

Determining the Loss of Earning Capacity in Pediatric or Young Adult Cases

Terry P. Leslie, M.Ed., CRC, LPC, D/ABVE

Leslie Vocational Consulting

This article will attempt to outline a framework to guide vocational experts in determining the loss of earning capacity in pediatric and young adult cases. The term “young adult” is being used as it is common for litigation to take years before a trial may occur. During this period the injured child may now be a young adult. The author believes the methodology in determining the loss of earning capacity is based on when the injury occurs and not when the litigation occurs, therefore even though the individual may be a young adult, if the injury took place when they were below the age of 18, it should still be considered a pediatric case. As in any other type of case, the vocational expert is charged with making the determination of the vocational consequences of an event, which then leads to a determination of a loss of earnings or earning capacity.

One of the more popular methods of determining the loss of earning capacity of pediatric cases is the PEEDS-RAPEL method published by Neulicht and Berens (2005). This model is a modification of the RAPEL method (Weed, 1993), which is commonly used to determine the loss of earning capacity in adults with injuries or disabilities. The parts of the RAPEL method include rehabilitation plan, access to the labor market, placeability, earnings capacity and labor force participation. The RAPEL modification as outlined by Neulicht and Berens included characteristics of the child and their family including occupations, educational attainment, evaluation results, developmental stage and synthesis or conclusions.

This group of professionals have given the forensic community guidance in this area and based on current data it is proposed that additional modifications are needed. The consistent theme in the PEEDS methodology is parents and family.

The 1997, National Longitudinal Survey of Youth, found that by the time that the cohort had reached ages 26-31 in 2011, 81% of the births by women and 87% of the births reported by men were to non-college graduates. Fifty-seven percent of the births had occurred outside of marriage for both men and women, with 64% of women and 63% of men reporting a birth had at least one child outside of marriage. In only looking at individuals without 4-year college degrees, these figures rose to 74% among women and 70% for men.

Cherlin (2010) found that it is now unusual for non-college graduates who have children in their teens and twenties to have all of them within marriage. Rankin and Gibson-Davis (2012) used the same sample to complete their research through 2009 and found that first births among whites were 60% of the time outside of marriage, 91% among blacks and 74% among Hispanics. Early non-marital childbearing is associated with union dissolution due to high break-up rates among unmarried parents in the first several years following a birth (McLanahan, 2011). This pattern of early non-marital childbearing results in step-siblings and half-siblings in the household, along with parents and siblings living in other households.

Based on the demographical data and the expectation that this trend will continue, it is proposed that the focus be on the “Sphere of Influence”, instead of family or parents as these “traditional relationships” appear not to as prevalent as they may have been in the past. The author proposes that the “Sphere of Influence” cover three general areas, genetics, socio-economic status and the characteristics of the child themselves.

Genetics

Bruce Sacerdote (economist) examined the educational attainment of children adopted from South Korea by random U.S. families. He compared the relationship between the mothers

schooling and the child's schooling both for adopted and biological children. He calculated that only 23% of schooling transmitted from mother to child and that genetics played a large part (77%) in their educational attainment. Sacerdote's conclusion is that 23% of future educational attainment is determined by the environment in which the child is raised and 77% by genetics. Most psychologists who examined this area have found that genetics accounts for 30 to 40 percent of a child's future functioning. Sacerdote also found a direct correlation between the educational attainment of mothers and their biological children.

Dickens (2005) found that depending on the measure of achievement used, the sample studies and the age of the subjects, estimates of the share of variance explained by genetic differences within racial and ethnic groups range from as low as 20% to upward of 75%. However, most estimates, particularly those for younger children, seem to cluster in the range of 30 to 40 percent.

There are a number of medical conditions which may have genetic causes and will need to be taken into account in determining the pre-morbid level of functioning of a child compared to their post-morbid level of functioning. ~~The~~For example, DSM-V outlines that heritability estimates for autism spectrum disorder range from 37% to higher than 90%. The heritability of attention-deficit/hyperactivity disorder (ADHD) is substantial, with oppositional defiant disorder (ODD) being present in half of this population. Specific learning disorders appear to aggregate within families, with reading disability being highly inheritable. Additional genetic heritable traits include Tourette's disorder, bipolar disorder, cystic fibrosis, etc.

