accurately.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    Maybe vary our music with some difficult and some easier selections to help those of us who do not learn as quickly have a chance to catch up.

    Additional comments: *Would it be possible to suggest to blow music up so notes are spaced apart a bit more?*

Survey Questions: Participant 7

1. What was the difficulty level of this excerpt on a scale of 1-10? *7*

2. How did you process the excerpt in your allotted 30 seconds?
   I looked at the fastest rhythms first to establish my tempo, and then made sure I was performing in the correct key signature.

3. What did you think went well as you were performing the excerpt?
   The key was not bad, and it felt like a F major scale variation.

4. What did you struggle with while performing the excerpt?

The faster notes were really tough to count and play even with having thought about them.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes, scales.

6. What was your perception of notes, stems, and lines on the staff?
   Okay, nothing too crazy.

7. Did notes present as clusters at any point in your sight-reading?
   Yes, in the 16th note triplet section.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   A bit of both?

9. Do you believe your dyslexia helped your sight-reading in any way?
   Maybe it made me think a little harder and not take easier things for granted.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    Quicker rhythms have always been a problem for me.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    I know sigh-reading is a necessary thing, but maybe more fundamentals on patterns and scales could help everyone have a better chance to sight-read at a higher level.

    Additional comments: *Thank you for including me in this study! I hope it helps!*

Survey Questions: Participant 8

1. What was the difficulty level of this excerpt on a scale of 1-10? *7*

2. How did you process the excerpt in your allotted 30 seconds?
   I think too slowly, I only got about 5 measures in before the time was up.

3. What did you think went well as you were performing the excerpt?
   The range was not too bad, and the key signature was generous.

4. What did you struggle with while performing the excerpt?
   Faster rhythms and the rests were awkward.

5. Did you utilize pattern recognition such as scales, chromatic passages, etc.?
   Yes, a bit of each.

6. What was your perception of notes, stems, and lines on the staff?
   Sometimes it is hard to tell them apart, but that is more above and below the staff.

7. Did notes present as clusters at any point in your sight-reading?
   Yes, in faster rhythms.

8. Did you tend to focus on smaller segments or the larger picture while sight-reading?
   Smaller segments.

9. Do you believe your dyslexia helped your sight-reading in any way?
   Not especially.

10. Do you believe your dyslexia hurt your sight-reading in any way?
    I struggle to process things at a quick speed, and the time limitations always hurt me.

11. What advice would you offer to a music educator to better understand how you perceive music notation and sight-reading?
    Maybe more practice with those of us who request extra help with sight-reading could be good.

Additional comments: *I want to be able to write in my music more, as that really helps me.*