

“Behold, there is nothing greater than writings. They are like a boat on the water. Let me teach you to love writing...Let me encourage its beauty into your sight. For it is greater than any office. There is nothing like it on earth.” Dua-Khety, 3<sup>rd</sup> millennium BCE

### **The Reverberate Hills:**

#### **Reading to young children to improve literacy**

##### **What is the public health need?**

In the United States today, the early literacy of preschool children echoes throughout their future academic achievement, economic prosperity, and ultimately, their physical health. From birth through early elementary school, emergent literacy is the knowledge of words and print that children have before learning how to read and write.<sup>1</sup> Introduction to the written word is fostered by caretakers prior to and in tandem with formal reading and writing instruction<sup>2</sup>. The American Academy of Pediatrics recognizes that reading aptitude by the third grade predicts high school retention and adult employment rates.<sup>3</sup> Greater literacy proficiency presages higher levels of education and better paying jobs.<sup>4</sup> Lower print literacy forecasts worse health outcomes and overall lack of engagement with healthcare services.<sup>5</sup> In short, better readers do better in school and live better lives as adults with reduced burden of chronic disease. Although emergent literacy has many facets, the most enduring element in foretelling future reading success is the amount caregivers read to their children.<sup>6</sup>

Thus, without guidance and preparation, literacy is the exception rather than the rule. It is perhaps not surprising then that the percentage of illiterate adults in the United States has remained constant over the past several decades.<sup>7</sup> For all our efforts at educational reform, we have failed to boost local and national literacy rates. In Oregon, ten percent of adults lack basic

prose literacy skills.<sup>7</sup> Because the presentation of this report will take place in Coos County, it is interesting to point out that in Coos County, 42% of ninth graders will not graduate from high school<sup>8</sup> and there is a downward trend for high school graduation rates (figure 1). Further, 30% of the children in Coos County will grow up in poverty<sup>8</sup>, another factor predictive of low literacy.<sup>4</sup> In fact, 90% of welfare recipients have never completed high school and approximately 40% of adults with low literacy live in poverty.<sup>9</sup> Whatever can be done to increase literacy rates will have far-reaching effects on future generations because illiteracy in children, passed down from illiterate parents, foments a cycle of poor educational and social outcomes.<sup>10</sup>

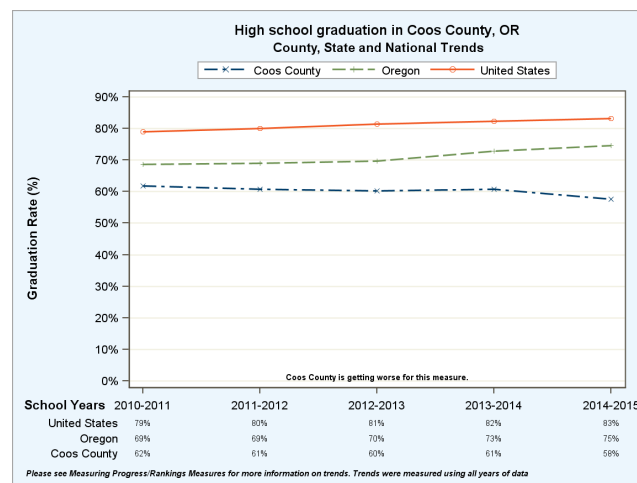


Figure 1. Projected high school graduation rates in Coos County Oregon when compared with state and national rates.

