“Eye” don’t see the connection between vision and learning in the Yakima Valley!

Findings from a Review of Existing Literature and Community Interviews
for The AmeriCorps Child Vision Project
Division of Children and Family Services – Toppenish

Prepared by Barbara Obena, MPH | July 2013
Edited by Helen Spencer and Katie Johnson

University of Washington School of Public Health
Community-Oriented Public Health Practice Program

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Executive Summary

Children in the state of Washington do not receive comprehensive vision exams because it is not a requirement prior to entering schools, nor performed by primary care providers at well-child exams. Instead, Washington requires vision screenings via the Snellen chart. However, the flaw with this vision screening is that a Snellen chart only checks for distance visual acuity (i.e. whether a child can see the board) and not functions associated with close up work – focusing, teaming, moving across a line. As a result, a student with one or more undetected visual dysfunctions may have difficulties learning in school and thriving in life.

During 2010-2012, the AmeriCorps Child Vision Project helped facilitate comprehensive vision exams for 85 foster children at the Department of Child and Family Services—Toppenish Office. Because vision problems may interfere with the ability to learn, the Project speculates that similar figures may exist in children who have learning disabilities and are classified as special education; hence, the desire to study this population more in depth.

The author examined existing literature and interviewed community members to understand the issue of child vision at the local level. Recommendations for the future of the Project were created based on findings from literature, what community members proposed, and from the author's personal observations working directly with the Project.

Background

Why the Issue of Child Vision is Important: Vision problems are detrimental to individual child development. However, children who suffer from vision problems are unable to tell people in their lives that they have a problem because they are unaware of what it means to have good vision. Consequently, according to Parch and colleagues "these children may be puzzled and frustrated by the difficulties they face with their school work if their visual stress is severe and un-diagnosed and they may become one of the 'might-have been' children – those that display signs of intelligence, but do not succeed at school."[1] Dr. Joel Zaba, an optometrist in Virginia who specializes in learning-related vision problems adds that succeeding in school is an important life event to accomplish in order to obtain a good-paying job. Now, more than ever, adults need a higher level of literacy to function well. Society has become more complex and low-skill jobs are disappearing.[2,3]

In socioeconomically distinct populations, the rates of vision problems are alarming. Research with Title I students in the fifth through eighth grades, and academically and behaviorally at-risk children ages 8 to 18, showed that up to 85% of these children had vision problems that were either undetected or untreated.[4] Additionally, according to Ethan and Basch, "children from poor urban areas, many of whom are ethnic minorities, experience more than twice the normal rate of vision problems."[5]

The AmeriCorps Child Vision Project: To address this issue of undetected vision problems in children in the Yakima Valley, Helen Spencer, a lawyer who worked with the Department of Child and Family Services (DCFS) – Toppenish Office, created the AmeriCorps Child Vision Project (ACVP) in 2010 in partnership with the Toppenish Office. The goal of the ACVP is to prevent child vision problems through early detection and treatment. The author helped the ACVP craft the following mission statement: "The AmeriCorps Child Vision Project strives to increase awareness and education about child vision problems in Central and

Eastern Washington, and advocates for change on a local and state level to create access to timely, quality, and comprehensive vision care."

Past project efforts include facilitating vision exams for foster children in the Yakima Valley. The Project received referrals from the DCFS office foster child caseworkers. AmeriCorps volunteers made individual contacts with the foster parents/guardians to coordinate appointments, transportation, follow up care, and support for vision therapy, if that was part of the child's treatment plan. Treatment also consisted of getting glasses. From 2010-2011, 43.50% of 46 children who received a vision exam required treatment. During 2011-2012, 43.59% of 39 children who received a vision exam required treatment.

Purpose of Report: In August 2012, the author formed a partnership with the ACVP to work on the following objectives:

1. Assess the vision needs of children deemed "special education" (more specifically, children with learning disabilities) in the Yakima Valley by:
    - conducting literature review that looks at the relationship between vision and academic achievement on a national, state, and local level
    - talking with stakeholders (i.e. parents, optometrists, school administrators identified by project staff, partners, and word of mouth)
2. Prepare recommendations that will help facilitate access to comprehensive vision services

This report addresses these objectives and presents findings from existing literature and community member perspectives regarding child vision problems. Additionally, it identifies existing community resources and strategies on how the ACVP can potentially collaborate with such resources to study, access, detect, and provide treatment to children, who may have vision problems that may be contributing to their learning disability and special education classification.

An additional component of the author's work with the ACVP was the development of health education materials to promote awareness and education early detection of child vision problems. Items developed include a tri-fold brochure, age specific bookmarks, a resource list, posters, an infographic flyer, health fair presentation board, and PowerPoint presentation. The material can be found on Joan Gilman's website www.readeasysolutions.org.

