CHRISTEN A. CARSON, PH.D., ABPP

Clinical and Forensic Psychology
Board Certified in Forensic Psychology
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EXPERT AFFIDAVIT OF CHRISTEN A. CARSON, PHD, ABPP

I, Dr. Christen A. Carson, state that the following is true to the best of my knowledge, information, and belief:

1. I practice clinical and forensic psychology in Seattle, Washington, and am the past president of the Washington State Psychological Association.

2. I am Board Certified in Forensic Psychology by the American Board of Professional Psychology and serve as a Faculty Member of the American Board of Forensic Psychology.

3. I am Board Certified in Couple and Family Psychology by the American Board of Professional Psychology and currently serve as President of the American Board of Couple and Family Psychology.

4. I serve as a consultant for the Center for Law, Brain & Behavior (CLBB), an academic center based at Massachusetts General Hospital and affiliated with Harvard Medical School.

5. I served as a clinical case consultant and panelist for the Federal Judicial Center - Center for Law, Brain & Behavior workshop, *Science-Informed Decision-Making* (Harvard Law School, June 2024).

6. I provide regional and national training on sentencing and resentencing considerations, including for the American Board of Forensic Psychology and the American Psychological Association national conferences.

7. Among other areas, I specialize in juvenile and adult sentencing mitigation. I have completed more than 100 forensic evaluations and provided oral testimony approximately 40 times.

8. A current copy of my Curriculum Vitae is attached as Exhibit “A.”

9. The statements below are based on my education and training regarding adolescent and emerging adult brain development and its relationship to criminal offending.

10. The science of youthful brain development has significant implications for the culpability of youth involved in the criminal justice system.

11. Offense behavior and decision-making exhibited by an individual before their mid-20s reflect the neurodevelopmentally limited capabilities of a brain still growing and maturing. Decades of neurodevelopmental research have concluded: "It is well established that the brain undergoes a 'rewiring' process that is not complete until approximately 25 years of age."[1] By rewiring, neuroscientists mean that intricate connections are formed and pruned throughout adolescence and young adulthood. During this time, the full capabilities of the brain, from decision-making to emotional regulation, are steadily developing. A brain in adolescence or late adolescence (ages 18 through the early 20s) is one still in progress.

12. Youth between the ages of 18 and the early 20s are more similar to younger adolescents than adults in their brain development, primarily in terms of reduced capacity for emotional regulation, judgment, and risk appraisal. These reduced capabilities are particularly evident in contexts of "hot cognition."[2] When late adolescents are in situations of hot cognition, strong emotions, immediacy, and stress adversely impact their mental processing of information. Unsurprisingly, much youthful criminal or illegal behavior is perpetrated in such hot cognition contexts.

13. A hallmark sign of immaturity in adolescence is "sensation-seeking." Sensation-seeking is evidenced when individuals exhibit a strong desire to seek out intense, exciting experiences with decreased regard for risk. Data indicate that sensation-seeking peaks around age 19, while the capacity for self-regulation, a behavior that opposes sensation-seeking, develops gradually throughout adolescence and plateaus around the mid-20s.[3]

14. The reduced sensation-seeking and increased ability to self-regulate demonstrated by adults flow from the progressive development and wiring of the prefrontal cortex. The prefrontal cortex and related networks are responsible for executive functioning, including impulse control and modulation of emotions. The maturation of the prefrontal cortex and its associated networks throughout adolescence and young adulthood accounts for improvements in a wide variety of domains, from planning and strategizing to the

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[1] Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., Sandhu R., & Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric disease and treatment*, *9*, 449.

