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Examining the Relationship between Perfect Pitch, Auditory Processing Disorders, and Autism

Spectrum Disorder

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There appears to be an increase in autism traits among musicians with perfect pitch, which may result from a “genetic predisposition” (Dohn, Garza-Villareal, Heaton, and Vust, 2012, p. 2). If musicians with perfect pitch tend to possess more traits of autism than musicians without perfect pitch, an accommodation and/or modification may be necessary for both the perfect pitch and the autism spectrum disorder. Music educators may have unique opportunities to provide accommodations and modifications for perfect pitch possessors with and without autism traits, encouraging educators to broaden their occupational horizons and become creative in their teaching resulting in a more positive learning experience for not only the teacher is accommodating but also the rest of the students in the classroom.

On a similar plane, the ideas of pitch processing and intonation in terms of melodic contour are also important to autistic speakers of tonal languages such as Mandarin Chinese. Mandarin Chinese uses pitch to “differentiate words at the syllabic level”, as seen in the Mandarin word /ma/ which means “mother” with a higher inflection, “hemp” with a rising inflection, “horse” with a descending-ascending inflection, and “to scold” in a falling inflection (Jiang, J., Liu, Wan, & Jiang, C., 2015, p. 2067). This linguistic attribute results in a large percentage of Asian musicians with perfect pitch, particularly Mandarin Chinese speakers. This is applicable to American music education—specifically choral music education—by using the native tongue as a teaching tool for autism by emphasizing key characteristics such as inflections and melodic contour to aid the student in learning to sing in English or other non-native languages and receive an active music education rather than a passive music education.

In slight contrast, the element of increased auditory processing levels in musicians with perfect pitch presents noteworthy findings on a not-too-often examined topic. Auditory

processing levels in musicians with perfect pitch impact the music education of these musicians by examining the heightened musical ability that comes with having perfect pitch; these students can hear and identify certain musical aspects quicker than most of their classmates, which can in turn render them more vulnerable to boredom and disengagement because they are ready to move on to the next step. Musicians with perfect pitch are often observed to have increased levels of auditory processing, caused by “cortical thickness and volume differences”, resulting in a significant impact of their music education in the form of accommodations and modifications catering to the specific needs of each student (McKetton & Schneider, 2018, p. 1). In connection to music education, the educator is faced with the need to provide accommodations and/or modifications for these students to match their heightened musical ability to avoid boredom and disengagement.

In relation, students with autism may show increased levels of auditory processing yet display an extreme “hypersensitivity to certain sounds”, presenting an interesting scenario in a potentially noisy environment such as a music classroom (Remington & Fairnie, 2017, p. 460). This means that students with autism who have auditory sensory sensitivity and perfect pitch face an additional hurdle, needing accommodations and/or modifications for both their autism and their perfect pitch while also avoiding the sounds that may cause them distress. Educators can connect this to music education by examining what types of sounds cause students stress and adjust lesson plans and classroom culture accordingly to best suit the needs of the students, in turn creating a learning environment that ensures music for all.

In conclusion, the relationship between perfect pitch, auditory processing disorders, and autism spectrum disorder affects the music education of students because it creates a need for

accommodations and modifications for diagnoses pertaining to both musical giftedness and musical struggles. Recognizing the cross-curricular connections that can be made to benefit students with autism, by addressing the connection between auditory processing and perfect pitch, and by studying the effects of increased auditory capacity in autistic students allows both the educator and the student to evaluate how to best accommodate and modify learning objectives to provide the best education possible for these students. Each of these points connects to music education in their own unique way while also coming together to form an interdisciplinary bond that presents new and interesting educational perspectives that may have otherwise gone unrecognized.

## References

Dohn, A., Garza-Villareal, E.A., Heaton, P., and Vust, P. (2012). Do Musicians with Perfect Pitch Have More Autism Traits than Musicians without Perfect Pitch? An Empirical Study. *PLoS ONE*, 7(5), p. 2.

Jiang, J., Liu, F., Wan, X., & Jiang, C. cunnmeijiang@126. co. (2015). Perception of Melodic Contour and Intonation in Autism Spectrum Disorder: Evidence from Mandarin Speakers. *Journal of Autism & Developmental Disorders*, 45(7), p. 2067.

McKetton, L., & Schneider, K.A. (2018). Auditory Processing in Absolute Pitch Possessors. *AIP Conference Proceedings*, 1965(1), p. 1.

Remington, A. [a.remington@ucl.ac.u.](mailto:a.remington@ucl.ac.u.), & Fairnie, J. (2017). A Sound Advantage: Increased Auditory Capacity in Autism. *Cognition*, 166, p. 460.