Child Vision Care in Washington State

The discussion of child vision care is not new. In fact, the American Public Health Association passed resolutions dating back to 1982, recognizing the importance of early detection and follow up care of vision problems. Subsequent resolutions supported by the APHA include additional research of cost effective methods, regular comprehensive eye exams, coordinated school programs that assess health conditions, and reducing barriers to vision care (see Table 1).[6]

Table 1: American Public Health Association's Resolutions for Child Vision Care	
1982	Encourages state legislators among others to mandate preschool vision screening with appropriate follow-up programs and/or vision examinations for all children prior to entry into school.
1989	Calls for further research to develop appropriate and cost effective methods of earlier detection and treatment of vision and hearing problems
2001	Encourages a regular comprehensive eye examinations opposed to screening for pre-school children.
2004	Supports coordinated school health programs in every public and private school to conduct needs assessment that identifies undiagnosed health conditions or other unmet health needs that inhibit student academic success.
2011	Urges to reduce barriers and improve access to children's vision care services, as well as incorporating results from current, seminal National Institutes of Health children's vision studies. This new resolution does not supersede, or call for archival of, former resolutions

Source: American Public Health Association

Additionally, there have been advocacy efforts at the local, state, and national level to inform policymakers about the need to support comprehensive vision

care because of its role in learning (see Table 2). In California, Senate Bill (SB) 430 was introduced in February 2013, urging lawmakers to include binocular function assessment in elementary school vision screening. With SB 430, "binocular function appraisal need not begin until the pupil has reached the 3rd grade and would authorize the binocular function appraisal to include a validated symptom survey, as specified. By requiring a school nurse or other authorized person to test for binocular function, the bill would impose a state-mandated local program.[7]" The ACVP is closely monitoring SB 430 as language modifications are considered in the legislative process and believes it may be a viable approach for Washington State.

Table 2: Efforts towards changing Children's Vision Care – National, State, and Local	
National Parent-Teacher Association (PTA)	Resolution: Learning Related Vision Problems Education and Evaluation (1999)
Washington State Department of Health	Substitute House Bill 1951: Visual Screening of Children in Public Schools (2006)
National Association for the Advancement of Colored People	Resolution: Support for Vision Therapy for Children and Adults (2009)
Washington State Access to Justice Board	Resolution : Support of Children's Vision Care, Vision and Learning Symposium (2013)
State of California	Senate Bill 430: Pupil Health – Vision Appraisal: Binocular Function (2013)

Sources: Parent-Teacher Association, Washington State Department of Health, National Association for the Advancement of Colored People, Access to Justice, California Legislative Information

Children in the state of Washington do not receive comprehensive vision exams. This is because they are not a requirement prior to entering schools, nor performed during annual well-child exams in primary care settings. Only three states in the country require comprehensive professional vision examinations – Missouri, Illinois, and Kentucky – while others require screenings, screenings and follow up, or nothing at all.[8]

A comprehensive vision exam checks for problems associated with distance acuity, binocular function, and eye health; it is a more holistic approach to vision care. This exam involves an eye health professional assessing the following[9]:

- Refractive state of the visual system: whether individual is nearsighted (has difficulty seeing distant objects than near objects), farsighted (has difficulty seeing near objects than distant objects), or has astigmatism (blurred vision)
- Visual acuity: the clarity of vision at 20 feet[10]
- Focusing or accommodation: the ability for the eye to focus on an object and move easily to another object
- Visual alignment and ocular motility: how well the muscles of the eyes help them point in the same direction when looking at an object
- Binocular fusion: whether eyes area able to team and work together to see an object
- Eye tracking skills: whether eyes are able move across a page of text accurately while reading
- Color vision: whether individual is able to discriminate and identify different colors
- Ocular health: eye care professional looks at the structures within the eye
- Elements of visual perception: whether individual is able to see 3D images

Instead of comprehensive vision exams, the Washington Administrative Code (WAC) 246-760-020 states that schools must conduct visual screenings in "kindergarten and grades one, two, three, five, and seven. If resources permit…[schools can] annually screen children at other grade levels.[11]" Additionally, "other screening procedures equivalent to the Snellen test may be used only if approved by the state Board of Health.[11]"

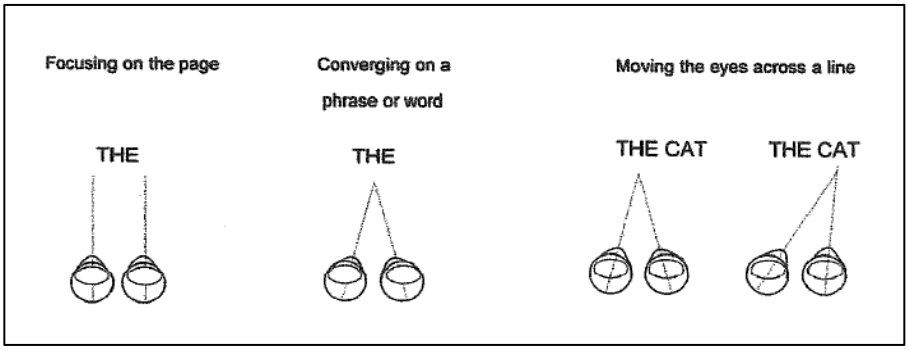
The Potential Relationship Between Vision and Learning

The American Optometric Association states that a good visual system is especially crucial for school-aged children, as 80% of learning occurs through the eyes.[12] The Vision Council of America estimates that a quarter of school-aged children suffer from vision problems that could have been addressed or eliminated if appropriate screening and follow-up had been in place upon entry to school.[9] As a result, children with one or more undetected visual problems may have difficulties learning in school and thriving in life.