[2] Casey, B. J., Taylor-Thompson, K., Rubien-Thomas, E., Robbins, M., & Baskin-Sommers, A. (2020). Healthy Development as a Human Right: Insights from Developmental Neuroscience for Youth Justice. *Annual Review of Law and Social Science, 16,* 295-315. https://doi.org/10.1146/annurev-lawsocsci-101317-031101

[3] Steinberg, L., Icenogle, G., Shulman, E. P., Breiner, K., Chein, J., Bacchini, D., Chang, L., Chaudhary, N., Giunta, L. D., Dodge, K. A., Fanti, K. A., Lansford, J. E., Malone, P. S., Oburu, P., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Tirado, L. M. U., Alampay, L. P., … Takash, H. M. S. (2018). Around the world, adolescence is a time of heightened sensation seeking and immature self-regulation. *Developmental science*, *21*(2), 10.1111/desc.12532. https://doi.org/10.1111/desc.12532

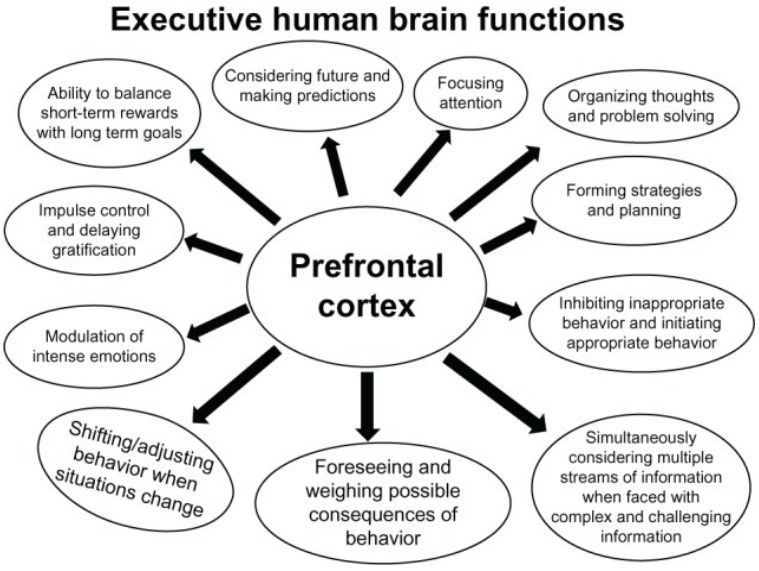
modulation of intense emotions and focusing of attention. These domains are essential to the regulation of emotion and well-reasoned decision-making.

15. Adolescent and late-adolescent *neurological* immaturity is expressed in *functional* immaturity, which may be evidenced in underdeveloped moral reasoning, faulty weighing of risks and benefits, and judgment impulsivity in offense conduct.[4]

16. Initial judicial adoption of neurodevelopmental research focused on the limitations of youth who were younger than 18. This focus may have prompted a misunderstanding that late teens and early 20s possess fully mature capabilities. However, there is no bright line separating offenders younger than 18 from those who are in the "late adolescent" category. There is diverse evidence for this neurodevelopmental continuum. Four lines of research demonstrate that brain development and its functional expressions continue up to age 25: psychosocial-behavioral assessments, morbidity and mortality data, functional neuroimaging during task performance, and neuroimaging.[5]

    a. *Psycho-social-behavioral assessment:*

    Important pro-social psychological capabilities develop from the teens to the mid-20s. Psycho-social-behavioral assessment during the late teens and early 20s demonstrates continued progression in a number of executive functions, as reflected in the model below:[6]



[4] Cunningham, M. D. (2023). Miller evaluations. In R. Gurung and R. Roesch (Ed.), *Routledge encyclopedia of psychology in the real world: Psychology and law.* Routledge, Taylor & Francis Group.
[5] Cunningham, M. D. (2023). Miller evaluations. In R. Gurung and R. Roesch (Ed.), *Routledge encyclopedia of psychology in the real world: Psychology and law.* Routledge, Taylor & Francis Group.
[6] Arain M, Haque M, Johal L, Mathur P, Nel W, Rais A, Sandhu R, Sharma S. Maturation of the adolescent brain. *Neuropsychiatr Dis Treat*. 2013;9:449-461
https://doi.org/10.2147/NDT.S39776

As the brain matures from the late teens to the mid-20s, psychosocial capabilities develop for complex thinking, greater appreciation for diverse views, improved understanding of mutuality in relationships, increased emotional regulation, and greater ability to weigh risks and benefits.[7]

