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High School and Beyond Longitudinal Study of 2020 (HS&B:20)

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Name: Samuel Pierce

The American Optometric Association (AOA) is very interested in the Department of Education's (DOE or "the Department") plan to conduct the "High School and Beyond 2020 study" (HS&B:20). Our organization would like to provide our expertise and resources to help the Department adequately understand how our children's vision health impacts their education and performance. The AOA represents more than 33,000 doctors of optometry serving the eye health and vision care needs of communities across our country. Our profession has mobilized to help the millions of children who are suffering needlessly from undiagnosed or untreated eye health and vision conditions that undermine learning.

We understand that the DOE plans to include a "2-minute vision test" as part of HS&B:20. As vision is integral to learning, development, and the health of our children, we appreciate that the Department's efforts to understand how vision impacts education. However, based on our experience and the wide body of evidence that exists on this topic, we are concerned that a "2-minute vision test" will not provide the kind of data needed to accurately track long-term trends and inform education policy. We write to offer an alternative approach and assistance from our members in gathering information on how children's eye health impacts their education and performance.

Given that the DOE has included a vision test as part of the survey, we believe the Department understands that eye and vision problems in children can impact academic success. An estimated one in five preschool children have vision problems.^{i,ii,iii,iv,v,vi,vii} Since eye and vision problems can become worse over time, early diagnosis and treatment are essential to optimize children's eye health and vision and to prevent future vision loss. Eye and vision disorders can lead to problems in a child's normal development,^{viii,ix} school performance,^{x,xi,xii,xiii,xiv} social interactions,^{xv} and self-esteem.^{xvi,xvii,xviii} Vision disorders that occur in childhood may manifest as problems well into adulthood, affecting an individual's level of education, employment opportunities, and social interactions.^{xix}

Including an eye health component as part of HS&B:20 is an important step, however, we strongly believe that a 2-minute vision test simply cannot produce reliable and accurate information regarding the eye health of the children in the study. Without accurate information about the eye health of the students, it will be difficult to achieve the survey's purpose of demonstrating the connection between eye health and students' readiness for high school; the risk factors associated with dropping out of high school; high school completion; and the transition into postsecondary education and access to/choice of institution.

Our nation's children all deserve a clear future. The National Academies of Sciences, Engineering and Medicine (NASEM) in their 2016 report recognized that comprehensive eye examinations are "the gold standard in clinical vision care to most accurately identify and diagnose eye and vision problems."^{xx} Although a 2-minute vision test may seem like a cheaper alternative to the "gold standard," the test will not produce information on how the children's eye health impacts their education and will provide unreliable data. The sensitivity of a wide variety of screening techniques was evaluated by the Vision in Preschoolers (VIP) study, which unlike standard screenings, used licensed eye doctors who had completed VIP study specific training and certification.^{xxi} In the study, the sensitivity of 11 vision screening techniques used for detecting clinically significant vision problems in children 3 to 5 years of age varied from 16 percent to 64 percent, with specificities ranging from 62 percent to 98 percent. These tests were compared again with a specificity of 94 percent, and the sensitivity dropped even further^{xxii}, the most common being Lea Symbols Visual Acuity (49 percent sensitivity), HOTV Visual Acuity ((36 percent sensitivity), MTI Photoscreener (37 percent sensitivity), Retinomax Autorefractor (52 percent sensitivity) and SureSight Vision Screener (51 percent sensitivity).^{xxiii} While we are uncertain which specific autorefractor DOE intends to use to conduct the 2-minute vision test, we are certain that the tests will have significant limitations.

It is critically important for the DOE to recognize the limitations of vision screenings. Many vision screenings test only for distance visual acuity. While the ability to see clearly at a distance is important, it does not indicate how well the

eyes focus up-close or work together. In addition to appropriately interpreting what the eyes see, the foundational visual skills children need to succeed in the classroom include the ability to focus the eyes at distance and at near, to use both eyes together as a team, and to move the eyes efficiently and effectively. Any screening approach employed in the study is certain to come with significant limitations and drawbacks. Research has found that when Snellen visual acuity alone was used as a screening tool, it was 100 percent specific for identifying reduced acuity due to myopia (nearsightedness), but missed 75.5 percent of the children found to have, hyperopia, and or binocular and oculomotor vision problems when given a complete visual examination.^{xxiv} Additionally, a study of 1,992 school-age children found that 41 percent of children who failed the State University of New York screening battery would not have been identified if the screening was based on visual acuity alone.^{xxv}

The U.S. Preventive Services Task Force (USPSTF) has concluded that the current evidence is insufficient to assess the balance of benefits and harms of vision screening for children 3 years of age and younger.^{xxvi} While the USPSTF concluded with moderate certainty that vision screening for risk of amblyopia for children 3 to 5 years of age has moderate net benefit compared with no screening, they did not compare the benefit of screening to a comprehensive eye examination, and the recommended screening is not intended to identify the variety of other vision problems that affect children.^{xxvii} Vision screening procedures lack the evidence needed, with proven high sensitivity and specificity, for identifying the targeted vision problems present in the population of children being screened.^{xxviii,xxix}

The AOA would like to offer its assistance and resources to ensure the DOE efforts results in data that can be used to accurately track trends in our children's eye health and meaningfully inform education policy. The AOA is offering its expertise to the DOE and would like to work with you to connect the children included in the study to doctors of optometry in their communities who could provide comprehensive eye examinations, in lieu of the 2-minute vision test. Given the priority that our organization places on ensuring that children receive the eye care necessary to succeed in life, we would welcome this opportunity to serve as a link to our nationwide network of doctors of optometry. The AOA could also assist in developing a plan with the DOE to ensure that the necessary data is captured and reported to the DOE for study tracking purposes.