Furthermore, low print literacy predicts worse overall engagement with healthcare and higher mortality especially in patients of lower socioeconomic status (SES).<sup>5</sup> Low health literacy correlates with less access to primary care and greater burden of chronic disease.<sup>5</sup> Supporting this finding, national education statistics show that ninety million American adults cannot read a patient education printout.<sup>4</sup> When patients cannot read, they are less likely to adhere to care

instructions for themselves and for their children.<sup>5</sup> Low literacy correlates with poor understanding of healthcare overall. As such, teenage girls with low literacy are six times more likely to have unmarried or unplanned pregnancies<sup>11</sup> and low literacy correlates to grand multiparity.<sup>12</sup> Beyond disease, poor literacy skills correlate with victims of violence and incarceration.<sup>4,13</sup> Entanglement with the legal system is also reflected in the fact that 85% of juvenile offenders are functionally illiterate.<sup>9</sup> According to UNISEF, about one billion people worldwide have entered this century without being able to read a book or sign their name.<sup>14</sup> Literacy reflects more than what a child achieves in school; it follows the child for life.

## **TOPIC**

### **Synthesis of findings**

For all their similarities, literacy skill is not language skill. Literacy, unlike language, does not occur spontaneously. Invented languages have sprung up throughout history and multitudes of illiterate societies have rich oral traditions.<sup>1</sup> Phonetic writing, however, has only been invented once in the history of our species.<sup>15</sup> Early language exposure may influence language development, but language exalts itself as an indispensably human quality that emerges without explicit instruction. For example, Nicaragua had no form of sign language until, in the nineteen seventies, a group of deaf children were brought together to learn to lip-read Spanish. Although the program was unsuccessful in terms of lipreading, the children invented their own signs to communicate with each other. Thus, without any exposure to language, children invented a language that is still in use today.<sup>16</sup> Contrastingly, reading and writing must be taught. Though there are cases of children teaching themselves to read, for the clear majority, literacy requires formal instruction.<sup>1</sup>

One interesting aspect of formal reading instruction is that its success is largely based on the preparedness of the learner.<sup>17</sup> When children start school with tools they need to succeed as readers, they continue to progress throughout elementary school as readers and students overall. Better literacy skills in kindergarten tend to persist and make better readers in the third grade.<sup>6</sup> By contrast, children who start off with poorer reading skills tend to fall behind in school, and the gap between poor readers and good readers widens as the grades advance.<sup>18</sup> Although both language and literacy are tied to intellectual development in childhood, literacy stands out as an environmentally and instructionally intensive milestone.

Literacy and language are, however, inexorably linked because both deal with words.<sup>19</sup> Phonological awareness and exposure to a rich vocabulary enhance both language skills and future reading skills.<sup>1</sup> Furthermore, like the critical period of early language exposure to develop proper syntax, early literacy exposure enhances aptitude for future reading.<sup>1</sup> Phonological awareness is integral to early reading as children decode letters as sounds. Later, a rich vocabulary takes over as crucial for further reading development once phonologic recoding becomes automatic.<sup>1</sup> It is well documented that children who hear a greater number and variety of words with longer utterances will have a richer vocabulary.<sup>20</sup> Variation among children in richness of their vocabularies by age nine can be traced back to language exposure prior to the age of three.<sup>6</sup> Vocabulary and exposure to words that may not be common in everyday spoken language are crucial for enhancing reading skills. Language exposure in the home helps to create a rich environment for future literacy.

Twin studies have shown that literacy environment in childhood overshadows genetics in terms of creating a great future reader.<sup>21</sup> The way that caregivers relate to written material and the amount of written material in the home helps children to adopt reading as an important aspect

of their culture.<sup>10</sup> Although there are many facets that promote a rich literature environment in the home, reading aloud to children stands as chief among the early interventions for learning how to read.<sup>22</sup> Reading aloud to children not only positively shapes their values surrounding literature but also increases language exposure. Helping families to fashion a rich literacy environment will have long-term benefits for the child's reading ability.

### **Intervention: The childhood literacy environment**

For thousands of years, humans have recognized the importance of literacy in social standing and success.<sup>15</sup> Building on the wisdom of our ancestors, we know today that better readers will do better socially and get better jobs as adults.<sup>4</sup> Better readers are more likely to finish college and less likely to be incarcerated.<sup>4</sup> With a college degree and a higher-paying job, SES will likely be elevated. Higher SES correlates to better health outcomes.<sup>23</sup> By contrast, low SES, which correlates with low literacy rates, will not only lead to poorer language skills in young children,<sup>24</sup> but will also lead to worse outcomes in health and wellbeing.<sup>25</sup> Increasing literacy rates will help to increase SES and, by doing so, increase health and wellbeing in society.