Stanley Applebaum, a behavioral optometrist who was featured in a New York Times story about vision and learning disabilities says, "vision isn't just about eyes or eyesight but it is also something more holistic – how eyes work together and move together and process information and store information and do something with the information.[13]" Children need to be able to do more than just see the board in school and life; they need to be able to do close up work and read. This requires three functions from the eyes (see figure 1):

- Focus: eyes must sustain attention the ability to point in the same direction (aim),
- Convergence/aiming: eyes must have the ability to point in the same direction
- Move together: eyes must team together to read across a line

Figure 1: Three Functions of the Eyes



Source: The Gemstone Foundation

When any or all of these functions are impaired, a child may have difficulty reading; thus, compromising their capability to learn and thrive in their environment. As a result, they may fall behind in class, be resistant to doing schoolwork, have behavioral issues, or be labeled as having a learning disability. Many studies exist regarding the potential relationship between vision and academic achievement. In a study that implemented and evaluated a school-based program to improve vision in New York, Danna Ethan and colleagues concluded that although academic success is affected by many factors, it seems likely that vision problems may act as a barrier to optimizing children's healthy development and educational progress.[14] This is because visual skills correspond to certain skills carried out in school. For example, binocular coordination is essential for tracking skills (e.g., the ability to move across a line of text when reading). In children, the stability of binocular control has been associated with reading and with spelling skills. Research about the vision and achievement gap in urban and minority youth notes that if a child has poor tracking skills, he/she may be at risk for low levels of reading ability.[15, 16] Linda Kimel, a school nurse in Chicago, studied barriers in follow up and vision care and showed the adverse effect of having vision problems, including frequently loss of place when reading, having difficulty copying, tending to omit letters in written work, misaligning numbers in columns, and having difficulty with Scantron sheets.[17] Vision problems may manifest as avoiding school work because of fatigue, strain, and demoralization[15].

In 2001, the Harvard Graduate School of Education held a day-long conference for optometrists and educators titled, "Visual Problems of Children in Poverty and Their Interference with Learning". Gary Orfield, moderator and Professor of Education and Social Policy at Harvard University, noted the urgency and importance of holding the conference by saying, "It's time we had a discussion between people concerned about vision and people concerned about education.[18]" This was a step in communicating the problem and showcasing research in the field of child vision and learning. For instance, Rochelle Mozlin, Associate Clinical Professor of Optometry at the State University of New York,

reported on her research that examined vision problems in youth at risk for dropping out of schools. 52% students tested failed her vision screening and within this population, 58% were in special education.[18] Follow up of parents and students were noted as barriers in treatment.

Additional research at the Harvard conference was presented by Antonia Orfield, an optometrist at Harvard University Health Services Eye Clinic and chief investigator of the Boston Mather School Inner-City Vision and Learning Project, who noted that 53% of children tested at the Mather School had vision problems that affected their ability to read.[18] Her suggestions for alleviating this epidemic included developing better screening tools to identify vision problems associated with learning and providing eye glasses or vision therapy to those who need it. Dr. Orfield, an expert in this field, wrote the book, Preventing and Curing Vision-Related Learning Problems: Eyes for Learning which discusses vision as more than seeing the blackboard, how visual systems are made, the benefits of vision therapy, and the roles teachers, schools, and parents have in preventing vision-related learning problems.

Despite existing research, there is debate among health care professionals regarding the causal relationship of visual perceptual problems contributing to reading problems or learning failures. Optometrists who specialize in visual development, also known as developmental optometrists, argue for the causal influence of vision on learning while most ophthalmologists and psychologists suggest that reading/learning disabilities and visual perceptual deficits may be *related* but not *causes* of learning problems.[19] This disagreement suggests more research into the subject is needed. However, while more research is needed, existing data and studies indicate a current hardship for many children and unfairness to their parents of not having even an accurate diagnosis of their vision problem, let alone information on what treatment options may be available.

Consequences of Undetected and Untreated Vision Problems

Vision problems are often mistaken for a learning disability, and vice versa. Jane Erin and colleagues published an article in the *Journal of Learning Disability* and stated, "perhaps more than any two other disabling conditions, learning disabilities and visual disabilities, are often mistaken for one another, or occur concomitantly with one condition remaining unrecognized.[20] Furthermore, vision problems may manifest as behaviors of "prolonged reading tasks, [having] difficulty identifying letters and words correctly while readying, or [performing] poorly on tasks that require judgment of spatial relationships and accurate hand-eye coordination, which are also characteristics of learning disabilities.[20] The potential for safety problems also exists. If a child is unable to utilize his or her visual system properly, unintended injuries are more likely to occur.[17]

Students with learning disabilities are classified in the education system as "special education." In 2006, the New Jersey Commission on Business Efficiency of the Public Schools examined how children with reading difficulties are more likely to be classified as special education. At the time, over 200,000 children were classified as special education, and state aid for these students consisted of $900 million or $4,500 per student.[21] If the state implemented early intervention reading programs, improved educator's skills in identifying students with reading difficulties, and screened for literacy and vision problems, the Commission estimated that approximately $200 million per year could be saved.[21] The proposal was never funded.

Students with learning disabilities are classified in the education system as "special education." In Washington State, the Office of Superintendent of Public Instruction oversees special education and related services. Annually, they provide services to about 124,000 eligible students across 295 school district under the federal Individuals with Disabilities Education Act (IDEA) and Washington Administrative Code 395-RCW 28A.155.[22] Table 3 shows Washington

State funding for different types of students.[23] Basic funding is how much is typically sent to districts from the state while extra funding indicates how much extra funding is provided when districts have a student who needs extra support. One can see that additional funding is needed to serve special education students. This extra funding is $3,679 per student, which can be a significant cost to the state of Washington; thus, the need to identify whether difficulties with learning are due to vision problems that need to be fully assessed and treated by an optometrist or actual learning disabilities that need educational intervention.