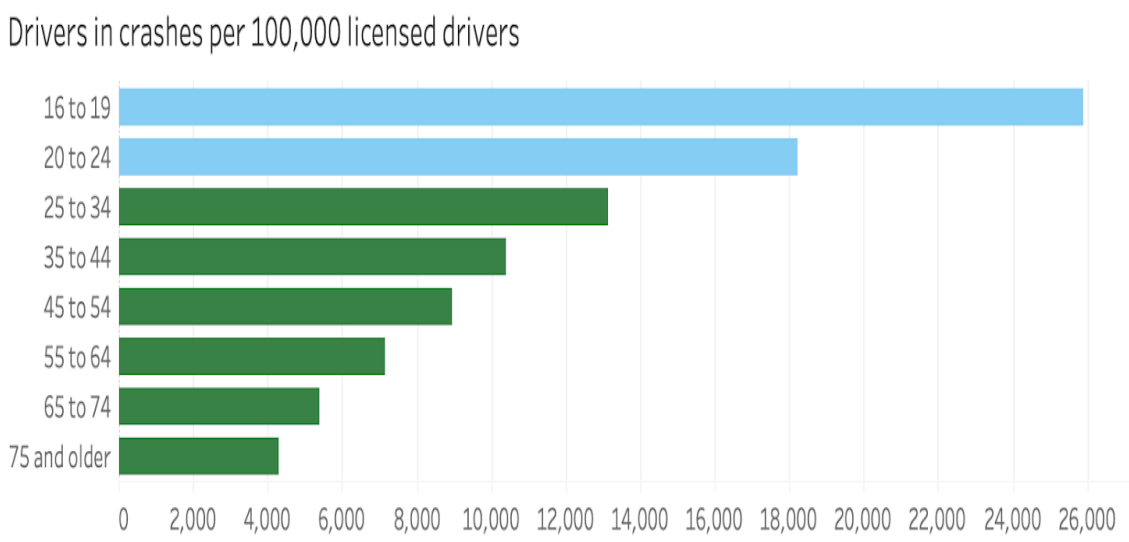
With progressive emotional, social, and intellectual maturity, better control over behavior develops. Steinberg, Cauffman, and Monahan[8] described three aspects of such psychosocial maturity essential to desistance from crime:

- *Temperance:* The ability to control impulses, including aggressive impulses.
- *Perspective*: The ability to consider other points of view, including those that take into account longer-term consequences or that take the vantage point of others.
- *Responsibility*: The ability to take personal responsibility for one's behavior and resist the coercive influences of others.

b. <u>*Morbidity and mortality data:*</u>

Various sources of morbidity and mortality data demonstrate the behavioral implications of brain immaturity and associated decision-making, as well as the steadily accruing benefits of psychosocial maturity with age in the late teens and early 20s. Studies of data from car crashes prove instructive in highlighting the consequences of this neurodevelopment. To illustrate, the graph below from the National Safety Council (2021)[9] reflects driver crash rates per 100,000 licensed drivers by age group. Note that crashes in the 16 to 19-year-old age group and the 20 to 24-year-old age group are significantly higher than those of older cohorts.

[7] Simpson, R. (2008). *Young adult development project.* Massachusetts Institute of Technology, Workplace Center.
[8] Steinberg, L., Cauffman, E., & Monahan, K. (2015, March). *Psychosocial maturity and desistance from crime in a sample of serious juvenile offenders*. U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention. https://ojjdp.ojp.gov/library/publications/psychosocial-maturity-and-desistance-crime-sample-serious-juvenile-offenders
[9] National Safety Council. (2021). *Motor vehicle — Age of driver.* In *Injury Facts.* https://injuryfacts.nsc.org/motor-vehicle/overview/age-of-driver/



Recognition of the actuarial and statistical implications of a driver being less than 25 years old is demonstrated by the policies of car rental companies toward drivers younger than 25 (e.g., declining to rent to these drivers, applying significant surcharges, and restricting these drivers to specific vehicles). The data supporting these restrictions is sufficiently broad that there is no attempt to make a case-by-case determination based on driving history or other individualized metrics.