Socio-economic Status

Socio-economic status may include the following:

Specifically outlining the individuals who have an influence on the child, which may include: biological parents, grandparents, relatives, siblings, church members, family friends, etc.

- The educational attainment of the individuals in this sphere of influence
- The academic achievement of the individuals, which includes how they did in school, absences, functioning compared to grade level, etc.
- Earnings records of these individuals
- Work histories of these individuals
- Criminal records of these individuals

Hauser (1996) suggested that investigators should collect and use data on education and income, as well as on occupational standing when determining socio-economic status. Socio-economic status can be a function of educational attainment, occupational standing, income, tangible possessions and social class.

The following is the Education and Socio-economic Status Factsheet published by the American Psychological Association.

Socio-economic status (SES) is often measured as a combination of education, income and occupation.

- Children from low SES environments acquire language skills more slowly, exhibit delayed letter recognition and phonological awareness, and are at a risk for reading difficulties (Aikens & Barbarin, 2008)
- Children with higher SES backgrounds were more likely to be proficient on tasks of addition, subtraction, ordinal sequencing and math word problems than children with lower SES backgrounds (Coley, 2002)

- Students from low-SES schools entered high school 3.3 grade levels behind students from higher SES schools. In addition, students from the low-SES groups learned less over 4 years than children from higher SES groups, graduating 4.3 grade levels behind those of higher SES groups (Palardy, 2008).
- In 2007, the high school dropout rate among persons 16-24 years old was highest in low-income families (16.7%) as compared to high-income families (3.2%) (National Center for Education Statistics, 2008)
- Children from lower SES households are about twice as likely as those from high-SES households to display learning-related behavior problems. A mother's SES was also related to her child's inattention, disinterest, and lack of cooperation in school (Morgan, et al., 2009)

A strong positive association between one's school attainment and that of one's parents has been consistently documented in numerous empirical studies, (Keane 1999). Two explanations are typically used. The first is based on the heritability of traits, that children of more educated parents may inherit the abilities, personalities and preferences that led to the higher educational attainment of their parents. The second is based on human capital production, that more educated parents, may invest more heavily in their children's human capital, based on their own preferences for more educated children and/or due to their higher wealth.

If both parents were high school graduates, then 88.7% of their children would complete high school or have more education, but only 21.9% would completed college. If both parents had a college degree, then 63.6% of their children would complete college. If both parents dropped out of high school, then only 6.9% of their children would complete college.

Children whose mothers work more during their children's early stages of life have less educational attainment compared to children whose mothers spend more time at home with them (Ermisch, 2000). In addition, parents' education is a powerful predictor of their children's educational attainment (Haveman, 1993). This is more the case for mothers' education. Mothers with a higher level of education instill the importance of education in their children. Although fathers' education is important, mothers have a greater impact on the values children later find important (Ermisch, 1997). ~~Boggerss~~Boggress (1998) finds that living in a mother-headed household or a stepfather-mother family has a negative effect on education levels due to a decreased level of resources. It is hypothesized that mothers' educational attainment is directly related to the educational attainment of their children for two reasons. First, children's actions often reflect their mothers' actions and attitudes. Second, educated parents have the resources to teach and help their children outside of the classroom.

Chadwick and Solon (2000) studied the income relationships between parents and children. Utilizing data from two longitudinal surveys, the Panel Study of Income Dynamics and the National Longitudinal Surveys of labor market experience, suggests that the elasticity between the permanent components of son's and father's earnings is about 0.4. The results of this study finds that the intergenerational income elasticity for daughters is estimated at 0.43.

Mare (2000) found that when both parents have 16 or more years of education, their sons have a .504 (50.4%) probability of completing 16 or more years of education and their daughters have a .565 (56.5%) probability of completing 16 or more years of education. If both parents did not graduate from high school, their sons have a .56 (56%) probability of not graduating from high school and their daughters have a .58 (58%) probability of not graduating from high school.

Mazumder (2005), completed research using longitudinal earnings from the Social Security Administration (SSA) and found that the association between the earnings of fathers and their children to have an intergenerational elasticity (IGE) of 0.6, and suggested that the United States is substantially less mobile than previously believed.