Table 3: Washington State Funding – By Student Type (2005)

Student Type	Basic Funding	Extra Funding	Total
Basic education student	$4,237	$0	$4,237
Learning assistance program student	$4,237	$436	$4,687
Special education student	$4,237	$3,679	$8,181

Source: Washington State Special Education Coalition

Beyond financial burden, vision may contribute to social and economic problems, such as literacy, high school dropout rates, juvenile delinquency, and adult criminality.[2] Dr. Joel Zaba wrote about this in "A Call to Action", a report about the societal effects on undetected vision problems. Zaba writes, "research has found that Title 1 students, juvenile offenders, illiterate adults, academically at-risk college students, and academically and behaviorally at-risk public school students have a higher prevalence of undetected vision problems." [24]

For the individual child, undetected vision problems may contribute to feelings of low self-esteem, contributing to poor mental health. A paper written by members from the Section on Ophthalmology and Council and Children with Disabilities, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus, and American Association of Certified Orthoptists describe the mental health effects of having undetected vision problems that may be contributing to a child's inability to read. "Many children with reading [disabilities] are observed to grow ashamed as they struggle with skills that their classmates master easily.[25]" The child may blame him or herself for not being able

to keep with their classmates because they may be unaware of a vision problem that is affecting their ability to see when doing class work.

Screening Methods

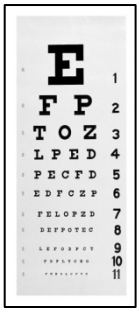
Though the "gold standard" approach in assessing vision problems would be to conduct a comprehensive eye exam, an optometrist is not always accessible, especially in rural areas, such as the Yakima Valley. Thus, screening tools can be helpful in identifying a child's risk of having vision problems. Table 4 outlines the criteria of an effective screening tool.

Table 4: Classic Screening Criteria (Wilson and Jungner)[26]
1. The condition sought should be an important health problem.
2. There should be an accepted treatment for patients with recognized disease.
3. Facilities for diagnosis and treatment should be available.
4. There should be a recognizable latent or early symptomatic stage.
5. There should be a suitable test or examination.
6. The test should be acceptable to the population.
7. The natural history of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an agreed policy on whom to treat as patients.
9. The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole.
10. Case-finding should be a continuing process and not a "once and for all" project.

Source: World Health Organization

- **Snellen Chart:** In school settings and in primary care offices, visual screenings are conducted using the Snellen Chart (see Figure 2), which tests for distance acuity, or how sharply a person can see, at 20 feet. Normal vision is 20/20, which means a person can see an object clearly when they are standing 20 feet away from it. If a person sees 20/70, this means at 20 feet, they can see what a

Figure 2: Snellen Chart



person with normal vision can read at 70 feet. The Snellen Chart screening requires a person reading letters from an eye chart, one eye at a time, at 20 feet away from the chart. The results from Snellen charts are used to the extent of helping schoolteachers identify children who need to sit closer to the board.

Unfortunately, Snellen charts miss up to 75% of vision problems because they do not test for binocular dysfunctions, such as convergence insufficiency (when the eyes do not point in when doing close work), accommodative insufficiency (when the eyes are unable to focus), and saccadic tracking problems (when the eyes cannot team together).[27] If a student fails the Snellen chart vision screening, their parent or guardian is notified to see a health a professional; however, no referral is given or follow up is done.

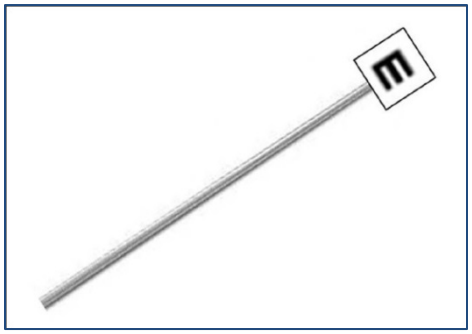
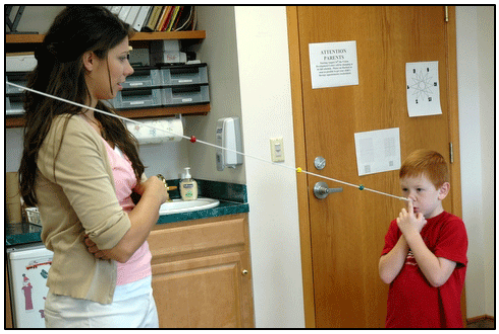
- **Convergence Insufficiency Symptom Survey:** This paper survey consists of 14 questions, asking how the patient feels when reading or doing close work (see Appendix A). If a child scores more than 16, it suggests, but does not prove, he/she may have convergence insufficiency. A comprehensive vision exam with an optometrist should confirm the presence of a vision problem.

  A study conducted by the National Eye Institute utilized this survey to detect this vision problem in individuals 9 to 17 years of age. For individuals with symptoms of convergence insufficiency, Scheiman and colleagues sought to understand whether vision therapy/orthoptic, pencil push-ups, or placebo vision therapy was effective in reducing the symptom. Scheiman and colleagues found that vision therapy/orthoptics was more effective than the other forms of treatment.[28]

- **Near Point-convergence and the Brock String Test (Figure 3):** With the near point convergence test, an eye care professional has an object with a target and moves the object towards a patient's face and away from it, instructing the patient to keep their eye on the target. The Mayo Clinic patient describes this test as a tool that allows an optometrist to assess whether a patient "experiences double vision or…recognizes that [the patient's] eyes can no

longer focus together.[29]" The Brock String Test is similar; however, the object is a string and the target is a ball on the string.