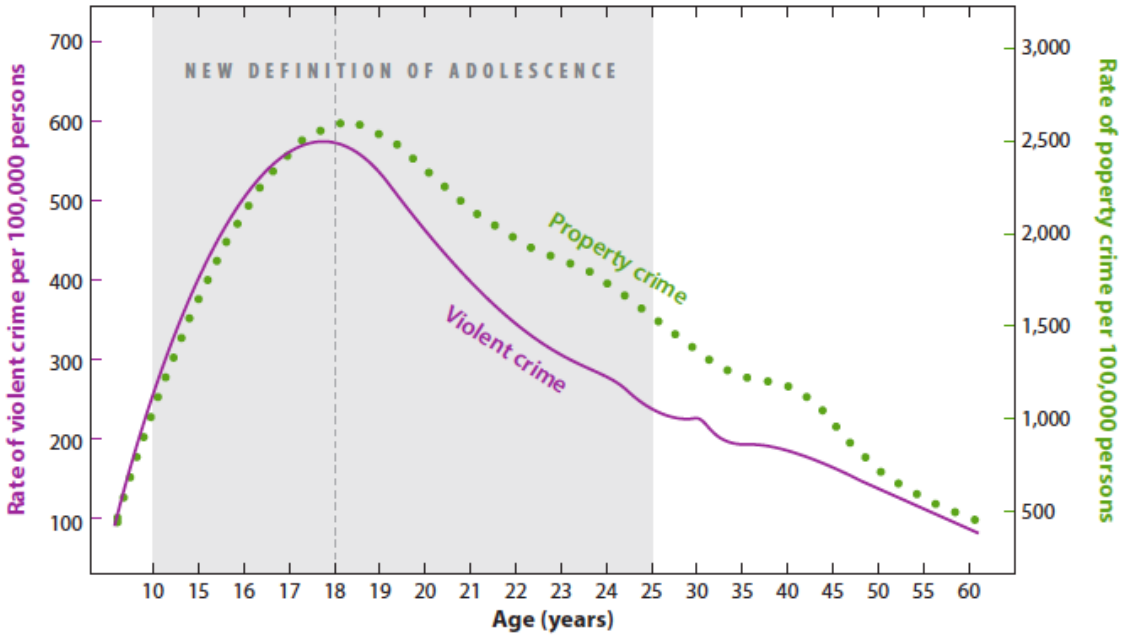
The Center for Law, Brain, and Behavior's White Paper on the Science of Late Adolescence: *A Guide for Judges, Attorneys, and Policy Makers* (2022) similarly notes adolescents' elevated risk-taking decisions and behaviors in multiple behavioral domains:

> Compared to adults, middle and late adolescents are more likely to engage in behaviors that risk their lives and well-being. Many health risk behaviors peak in late adolescence and young adulthood. This includes risk-taking behaviors and risk-related outcomes such as reckless driving, unprotected sex, and unintentional injuries—further, overdose deaths and substance misuse peak in late adolescence and early adulthood. [10]

Age-crime data similarly demonstrate the behavioral implications of brain immaturity through age 25 as reflected in offending patterns mapped over the lifespan. Violent crime

[10] Center for Law, Brain & Behavior. (2022). *The science of late adolescence: A guide for judges, attorneys, and policymakers.* Massachusetts General Hospital, Harvard Medical School. https://clbb.mgh.harvard.edu/white-paper-on-the-science-of-late-adolescence/

and property crime markedly decrease after age 25 compared to age 17-19, as reflected in the figure below:[11]



(Casey et al., 2022)

The age-crime curve demonstrates the decreased level of offending subsequent to brain development and increased psychosocial capacities.

c. *Functional neuroimaging during task performance*

The chronology of brain development can be followed using neuroimaging measurements, in particular, functional MRI (fMRI). Neuroimaging through fMRI can evaluate the brain and its various circuits and connectivities in action. In fMRI studies analyzing large-scale brain activity over several years, there is a noticeable lag in the development of the prefrontal cortex and the associated frontoparietal network (as compared to other regions of the brain). These later-developing regions are responsible for evaluative decision-making, impulse control, and emotional regulation, and account for diminished behavioral control in adolescents.

d. Neuro-imaging (MRI/CT)

Brain maturation does not reflect a singular developmental track. Instead, it is a multilayered and parallel process. There is an early priority in the development of subcortical limbic circuits - the reward circuits involved in immediate need attainment (such as desire, fear, and rage) - over the prefrontal cortex, which is involved in executive functions of impulse control, planning, and predicting outcomes

[11] Casey, B. J., Simmons, C., Somerville, L. H., & Baskin-Sommers, A. (2022). Making the sentencing case: Psychological and neuroscientific evidence for expanding the age of youthful offenders. *Annual Review of Criminology, 5*, 321-343. https://doi.org/10.1146/annurev-criminol-030920-093346.

such as negative consequences. In emotionally charged situations, the limbic circuits are prioritized, as they are better developed than the executive systems of the prefrontal cortex. The latter reaches full capability in the mid-20s.