Dahl and DeLier, (2008), compared the earnings of sons and daughters to their fathers, using the children's average earnings around the age of 36 and compared them to the earnings histories of their fathers from age 20 to 55. Their results showed intergenerational elasticity (IGE) of 0.26 to .063, with the highest influence being fathers who had earnings at every age from 25 to 55 and the lowest using the average earnings of fathers from age 20 to 55, including years of zero earnings. This study found a direct relationship between the earnings of fathers and sons, like the results of Solon. They found a weak association between the earnings of fathers and daughters, noting that a 10 percentile increase of fathers, will generally show a 1 percentile increase in the earnings of the daughter, however, when looking at fathers who have had a steady work history and are above the 90th percentile in earnings, the daughters had lower earnings than what would have been expected.

Direct Influences on Characteristics of the Child/Young Adult

Direct influences on Characteristics of the child/young adult may include the following:

- Event which is the focus of the litigation
- Medical conditions which are not related to the focus of the litigation
- Academic records
- Test results

- Medical/psychological opinions regarding functioning
- Interests of the child
- Residency/Citizenship
- Criminal record
- Drug use
- Skills developed by the child

Included in this section are any medical conditions the child may have developed which are not related to the focus of litigation. For example, during the birthing process the child may suffer a brachial plexus injury, which may be the focus of litigation, but may also have a congenital birth defect which impacts their functioning. They may have also suffered subsequent injuries which have impacted their future vocational alternatives.

The Environmental Protection Agency (EPA) has studied the environmental exposure of mercury on children and have found that the Trasande value of -0.093 IQ points for each 1 ppb of mercury in cord blood implies a 0.465 IQ decrement for each part per million of mercury in hair, with other studies showing that this relationship is -0.12 IQ points per part per million mercury in maternal hair. The loss of lifetime earnings as a result of the loss of IQ points was calculated by Trasande, et al. and the EPA, with both using the work of Salkever (1995) to estimate the effect of one loss of IQ point has on earnings. Transande's research showed that for each loss of IQ point males experienced a 1.93% loss in lifetime earnings and females experienced a 3.23% loss. The EPA combined the genders and found that the loss was 2.379% of lifetime earnings. There were additional computational differences with Trasande adjusting

earnings for labor force participation rate and reduction to present value. The EPA took earnings over 5-year intervals and both reduced the earnings to present value.

In addition to mercury exposure, the effects on children of other environmental pollutants have been studied. Asthma is the leading cause for hospital admissions among urban children and the leading cause for lost days of school. Regarding blood lead levels, this report finds a reduction of 0.25 IQ points/ug/dl with the mean blood level in the 1997 5-year-old child being 2.7 ug/dl. Salkever found that the loss of one IQ point is associated with an overall reduction in lifetime earnings of 2.39%. This means that the mean blood lead level represents a loss of 0.675 IQ points or 1.16% in lifetime earnings. There is a loss of lifetime earnings from having asthma, but this was not calculated in this study. In the treatment of brain cancer, cranial irradiation will reduce IQ by an average of 2.8 points in each child. (Sibler 1992)

Pirkle (1994) studied blood lead levels between 1976 and 1991, which involved a survey of over 27,000 individuals. This study found that the mean blood lead levels of children from one to five years of age declined from 13.7 ug/dl to 3.2 ug/dl for non-Hispanic white children and from 20.2 ug/dl to 5.6 ug/dl for non-Hispanic black children. The prevalence of blood lead levels of 10ug/dl or greater in children between the ages of one and five declined from 85.0% to 5.5% in non-Hispanic white children and from 97.7% to 20.6% in non-Hispanic black children. It was concluded that the major cause for the reduced blood lead levels was from the removal of lead from gasoline and the removal of lead from soldered cans. However, there continued to be socio-economic factors associated with higher blood lead levels, including younger age, male, non-Hispanic black children in low income households.

Drug use also has an effect not only on the motivation and potential criminal behavior of adolescents, but also their cognitive functioning. Meier (2012) found that persistent marijuana use in adolescents is associated with neuropsychological decline and the loss of functioning based on IQ scores. The study found that the discontinuation of cannabis did not fully restore neuropsychological functioning among adolescent-onset users.