Figure 3: Near-point convergence test (left) and Brock String Test (right)[28, 31]

- **Red Flags for Primary Teachers:** With over 40 years of teaching experience, Katie Johnson has observed firsthand that some children have vision problems that interfere with their ability to thrive in the classroom. She believes that children may have vision problems because of unfinished developmental patterns, which Anne Green Gilbert of the Creative Dance Center in Seattle, WA outlines as: "breath, tactile, core-distal, head-tail, upper-lower, body-side, cross-lateral, and vestibular"[30]. Ms. Johnson has developed her own K-1 screening, which teachers can use with their students to assess whether he/she can achieve the following: eye tracking, balance, eye-teaming, skipping, visual discrimination and tummy crawl. Her book, Red Flags for Primary Teachers, offers case studies of struggling students and simple and fun activities she incorporated to improve their neurodevelopment.

How to Address Child Vision Problems

How to Address Child Vision Problems: Literature reveals a multi-level approach in addressing child vision problems: system level, which focuses on policy and education on a broader level; educator level, giving teachers autonomy and responsibility in detecting vision problems; and, the school-based level, using the school as a resource to distribute information and avenue to reach parents or

guardians. These multi-level approaches can serve as a framework that the ACVP can use as it designs future activities and goals. It is affirming to see that the ACVP is already doing some of these steps including education, promoting prevention by early detection, and involving decision makers.

Dr. Joel Zaba's "Call to Action" describes five components of the systems level approach: [2]

1) *Screen children regularly:* As children progress through their school years, they must be screened for vision problems.
2) *Screenings should be comprehensive:* These screenings should include multiple tests to identify a wider spectrum of vision problems especially those affecting near-vision.
3) *Educate parents:* Parents must be educated on these points so they do not defer vision care for their children.
4) *Provide resources:* Leaders in business, education, government, health, and the non-profit sector must provide resources for parents who cannot afford eye exams or glasses for their children and, whenever possible, make it easier for them to follow through.
5) *Decision-makers collaborate:* Leaders in business, education, government, health, and the non-profit sector must come together to make vision care a priority, including affordable access to prescription eyeglasses, for all children.

An article from the *Journal of Disabilities* describes how educators can help address vision problems:[20]

1) *Assess academic performance:* Academic achievement is below expected performance when intellectual capacity is compared to progress in the classroom
2) *Notice behavioral signs:* High distractibility, lack of attention to a task, presence of avoidance behaviors such as passivity, excessive talking, blaming of difficulties on one's vision problems or physical discomforts, and

completing of assignments, hurriedly without full concentration are some signs of a vision problem.

3) *Look for warning signs:* Students with vision problems may exhibit problems in learning related memory, perception, organization, concrete thinking, perseveration and fixation, generalization, and language.

An article from the *Journal of School Health* provides suggestions on how schools can have a role in preventing and detecting vision problems:

1) *Outreach and education:* Intensify outreach to parents to motivate, enable, and support them to use existing community-based eye care services.[15]
2) *Provide eye care services:* Direct provision of services on-site within schools.[15]

Community Perspectives Regarding Children's Vision Issues

Overview: Eleven key informant interviews were conducted to better understand community member perspectives regarding the status of vision care in the Yakima Valley. The following topics were of particular interest:

- Vision's role in child development
- Existing resources
- Missing resources
- Barriers to vision care
- Who's responsible for ensuring children receive appropriate vision care, and
- Recommendations or solutions that would facilitate child vision care.

Key Informants: The author spoke with community partners in the field of education, optometry, and health care to understand how the different systems are set up to provide, or not provide, adequate vision care for children. Additionally, parents or guardians of children with vision problems were

approached to capture their experiences with child vision care in the Yakima Valley.

Procedure: The ACVP advisor recommended that the author speak with specific key informants including optometrists, educators, health professionals, and parents/guardians. One-on-one interviews were conducted October 2012 – April 2013 in person, over the phone, or via e-mail, ranging from thirty minutes to one hour each. A specific survey tool was created for each type of key informant; however, the interviews were open-ended, allowing key informants to discuss information that was not addressed in the questions (see Appendix B). When possible, a tape-recorder was used to capture responses. Other times, the author took notes by hand or on the computer during the interview.

Analysis and Results: Eleven interviews were collected from three optometrists, three health care professionals (primary care physician screening coordinator, and school nurse), three guardians (parents and guardians) and two educators (previous superintendent and special educator). Responses were transcribed into an Excel document and grouped into the six categories identified earlier. Interviewee summaries, by type, are provided below. Table 5 displays themes from all responses.

<u>The optometrist point of view</u>

- **Optometrist 1 (O1):** O1 provided insight about Indian Health Services. Patients are able to self-refer for vision appointments; however, they must be Native American. Services are free but hardware, contacts, and vision therapy are some examples of treatment that patients must pay for. In some cases, O1 was able to send referrals to the Tribal Department and got vision therapy covered for a few kids; however, these were extreme cases. O1 acknowledges there is not a lot of education about vision problems but Public Health Nurses try to bring it up during home visits with families. O1 has participated in child vision screenings; however, O1 has limited staff. There is often the issue of follow up after a vision problem is detected.