17. The neurodevelopmental immaturity demonstrated by all adolescents and young adults can be exacerbated or augmented by developmental adversity. Such adversity may include neurodevelopmental and psychological disorders, trauma, and deprivations in the family system, and corruptive and violent communities. As these accrue, *particular* functional immaturity may be observed.

18. In spite of the robustness and broad applicability of the above scientific findings, a variety of faulty metrics have been asserted in individual cases in denying the role of brain immaturity in adolescent offending. Among the more routinely encountered examples are the following:

    a. *Planning vs. impulsivity:* There may be an assertion that an offense does not reflect the impetuosity of youth because planning was involved, and therefore, the actions do not appear impulsive. This reflects a misunderstanding of impulsivity. To explain, "spontaneous" and "impulsive" overlap but are not synonymous terms/concepts.

       There are two types of impulsivity. The first type is *reactive impulsivity*. Reactive impulsivity involves an immediate reaction without pause or reflection: e.g., you are shoved, and you shove the other person back. It is spontaneous in its immediacy. Reactive impulsivity is most often observed in pre-school-age children, persons who are intoxicated, persons in a crisis, and persons with dementia.

       The second type of impulsivity is *judgment impulsivity*. Judgment impulsivity is characterized by the press of internal forces, with inadequate consideration for consequences or alternative options. For example, you meet someone today and spend the next two days planning your wedding and life together. On the third day, you marry. This represents a profoundly impulsive action, even though two days were spent in planning. Judgment impulsivity is particularly characteristic of adolescents.[12]

       Further, planning is *not* inconsistent with immaturity. The capability to plan is a feature of human cognition that arises during the preschool years with progressive development in the complexity of plans that may be supported. Planning is a continuous and not dichotomous variable. For that reason, the presence of a plan does not contraindicate youthful vulnerabilities.

    b. *Features of the offense:* An assertion may be made that if features of the offense behavior are similar to behaviors enacted by adults, then the vulnerabilities of

[12] Cunningham, M. D. (2023). Miller evaluations. In R. Gurung and R. Roesch (Ed.), *Routledge encyclopedia of psychology in the real world: Psychology and law.* Routledge, Taylor & Francis Group.

youth are not applicable, e.g., motive of pecuniary gain, efforts to avoid detection, etc. However, the role of youthfulness is not demonstrated in the offense being completely distinct from that carried out by an adult. Certainly, some features are more commonly observed among youthful offenders. There are no features of adolescent offending, though, that are entirely distinctive for that group alone.

To illustrate, car accidents occur with both adult and adolescent drivers. These accidents may emanate from similar behavioral features, including excessive speed, inattention, and stimulation. However, teens exhibit these risky behaviors more frequently than adults. One can't differentiate the role of youthful immaturity by inspecting the accident itself. Rather, the role of immaturity is demonstrated by a marked reduction in such crash-risk behaviors among drivers older than 25.

c. *Wrongful awareness:* It is sometimes asserted that if a youth "knew" an act was wrong, then youthfulness immaturity is not implicated. However, moral awareness and reasoning are more complex than a recognition that behavior is "wrong." To illustrate, a typically situated 5-year-old knows that it is wrong to kill another person. However, that recognition is socially regarded as so primitive and superficial that a 5-year-old would never be held to the level of criminal responsibility or moral culpability applied to a 25-year-old for the same homicidal conduct. From psychological research, it is understood that moral reasoning is not an all-or-nothing phenomenon. Rather, it accretes to age 25, encompassing such varied constituents as a moral code, increased empathy, and sensitivity to the impacts of actions.

d. *No "homunculus":* It may be asserted that though a youthful defendant was immature in some respects, his offense behavior did not reflect such immaturity, thus rendering his age irrelevant as a sentencing consideration. This postulates a homunculus, i.e., miniature "person" of maturity, intact discernment, and moral clarity who somehow magically sits outside of youthful limitations and impairments, formulating offense conduct as if an adult. This homunculus is a fiction. The immature brain and associated limitations in decisional capabilities and moral reasoning are the only resources a youthful defendant possesses for understanding and acting on the world at the time of offense conduct.