Among children and adults with sickle cell anemia the median age of death was 42 years for males and 48 years for females. Among those with sickle cell-hemoglobin C disease, the median age of death was 60 years for males and 68 years for females.

Most individuals who have sickle cell disease (SCD) are dependent on medical assistance and social security. A study completed by Ballas, et al. of 299 patients found that almost all had graduated from high school and almost half had some college education, but three fourths reported personal income of less than \$10,000 per year and more than half reported total household income of less than \$20,000 per year. Only 16% of the patients were employed full-time and 59% were either unemployed or disabled.

Among many areas which are affected by the actions of the parents or guardians and the child directly is chronic absenteeism. Chronic absenteeism is defined as a student missing 10 percent of a school year for any reason (Balfanz, 2010). This study found that 5-7.5 million students are chronically absent. In Maryland, there are 58 elementary schools with 50 or more chronically absent students. In high school, there are 61 schools with 250 or more students missing a month or more of school. Chronic absenteeism is most prevalent among low-income students, with the chronic absenteeism rate in the Baltimore City Public School System being 25%. Students in Baltimore, who were chronically absent in both pre-K and kindergarten often

continued to be chronically absent in later years and are more likely to be retained and have lower achievement (Connolly and Olson, 2012). Continuing to look at Baltimore statistics finds that approximately 70% of the students missing 0 to 10 days of school in the 6th grade, graduated within one year of their expected graduation date. Fifty-one percent of students missing between 10 and 20 days of school graduated; 36 percent of the students missing 20 to 39 days and just 13 percent of students missing 40 or more days graduated (BERC. 2011).

Students do not attend school because they cannot due to illness have instability with housing, they need to work or have family responsibilities or they are involved with the juvenile justice system. Students will not attend school to avoid bullying or feel that they are in an unsafe environment. Students will also not attend school, because they or their parents do not see a value in being there, they have something else they would rather do, or nothing prevents them from skipping school.

Analysis

In determining the loss of earning capacity in pediatric or young adult cases, we are looking at three spheres of influence to predict what would have occurred absent an injury, untimely death, etc. We can look at genetics, socio-economic status, and the characteristics of the child themselves to make our projections, but a statement published by Schonbrun and Kampfe (2008) bears repeating, *it is important for the vocational professional to have a good understanding of the educational makeup of the general population as well as the specific family he or she is evaluating*. It would be easy for the vocational expert to simply say that since the parents had a certain level of educational attainment, that the child will also have that same level

of educational attainment or higher, but we must acknowledge the changing role of education and how long it is taking to reach the various levels of education.

In 2015, the U.S. Census Bureau reported that 88% of the population had at least a high school diploma or GED, with 33% of adults, either male or female, having a bachelor's degree or higher. The 2012, Survey of Income and Program Participation (SIPP) surveyed non-traditional educational attainment involving professional certifications, licenses and educational certificates not previously associated with college education surveys. This found that a large portion of the population holds alternative educational credentials independent of traditional college degrees, with 46.3 million adults holding a professional certification or license and 19.1 million holding an educational certificate. The data suggests that if these individuals were included in the category of "more than high school" it would be a shift representing about 5% of the adult population.

In addition to non-traditional educational routes we find that the high school graduate rates in some urban areas can be low. The graduation rate for the Baltimore City School District is 56.4%. Many schools have changed to a five-year high school graduation rate instead of using a four-year high school graduation rate. Using this methodology, the graduation rate for the Baltimore City School District is 73.5%.

The manipulation of how graduation rates are being determined has carried over to higher education as the National Center for Educational Statistics shows that the 6-year graduation rate for full-time undergraduate students pursuing a bachelor's degree at a 4-year institution was 60%. The U.S. Department of Education finds that the graduation rate of full-time community college students pursuing an Associate's degree is 21% when measured over a three-year time

period. The National Student Clearinghouse tracked students who left their initial institution and found that the completion rate for Associate degrees to be 39% when measured over a six-year time period.

As we move forward in our electronic sophistication, reasonable accommodations may improve the child's educational attainment or residual functioning.