- **Optometrist 2 (O2):** O2 describes vision as an important tool for how we understand the world we live in. O2 identifies pro-active parents as existing resources and attributes poor vision care to schools or pediatricians not referring to eye doctor and eye doctors not testing for developmental problems. O2 notes that people don't understand vision problems because they can't actually see the problem as they would with a broken arm. Also, some parents don't know that they need to get their child's vision checked. Transportation, time commitment, and finances were described as barriers associated with vision therapy. Parents, pediatricians, schools, and eye doctors were identified as being responsible for child vision care. While legislation is typically seen as the answer, O2 believes there's a greater need for community education so people are aware of the problem in the first place.

- **Optometrist 3 (O3):** O3 stated that the eyes are important for getting information to the brain and getting it in the most organized way. When this doesn't happen, the eyes are in conflict. O3 noted that insurance, lack of education, inadequate school testing, and doctors not being open to vision therapy were some barriers to vision care. Having vision therapists and spreading awareness by changing policy were noted as two recommendations for ensuring children get the appropriate vision care they need.

<u>The health care professional point of view</u>

- **Health care professional 1 (HCP1):** HCPI described that it would be difficult for parents to advocate for vision care if they have children in special education. In particular, there is historical trauma that causes disconnect and lack of trust between Native parents and the educational system. Specific to the Yakama people, HCP1 noted that they experience lack of resources and varying health needs. HCP1 recommended creating an informational sheet with stories of tribal children experiencing vision

problems.

- **Health care professional 2 (HCP2):** HCP2 recognizes that there is a cadre of optometrists, ophthalmologists and some behavioral optometrists in Yakima and Pasco; however, it's not clear whether they are comfortable working with children. HCP2 recognizes that vision is part of how a child develops and describes undetected binocular dysfunctions as a hidden problem that may cause children to fall through the cracks. When asked what they would recommend, HCP2 said the gold standard of having vision exams should be pushed (similar to how the dental profession promotes oral exams). In her previous work as a family doctor, HCP2 was not aware of binocular dysfunctions and believes this is a fault of the health professional education system.

- **Health care professional 3 (HCP3):** As a school nurse, HCP3 recognizes that especially at lower grades, undetected vision problems interfere a child's ability to succeed in school. A child may have a hard time communicating a vision problem at a young age but as they grow older, he/she may begin to show behavior problems. HCP3 mentioned in their district, vision screenings were provided in preschool but this no longer exists and students have to see their primary care provider or get services through eye clinics locally. Barriers noted by HCP3 include language, traveling to get to a clinic, and transportation. For special education students specifically, HCP3 mentioned vision may not be as pressing as other diagnoses. HCP3 described having mobile units (similar to dental mobile units) and screenings during registration periods when students enter kindergarten, third, sixth, and ninth grade.

<u>The guardian point of view</u>

- **Guardian 1 (G1):** G1 identified cost, scheduling, and transportation as barriers to vision care. Additionally, G1 said that parent and teachers should be more active in identifying vision problems in the children in their

lives by encouraging exams and/or making sure children wear their glasses. G1 did not know vision problems affected children and thought poor eyesight came with age. Additionally, G1 suggested creating simple pamphlets with information on symptoms parents can look for. Also, G1 identified WIC as a resource to partner with, since they see kids up to 5 years old for well-child exams.

- **Guardian 2 (G2):** As a parent whose child participated in vision therapy, G2 expressed that vision care is costly, because insurance does not cover such treatment. G2's child has always had learning disabilities, but G2 notices that they can now play sports and has a better confidence level. G2 described how difficult it was to know which doctors to go to (an optometrist versus an ophthalmologist.) G2 suggested that vision screenings should be done in school and look beyond near and farsightedness. G2 also recommended publishing peoples' stories, educating people about the consequences of undetected vision problems, and creating brochures to increase awareness.

- **Guardian 3 (G3):** G3 has a child who has trouble in school and attributes this not only to speech delay, but now vision. G3 described how hard it is for parents to navigate the health care system especially in Yakima, a community with high poverty, low education, high dropout rates, and little access to care. People rely on their provider and don't know how to advocate for themselves. G3 noted that schools don't promote vision like they do with oral health and suggested a campaign with billboards and sending flyers to parents from schools. Additionally, G3 identified community health fairs as a resource and avenue to provide education about child vision problems.

<u>The educator point of view</u>

- **Educator 1 (E1):** Being involved with special education, E1 recognizes that vision impacts reading, learning, math and self-esteem. E1 believes vision

therapists should be part of a special education team, since there are roles for physical and occupational therapists. However, the barrier in special education is that there are not a lot of funds to begin with and parents might not have the funds to afford a vision therapist themselves. E1 did not think vision care was the school's responsibility, because they have too much, and identified optometrists as having responsibility in looking for developmental disabilities. Also, educators can have a role if they are provided with simple, cheap, and fun tools that can be used with children to detect vision problems.

- **Educator 2 (E2):** As past school administrator, E2 recognizes that being able to read is part of a student's success. Hence, E2 understands that vision problems may be preventing students from being able to read well. E2 notes that vision therapy is a good solution, but it's expensive. Therefore, E2 recommends giving simple, cost effective tools to parents that they can use with their children to screen and work with to improve vision problems. E2 expressed that teachers and parents don't know about vision problems and should be educated, mobilized, and riled up. A consequence of an undetected vision problem is that a kid might be branded or stigmatized.