19. The faculties of moral discernment and reasoning, facets of decisional and judgment capability, are products of increased brain development. Accordingly, the qualitative development of these capabilities is progressive through childhood and into the mid-20s and significantly accounts for the greater capacity of adults to desist from criminal conduct. Desistance from crime is also demonstrated by recidivism data, including the low recidivism rates in *Miller*[13] releases.[14]

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[13] *Miller v. Alabama*, 567 U.S. 460 (2012).

[14] Beckett, K., & Goldbert, A. (2024, January 12). *Sentencing reform in Washington State: Progress and Pitfalls*. Seattle Clemency Project/University of Washington; Daftary-Kapur, T., & Zottoli, T. (2020) *Resentencing of juvenile lifers: The Philadelphia experience*. Department of Justice Studies, Monclair State University; Samples, S.

20. Courts have already incorporated these findings in their sentencing decisions. For example, Washington State's *O'Dell* case[15] applied this developmental science in sentencing considerations, stating, "The science proves that youth reduces culpability and is therefore relevant to the sentence imposed upon an individual defendant." The Washington courts have further adopted and relied on this science, with the *Monschke*[16] court noting, "no clear line exists between childhood and adulthood" and "individual youthful characteristics may mitigate the sentences of these two young petitioners."

21. Taken as a whole, the body of neuroscientific evidence regarding adolescent brains is clear. By biological fact, adolescents wield a brain that, in its circuitry and anatomy, is tilted towards emotion, intensity, impulsivity, and poor self-regulation. However, these decisional and behavioral vulnerabilities recede with progressive brain development to age 25. Increased age and desistance from crime are well-known phenomenon that squares well with our neurodevelopmental evidence that executive function, emotional regulation, and increased quality of moral reasoning progressively establish themselves as the brain matures. Courts would be remiss to ignore this body of evidence in their sentencing procedures—to ignore the impact of brain development until the mid-20s, and to make negative predictions about future behavior in the face of overwhelming evidence in favor of desistance.

Respectfully submitted,

Christen A. Carson, PhD, ABPP

Date: September 18, 2025

(2021, August). Crime by "juvenile lifers" after prison "very rare," State says. *Target 8 News*. Grand Rapid, Michigan. https://www.woodtv.com/news/target-8/crime-by-juvenile-lifers-after-prison-very-rare-state-says/

[15] *State v. O'Dell*, 183 Wn.2d 680, 358 P.3d 359 (2015).

[16] *In re Monschke*, 197 Wn.2d 305, 482 P.3d 276 (2021).

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CURRICULUM VITAE

BOARD CERTIFICATIONS

Forensic Psychology, ABPP, American Board of Professional Psychology (2022)
Couple and Family Psychology, ABPP, American Board of Professional Psychology (2014)

LEADERSHIP POSITIONS

Past President, Washington State Psychological Association
President, American Board of Couple & Family Psychology
Faculty, American Board of Forensic Psychology
Consultant, Center for Law, Brain & Behavior (CLBB)
Past President, American Academy of Couple & Family Psychology
Editorial Board, Journal of Family Trauma, Child Custody & Child Development (2015-2022)

LICENSURE

Psychologist, Washington (PY00002700, licensed since 2003)
Psychologist, Florida (PY10389, licensed since 2019)
Previous: Licensed Mental Health Counselor, Washington (2001-2003)

EDUCATION

Ph.D. Clinical Psychology, Pacifica Graduate Institute, Santa Barbara, CA (2001)
M.A. Clinical Psychology, Duquesne University, Pittsburgh, PA (1995)
B.A. Psychology, Stetson University, DeLand, FL (1993)
B.A. Spanish, Stetson University, DeLand, Florida and *Universidad Complutense*, Madrid, Spain (1993)