Thus, in terms of achievement in modern, literate society, literacy assumes priority as the rate-limiting step. Since we know that literacy in early elementary school will predict later literacy in school and beyond, our focus should be on early childhood interventions. The most predictive factors in later literacy success include: the amount of shared reading experiences with parents, the child's age at which the parent begins to read, and the number of books in the home<sup>26</sup>. Among these factors, the single most influential predictor of future success as a reader is the amount the child was read to before kindergarten.<sup>6</sup> Caretakers who read to their children prior to the children receiving formal reading training create a foundation for literacy and future

academic success. According to Healthy People 2020, the ages between birth and year eight encompass critical developmental stages in which caregivers have their greatest impact on early childhood literacy.<sup>27</sup>

Shared reading experiences between child and caretaker stand as integral to enriching emergent literacy and future reading ability. Although other factors are important in fostering a strong reader, reading aloud to children seems to have the most enduring impact. Sénéchal and Lefevre showed that reading to the child had longer lasting effects than parental reading instruction. Parents who read to their young child implicitly increase the child's awareness of grammar, vocabulary and syntax, all crucial early reading skills. Reading to children enhances phonologic awareness as well as an understanding of the connection between print and words. Increasing the amount of shared reading experiences critically enhances future reading success.

Yet, for all the importance of the early childhood literacy environment, only half the families of small children read to their children every day and one third of children entering kindergarten lack the necessary skills to succeed as a reader.<sup>28</sup> Bolstering emergent literacy is crucial because kids who fall behind in reading are more likely to never achieve reading levels appropriate for their grade.<sup>18</sup> The phenomenon anticipating that good readers will read more and improve while poor readers will read less and fall behind, dubbed the Mathew effect, compounds literacy skills.<sup>1</sup> Thus, a cycle develops whereby a poor reader reads less and is exposed to less literature. Without practice, the poor reader falls further behind and eventually gives rise to a low literacy adult. Lower literacy in adults tends to foster lower literacy environments for their children. Those children are, in turn, at risk for reading difficulties.<sup>29</sup> It has been shown that impressing the importance of shared reading upon parents will encourage better literary environments for their children. Thus, it is crucial to get the word out. Time constraints and a

lack of understanding of the parent's role in nurturing childhood literacy lead to poor outcomes in childhood development.

Setting aside a time each day in which the caregiver reads to the child is a simple solution that can have profound effects. By reading to their children for 30 minutes every night, parents will help their children accrue over 1000 hours of print exposure prior to kindergarten.<sup>30</sup> A regular story time each day also helps ameliorate chaos and adds to consistency in the household schedule. Mitigating household chaos can also have far-reaching effects on childhood behavior.<sup>31</sup> Building on household environment, Kumar et al showed that when young mothers read to their children, it reduces the mothers' post-partum depression.<sup>32</sup> More story reading will lead to more literary materials in the home, and early exposure to books correlates with greater reading aptitude.<sup>29</sup> Children growing up with fewer reading materials at home will tend to do worse in school even given the same academic opportunities.<sup>17</sup> Further, these interventions need not take a large amount of training. Letourneau detailed the positive effects of a small amount of coaching on parents of newborns to increase pre-literacy activities.<sup>25</sup> Early literacy habits correlate highly with future reading achievement. Children who come from high-quality home literacy environments and are read to by their caretakers will do better throughout their academic careers.