Table 5: Community Responses from Key Informant Interviews
How do you think vision may interfere with a child's ability to learn? • Impedes learning • Affects skill acquisition • Contributes to behavior problems • Can't see properly • Can't play sports • Affects self-esteem • Interferes with ability to succeed in school
What services or resources are available for children when it comes to vision? • WIC Program (possible place for educating mothers) • Head Start screenings (conducted by Indian Health Services) • Yakama Nation Review (information source) • Vision therapy clinics • Eye health centers • Medicaid coupons • Community health fairs/Annual Kids Play Date event (good place for outreach and education) • Community groups (Building Vision) • Neighborhood Health, Indian Health Services, Yakima Valley Farmworkers' Clinic, Children's Village)
What services or resources are missing for children when it comes to vision? • Comprehensive screenings • Lack of education/knowledge in community • Not enough developmental optometrists • Not enough optometrists • No funding for vision therapy • Lack of vision therapy clinics
What barriers prevent children from getting vision care? • Money/cost • Insurance/lack of coverage • Ignore/not knowing of vision problems and their effects • MDs/optometrists not working together • Transportation/travel to appointments • Time commitment to take children to appointments • Low self-advocacy (parents aren't empowered to tell their doctor their child needs a referral for an eye exam) • Services aren't available locally • Language barrier • System infrastructure (very few know about vision problems and their effects)
Who do you think is responsible for making sure children do not have vision problems that interfere with learning? • Parents • School staff/nurses • Teachers • Insurance companies • Health care professionals
Do you have any ideas on how children can receive comprehensive vision screening and follow up care? • Use vision therapists • Promote awareness and education • Work with existing resources • Push for full eye exams • Screen regularly • Mobile vision screenings at schools

Source: Created by author

Discussion: From speaking with community members, the author was able to understand how four different groups perceived the same issue. Optometrists provided insight about the technical aspects of performing vision screenings and noted the importance of vision as being a tool for how children interact with the environment. They noted barriers associated with lack of awareness, insurance, understaffing, and lack of coordination between other health care providers.

Health care professionals described the effects of a child having a vision problem, including falling through the cracks of the educational system and exhibiting behavior problems later on in life. Recommendations of communication tools, pushing recommended eye checkups, and having mobile vision screening units were described by this group.

Guardians described their personal experiences of navigating the health care system to obtain vision care a child in their life. They described interventions, such as glasses or vision therapy, as helping their child improve in school. Guardians recommended more education to parents and schools about vision problems because they did not know vision problems may be related to learning until they learned about the ACVP.

Educators shared their experiences working directly with students they saw as struggling in school. In particular, they noted the ability to do math or read were impacted when a child had vision problems. Both described vision therapy as a treatment but noted it was expensive for parents. Also, they noted getting parents and educators involved by "riling them up" and having simple, cheap, and fun tools that could be used to improve vision skills.

Collectively, key informant responses about the detrimental effects of vision problems in learning and thriving in life corresponded to my review of the literature. Additionally, community members identified local resources which the ACVP can potentially partner with or utilize. The deficiencies in the community speak more to systematic barriers, such as money or cost, which the ACVP should keep in mind while advocating for change at the policy level. Also, individuals who were deemed responsible for making sure children do not have vision problems

should be targeted to provide education and outreach. Lastly, it was affirming to hear recommendations from community members because these aligned with the ACVP's mission of advocating for full eye exams and promoting awareness and education.

Recommendations

The following recommendations are meant to guide the ACVP move forward in its efforts. They are based on observations the author made as a participant of the project and from interviews with community members. Recommendations are split into two categories:

1. Increase awareness and education about child vision problems
2. Develop partnerships to strengthen membership and opportunities

Recommendation #1: Increase awareness and education about child vision problems

1.1 Distribute health education materials at community health fairs

The author has developed health education materials based on recommendations received from the ACVP and guardians interviewed. These materials are in English and Spanish and serve as a simple tool to introduce an individual to child vision problems. Community health fairs are an ideal place to distribute the materials, due to the captive audience who is there to learn about or receive health services. The ACVP can use the materials to engage attendees in a discussion about child vision problems.

1.2 Conduct educational presentations to various interest groups

ACVP volunteers were recruited because they heard a presentation about the topic from another ACVP volunteer. To increase membership and create awareness, the ACVP should continue to deliver presentations. Parents, educators and health care professionals are target audiences because they have the most interaction with children and were identified as responsible individuals during interviews.

1.3 Provide early development programs with health education materials
Women, Infant, and Children (WIC) and Head Start were identified during key informant interviews as existing resources that the ACVP should provide materials with.

Recommendation #2: Develop partnerships to strengthen membership and opportunities

2.1 Partner with entities that have capacity and interest for developing screening tools

Pacific University College of Optometry in Forest Grove, Oregon has been working on developing an electronic and comprehensive screening tool. They have expressed interest in collaborating with the ACVP in conducting a study to test the effectiveness of their prototype and to help the Project detect vision problems in children. There is a possible opportunity to submit a proposal to fund such a study through the Patient-Centered Outcomes Research Institute, Assessment of Prevention, Diagnosis, and Treatment Option. Both parties would need to clearly define their roles, designate staff, identify intervention sites and consider treatment options if a child does have a vision problem. PUCO has been involved in development of the VERA electronic screening tool: www.visualscreening.com.