This analysis includes the genetic conditions that may have an impact on the functioning of the child, whether it be a limiting the child's physical or cognitive functioning, or possibly having an impact on their life expectancy or worklife expectancy.



The analysis continues by examining the socio-economic environment they are being raised in including the educational attainment and earnings of those within their sphere of influence. Educational attainment includes the need for special education, repeating grades, absences, when and where GED's were obtained, along with formal testing results. Earnings information is as important as or more important than educational attainment as the statistics show a close association with socio-economic status and future income.

We then look at the specific characteristics of the child

- What limitations are directly related to the injury/event being litigated?
- What conditions may affect their earning capacity/worklife expectancy that are not related to the specific injury?

- What education/academic skills has the child developed?
- The child's academic/educational attainment including test scores, attendance, etc.
- Criminal history of the child
- Drug use
- Test/evaluation results

Recommendations and Conclusions

It is recommended that the vocational expert look at multiple influences on the child and young adult when they are determining the loss of earning capacity. The influences on a child include genetic, socio-economic and the characteristics of the child themselves. Based on the studies reviewed, information which would be helpful in determining the loss of earning capacity in a pediatric or young adult case include the following:

Biological Parents

Education

Medical Conditions

Socio-economic Environment

Who the plaintiff was living with or would be living with

Educational attainment of these individuals including test scores, absences, etc.

Work History/Occupations of individuals in the plaintiff's sphere of influence

Earnings History of these individuals

Criminal records of these individuals

Characteristics of the Child/Young Adult

Limitations caused by the event being litigated

Medical conditions which are not related to the litigation

Academic records

Test results

Interests of the child

Residency/Citizenship

Criminal record

Drug use

Skills developed

References

- “*A Comparison of the Monetized Impact of IQ Decrements from Mercury Emissions*”
Charles Griffiths, Al McGartland, Maggie Miller, U.S. Environmental Protection Agency, Washington, DC.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Balfanz, R., & Byrnes, V. (2012). *Chronic Absenteeism: Summarizing What We Know From Nationally Available Data*. Baltimore: Johns Hopkins University Center for Social Organization of Schools.
- Ballas SK. Treatment of pain in adults with sickle cell disease. *Am J Hematol*. 1990;34:49-54.
- Ballas SK. *The Impact of Hydroxyurea on Career and Employment of Patients with Sickle Cell Anemia*, Journal of the National Medical Association, Vol. 102, No. 11, Nov. 2010: 993-999
- Baltimore Education Research Consortium (BERC) 2011. *Destination Graduation: Sixth Grade Early Warning Indicators for Baltimore City Schools: Their Prevalence and Impact* BERC: Baltimore MD
- Bogges, Scott. “Family Structure, Economic Status, and Educational Attainment.” Journal of Population Economics. 11 (1998): 205-22.
- Campbell, C., “*Graduation rates at city schools below average, but rising*”, The Baltimore Sun, December 16, 2014
- Chadwick, L.N., Solon, G. “*Intergenerational Income Mobility among Daughters*”, University of Michigan, July 2000.
- Cherlin, A.J. (2010). Demographic trends in the United States: A review of research in the 2000s. *Journal of Marriage and Family*, 72, 402-419.
- College of Education, University of Maryland, Maryland Equity Project, January 2014
- Connolly, F. & Olson, L.S. 2012, *Early Elementary Performance and Attendance in Baltimore City Schools’ Pre-Kindergarten and Kindergarten*. Baltimore Education Research Consortium, Baltimore, MD.