By contrast, significant childhood adversity, such as growing up in a chaotic household or punitive parental interactions, embeds itself in the child's physiology and leads to heightened stress responses in adulthood.<sup>33</sup> According to a recent report by Harvard's Center on The Developing Child, these inappropriate activations of the stress response in turn contribute to substance abuse, aggression, and obesity in later life.<sup>33</sup> In fact, the practice of positive parenting has long-term effects on the child's anatomy and physiology.<sup>34</sup> The positive parenting

demonstrated in the time and effort put forth in reading to children shows that the child is worth the parent's time and effort.

Thus, reading to young children not only increases their chances of doing well in school, but also fosters crucial social interactions that herald emotional and cognitive development. Positive interactions with adults encourage children to regulate their behavior and can predict better outcomes in mental and physical health.<sup>35</sup> In fact, high quality interactions between caregivers and children develop the neural circuits that will allow childhood self-regulation and future psychological health starting at the epigenetic level.<sup>33</sup> The genes that will mitigate the stress response in the adult are switched on in childhood, often as a direct result of healthy parent-child interactions. Positive interactions with adults in early childhood shape brain development and can have far-reaching effects into adulthood.<sup>34</sup> It is critical for parents to understand that the time they spend reading to a child engenders a protective factor in that child's development.

The faith that a parent puts in their child's abilities also enhances the child's likelihood of success. When a mother attributes her child's success to the child's ability, the child tends to do better in school. According to Enlund et al, mothers who are highly educated are more apt to cite their children's ability as the reason for the children's success, whereas mothers with vocational backgrounds tend to site the child's lack of ability as the reason for the child's failure.<sup>36</sup> Further, western cultures tend to emphasize innate ability over effort as the reason for a child's success whereas eastern cultures highlight hard work as the key to success. Thus, a mother who lacks higher education and was raised in the United States, will tend to see their child's failure to read in a fixed and deterministic way that can shadow the child's future efforts and triumphs. In light of this, it becomes all the more dire that we take action as health care providers to gently



encourage parents to see reading as a skill that can be developed with practice.<sup>37</sup> The practice in this case is reading daily to children. As children grow, it is also crucial that primary care providers encourage older children to adopt the custom of daily reading.

### **Community outreach: Coos Bay**

The information gathered in this paper can be used to address my audience in Coos Bay as part of the OHSU Physician Assistant program's rural track. As mentioned above, Coos Bay has a substantial number of children born into low SES. In Oregon, Coos Bay has a lower than average number of high school graduates and college-educated mothers. Addressing a mother prenatally could help to establish the course of both the mother and child's lives. The Reach Out and Read program worked hard to disseminate this message with quantifiable, positive outcomes.<sup>22,32,38</sup> Addressing young mothers prior to their children entering elementary school could help change the trajectory of the family. Parents need to know that the effort they put into their children will have as much influence as the genes they hand down. All mothers should understand that reading to their children is a relatively simple intervention that could have profound effects on their children's future health and security.

Shared reading can establish far-reaching patterns for the child's well-being. Reading aloud is a ritual that will provide a scaffold for parent-child interactions, a method for calming a child before bed, and a mirror of positive attitudes toward the written word. From my own experience both as a parent and within the clinic, reading has had a calming effect. Reading shows a positive interaction where the parent procures the child's attention without shame or bribery. The bedtime ritual has been shown to be an integral part of sleep hygiene and reading a bedtime story is part of a long history of helping children go to sleep. In fact, an informal survey of children's literature shows that many books for young children conclude with the protagonist

falling asleep. Finally, reading helps establish a love and respect for the written word, a useful attitude in academics.

Starting with board books and continuing through JRR Tolkien, Harry Potter and Steam Punk, I have read to my own son nearly every night since he was born, eleven years ago. When I was interviewing for OHSU, I told the program director that the one tradition that I would like to continue through the didactic year of PA school was reading to my kids every night. I have been deeply grateful to keep that promise to my child and for myself. My own mother read to me as her mother read to her. Within families, history tends to repeat itself. The verses we recite into the hills of time will reverberate for generations.

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