Additionally, Associate Professor and Director of Interactive Media Design, Bill Erdly, of UW Bothell has expressed interest in having graduate students work on developing computer programs that will enhance vision skills. The Project advisor and partners have met with Dr. Erdly and should continue this discussion.

2.2Partner with Building Vision Parent Group and their screening program

Building Vision is a grassroots group, organized by parents whose children have benefited from vision therapy. They receive training from a local developmental optometrist (who specializes in improving vision skills as they relate behavior and learning) on how to use the Convergence Insufficiency Symptom Survey to screen for vision problems in schools. Membership is limited to parents who have

children in vision therapy; however, the ACVP should explore the possibility of having new AmeriCorps member partner with this group to conduct screenings.

Conclusion

Information from this report provides the ACVP with an understanding of existing literature and community perspectives of vision problems in the Yakima Valley. It is apparent that the issue of vision problems is neither well-understood nor well-known by many, which may speak to a systematic fault, where many do not consider eye health as a part of overall health.

The ACVP is taking important steps before advocating for policy change – creating awareness and education and gathering research and data to document cases of and treatment options of vision problems for children living in the Yakima Valley.

- Creating awareness and education: Community presentations, individual conversations, and partnering with the author to develop educational materials have all been conducted to educate community members about this silent issue.

- Gathering research and data: This report and AmeriCorps data collection from 2010-2012 with the DCFS office and future data from 2013-2014 AmeriCorps members DCFS and the Toppenish School District (if these positions are awarded) add evidence to the issue of vision problems in the Yakima community.

With its growing supporters and volunteer advocates, ranging from optometrists, students, primary care doctors, educators, and school administrators, it is clear that the ACVP has started, and will continue, a worthy grassroots movement to ensure children are able to receive comprehensive vision care, so they do not go through life, suffering academically, socially, and mentally.

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Appendices

Appendix A: Convergence Insufficiency Symptom Survey

Instructions: read the *Subject Instructions* and then each item exactly as written. Name:_____ Age:_____
If subject responds with "yes" – please qualify with frequency choices. Do not give examples. Today's Date:_____

Subject Instructions: Please answer the following questions about how your eyes feel when reading or doing close work.

		Never	(Not very often) Infrequently	Sometimes	Fairly Often	Always
1.	Do your eyes feel tired when reading or doing close work?					
2.	Do your eyes feel uncomfortable when reading or doing close work?					
3.	Do you have headaches when reading or doing close work?					
4.	Do you feel sleepy when reading or doing close work?					
5.	Do you lose concentration when reading or doing close work?					
6.	Do you have trouble remembering what you have read?					
7.	Do you have double vision when reading or doing close work?					
8.	Do you see the words move, jump, swim or appear to float on the page when reading or doing close work?					
9.	Do you feel like you read slowly?					
10.	Do your eyes ever hurt when reading or doing close work?					
11.	Do your eyes ever feel sore when reading or doing close work?					
12.	Do you feel a "puffing" feeling around your eyes when reading or doing close work?					
13.	Do you notice the words blurring or coming in and out of focus when reading or doing close work?					
14.	Do you lose your place when reading or doing close work?					
15.	Do you have to re-read the same line of words when reading?					

Convergence Insufficiency Symptom Survey---V15 from Borsting EJ, Rouse MW, Mitchell GL, Cotter SA et al. (2003) Validity and reliability of the revised convergence insufficiency symptom survey in children aged 9 to 18 years. Optom Vis Sci 80:832=-838.

Appendix B: Key Information Interview Questions

Questions for health care professionals

1. How do you think vision problems interfere with a child's development?
2. What services or resources in the Yakima Valley are available for children when it comes to vision?
3. What services or resources in the Yakima Valley are missing for children when it comes to vision?
4. What barriers prevent children from getting vision care in the Yakima Valley?
5. Who do you think is responsible for making sure children do not have vision problems?
6. Do you feel physicians promote early detection of vision problems and follow up care? Please explain.
7. Do you have any memorable stories as a medical professional trying to provide vision care to children?
8. Do you have any ideas on how children can receive comprehensive vision screening and follow up care?
9. Any other topics that I'm missing but you feel is important in the discussion of child vision care in the Yakima Valley?

Questions for optometrists and educators

1. How do you think vision may interfere with a child's ability to learn?
2. What services or resources in the Yakima Valley are available for special education children when it comes to vision?
3. What services or resources in the Yakima Valley are missing for special education children when it comes to vision?
4. What barriers prevent special education children from getting vision care in the Yakima Valley?
5. Who do you think is responsible for making sure special education children do not have vision problems that interfere with learning?
6. Do you have any ideas on how the special education population can receive comprehensive vision screening and follow up care?
7. Is there someone you recommend I speak with who may have an interest in this issue?
8. Any other topics interviewee wishes to discuss.

Question for guardians

1. Does your child have a vision problem? How did you know?
2. Does/did your child's vision problem interfere with their learning in school and with other life activities?
3. What steps did you take to ensure they received a screening/exam and/or care?
    a. What services or resources were available to you?
    b. What services or resources were missing?
4. What are some barriers that prevented you or other people you know from accessing appropriate vision care?
5. What would make it easier for you or other people you know to access vision case?
6. Who do you think is responsible for making children do not have vision problems that interfere with learning?
7. How can the Project educate and create awareness of child vision problems in the Yakima Valley?
8. Any other topics interviewee wishes to discuss.