The AOA would welcome the opportunity to meet with you to discuss the possibility of improving this important study by ensuring that the students included receive comprehensive eye examinations which could very directly impact their academic success. To coordinate a meeting at a time of your preference or if you need additional information, please contact Kara Webb, Director of Coding and Regulatory Policy, at kcwebb@aoa.org or 703-837-1018.

Sincerely,

Samuel Pierce, OD
President, American Optometric Association

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 Dear Dr. Pierce,

Thank you for your interest in and support for the High School and Beyond:2020 Longitudinal Study (HS&B:20). The National Center for Education Statistics (NCES) agrees with the American Optometric Association (AOA) that eyesight plays an important role in students' ability to succeed in school, learn skills to allow them to pursue careers of their interest and become productive adults contributing to the economic well-being of their family, community, and the nation. The range of eye conditions affecting children's eyesight are, as described in your comments, optimally diagnosed before a child enters school using a comprehensive eye examination. Those affiliated with the AOA and other eye care professionals routinely provide such eye care to young children to optimize their entry into school. Having piloted a screening vision test in kindergarten and first-grade-aged children for the Early Childhood Longitudinal Study-K:2010-11 (ECLS-K:2011), we agree that measuring visual ability in young school-aged children to detect the range of conditions they might have is neither sufficiently valid nor reliable when performed within the constraints inherent in a school-based setting. Vision testing was not retained as a component in the full-scale ECLS-K:2011 study beyond the pilot, although a hearing screening was retained. The current clearance request for HS&B:20 is to include a different measure of vision in the field test of study protocols and procedures. If the field test results indicate that the vision test is not feasible as administered with a sample of high school students, it will not be retained for the full-scale study, similar to what happened with the ECLS-K:2011.

The goal of the current proposal for testing the eyesight and hearing in HS&B:20 is to collect data on these important public health issues for older children within the amount of time schools will allow us to work with children in a school setting. The proposed eye measurement will provide considerably less information than more extensive exams proposed by AOA, and inclusion of a single measure of eyesight is not intended to obviate the need for a comprehensive eye examination. The sole objective of a 2-minute vision test in the confines of the school setting is straight-forward, namely to capture refractive error in the eyes of each student to determine the rate of various types of refractive error, particularly myopia, in a nationally representative sample of U.S. students in the 9th grade. Re-measuring refractive error again in the 12th grade will allow for assessment as to whether the prevalence in this group of adolescents is changing and, for those students with myopia in the 9th grade, whether their condition is stable, improving, or worsening.

Gathering data on myopia from U.S. adolescents is important because studies in other countries have shown that rates of myopia are worsening [e.g. Williams KM et al. in Europe and Chen M et al. in China]. Furthermore, increasing severity of myopia carries significantly increased risk of subsequent vision impairment, costly retinal complications such as retinal detachments which occur in young adulthood when career trajectories are set, during middle age when economic productivity is highest, and in old age when concomitant health conditions already exact a toll on activities of independent daily living [e.g. Ikuno Y]. It is therefore important to assess the impact of myopia on U.S. adolescents as they navigate their way through high school and beyond so the health care system in the United States can anticipate and plan for resource and policy needs.

There is no contemporary, nationally representative study of adolescents in the United States that collects such critically important information. Data from the Department of Health and Human Service's National Health and Nutrition Examination Survey (NHANES) 1999-2002 documented that visual impairment was significant in survey participants ages 12-19, the preponderance of which was found to be due to refractive error [Vitale S et al.] The proposed HS&B:20 study will update these data using new technology to capture refractive error with enough precision to derive national prevalence estimates. Additionally, since it is unclear which predisposing factors might influence myopia development, including time spent on various activities during school-age years and academic achievement (data that were not captured in NHANES), the proposed study is well-suited to contribute useful data beyond providing mere prevalence estimates.

There are logistical limits on what data and how much can be collected in the in-school session planned for this study, and these constraints preclude administration of a full eye exam. A brief measure of vision and hearing, both of which will provide critically important public health information, are expected to fit into the limited time that schools will allow for testing of their students. Schools are reluctant to allow lengthy study sessions that pull students out of class and disrupt the school day, and so the duration of the session must be minimized as much as possible to alleviate this concern. If schools' concerns are not sufficiently addressed, schools are unlikely to agree to participate, which jeopardizes the success of the entire study.

The AOA has proposed that connections be made between students selected for HS&B:20 and local optometrists. However, NCES must follow strict legal requirements related to the protection of study participants' identities to maintain their privacy and confidentiality. Accordingly, NCES has procedures in place to minimize the risk of disclosure of personally identifiable information. Therefore, it is not possible for NCES to refer students for out-of-school exams at local doctors' offices and then have those results provided back to NCES for inclusion in study data files. All data collection must be conducted by HS&B:20 study staff who are trained in standardized methodology and are legally required to follow all rules and regulations related to the protection of participant information.

Hence, incorporation of a 2-minute capture of refractive error is an efficient, cost-effective strategy to gather information on a representative sample of U.S. adolescents in a school setting, collecting the data within logistical constraints to minimize disruption on instructional time in the classroom.

Sincerely,

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