- Dahl, M., DeLiere, T., August 2008, *The Association between Children's Earnings and Fathers' Lifetime Earnings; Estimates using Administrative Data*. Institute for Research on Poverty Discussion Paper No. 1342-08
- De Serf '02, Megan, "*The Effects of Family, Social and Background Factors on Children's Educational Attainment*" (2002) *Honors Projects*. Paper 8.
- Dickens, W.T., "*Genetic Differences and School Readiness*", *The Future of Children*, Vol. 15, No. 1 Spring 2005, 55-69
- "*Environmental Pollutants and Disease in American Children: Estimates of Morbidity, Mortality, and Costs for Lead Poisoning, Asthma, Cancer and Developmental Disabilities*" Philip J. Landrigan, et. al., *Environmental Health Perspectives*, Vol. 110, No. 7, July 2002
- Ermisch, J., Francesconi, M., *The Effect of Parents' Employment on Children's Educational Attainment*. United Kingdom: University of Essex UP, 2000.
- Ermisch, J., Francesconi, M., *Family Matters*. Institute for Social and Economic Research, 1997.
- Ewart, S., & Koninski. R., "*Measuring Alternative Educational Credentials:2012*", January 2014, U.S. Department of Commerce, U.S. Census Bureau
- Hauser, R.M. & Warren, J.R. "*Socio-economic Indexes for Occupations: A Review, Update and Critique*", The University of Wisconsin-Madison, October 1996.
- Haveman, Robert; Wolfe, Barbara. "*Children's Prospects and Children's Policy.*" *Journal of Economic Perspectives*. 4(1993): 153-74.
- Jaszkwicz, J. (2015, March). *Trends in Community College Enrollment and Completion Data, 2015*, Washington, DC: American Association of Community Colleges
- Keane, M.P., & Wolpin, K.I., "*The Effect of Parental Transfers and Borrowing Constraints on Educational Attainment*", Penn Institute For Economic Research, December 1999.
- Mare, R.D., "*Assortative Mating, Intergenerational Mobility, and Educational Inequality*" California Center for Population Research, November 2000, University of California, Los Angeles.

- Mazumder, B., 2005. "Fortunate Sons: New Estimates of Intergenerational Mobility in the U.S. Using Social Security Earnings Data." *Review of Economics and Statistics* 87(2, May): 235-55.
- McLanahan, S. (2011). Family instability and complexity after a nonmarital birth In M.J. Carlson & P. England (Eds.) *Social class and changing families in an unequal America* (pp. 108-133).
- Meier, M.H., et al, (2012), Persistent cannabis users show neuropsychological decline from childhood to midlife, *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 109, No. 40, E2657-E2664.
- Neulicht, A.T. & Berens, D.E. (2005), PEEDS-RAPEL: A Case Conceptualization Model for Evaluating Pediatric Cases, *Journal of Life Care Planning*, Vol. 4, No. 1, (27-36).
- Pirkle JL, Brody DJ, Gunter EW, et al. The Decline in Blood Lead Levels in the United States: The National Health and Nutrition Examination Surveys (NHANES), *JAMA*. 1994; 272(4):284-291
- Platt, O. et. al., "*Life Expectancy and Risk Factors for Early Death in Sickle Cell Disease*", *New England Journal of Medicine*, 1994;Vol. 330, No. 23; 1639-44.
- Ranckin H., & Gibson-Davis, C.M. (2012). The role of pre- and post-conception relationships for first-time parents. *Journal of Marriage and Family*, 74, 526-539.
- Riddick-Grisham, S. and Deming, L. (2011, 2nd ed.). *Pediatric life care planning and case management*. Boca Raton: CRC Press.
- Ryan, C.L. & Bauman, K., "*Educational Attainment in the United States: 2015*", March 2016, U.S. Department of Commerce, U.S. Census Bureau.
- Sacerdote, B. "*How large are the effects from changes in family environment? A study of Korean American Adoptees*", Dartmouth College, April 6, 2006.
- Salkever DS, Updated estimates of earnings benefits from reduced exposure of children to environmental lead.
- Schonbrunj, S.L., & Kampfe, C.M. "Loss of Earning Capacity in Pediatric Cases", *Journal of Forensic Vocational Analysis*, vol. 11, No. 2. pp. 7-15.

Sibler JH, Radcliff J, Peckham V, Perilongo G, Kishnani P, Fridman M, Goldwein JW, Meadows AT. Whole-grain irradiation and decline in intelligence; the influence of dose and age on IQ score. *J Clinical Oncology* 10:1390-1396 (1992)

Weed, R.O. (1993), The RAPEL method: A common sense approach to life care planning and earnings capacity analysis (unpublished document).

Weed, R.O. (2000). The worth of a child: Earnings capacity and rehabilitation planning for pediatric personal injury litigation cases. *The Rehabilitation Professional*, 8(1), 29-43.