MEMBERSHIP

American Psychological Association
Washington State Psychological Association
APA Division 41, American Psychology-Law Society
APA Division 43, The Society for Couple and Family Psychology Member
APA Division 31, State, Provincial, and Territorial Psychological Association Affairs
National Academy of Neuropsychology

PROFESSIONAL PRACTICE

03/2000 - Current: Clinical and Forensic Psychologist, Seattle, WA
Forensic Practice: Criminal: Evaluations including Mitigation Evaluations, *Miller* Evaluations, Competency Evaluations, Mental State Evaluations. Specialization in adolescent brain development, trauma. Previously contracted psychological examiner for King County Superior Court, Juvenile Division. Family: Litigation Support in dissolution matters; Civil: Personal Injury Evaluations.

Clinical Practice phased out in 2022: Previously conducted individual, couple, child, adolescent, and family psychotherapy; Mental Health psycho-diagnostic evaluations with treatment recommendations; Cognitive evaluations of adults, adolescents, children, including learning disabilities, ADHD, and giftedness; Clinical supervision and consultation with doctoral students, post-doctoral students, and psychologists. Clinical Specializations: Broad range of psychiatric mental health conditions, Psycho-diagnostic assessment and differential diagnosis, relationship issues, attachment and loss, life transitions, behavior problems, mood disorders, developmental issues, chemical dependency and dual diagnosis, parenting, domestic violence, sexual abuse, LGBTQ issues.

10/1998-6/2001: Licensed Mental Health Counselor, Sound Mental Health, Seattle, WA
Therapist working with multi-problem families with chemical dependency, domestic violence, physical abuse, sexual abuse, and out of home placement; Specialized work in the areas of psychological trauma, crisis intervention and emergency response, and integration of clinical work in primary care settings; Supervision of interns, Provided trainings to staff and students.

04/1997-09/1998: Predoctoral Psychology Intern/Therapist/Case Manager, Westside Outpatient Mental Health and Crisis Clinic, San Francisco, CA
Psychology Intern providing diagnostic and risk assessments, treatment planning, and psychological mental health services to individuals, couples, and families, supervision of staff, and program development. Specializing in acute mental health and chemical dependency issues.

01/1996-03/1997: Social Work Specialist/Bilingual Instructor and Case Manager, Curtis and Associates, Santa Barbara, CA
Taught skill-building curriculum, including social skills and psychoeducational information. Specific focus on minority non-English and Spanish-speaking participants. Curtis & Associates Inc., contracted by the Santa Barbara Department of Social and Health Services, offered self-sufficiency skills and job training to individuals and welfare-to-work programs.

08/1994-08/1995: Graduate Student Counselor and Assessor, Duquesne University, Pittsburgh, PA Provided cognitive and psychological assessments, and outpatient therapy.

01/1993-03/1994: Neuroscience Laboratory Technician and Research Assistant, Florida State University, Tallahassee, FL. Conducted research culminating in poster presentation and publication: Contreras, R. J., Carson, C. A., & Pierce, C. E. (1995). A novel psychophysical procedure for bitter taste assessment in rats. *Chemical senses*, *20*(3), 305–312. https://doi.org/10.1093/chemse/20.3.305

RECENT PRESENTATIONS

Adapting to change: Forensic Resentencing Evaluations Post-Monschke, Mattis, and Other State Case Law. Co-presenting with Stephanie Tabashneck, Psy.D, J.D. (CLBB). American Academy of Forensic Psychology, Washington, D.C., August 28, 2025.

Neuroscience and the Law- A 21st Century Paradigm Reflected in Juvenile Capital Sentencing Jurisprudence. William James College Psychology Doctoral Program Guest Lecturer. April 7, 2025.

Adolescent and late adolescent brain science and recidivism, with co-speaker Dr. Daftary-Kapur, Nebraskans for Prison Reform, Lincoln, NE, October 21, 2024

Evaluating Family and Community Factors in Adolescent and Late Adolescent Forensic Criminal Psychological Evaluations, American Psychological Association, Seattle, WA. August 10, 2024

Science Informed Decision-Making (in sentencing), Federal Judicial Center and Center for Law, Brain and Behavior, Clinical consultant and panelist, Harvard Law School, Cambridge, MA. June 11-13, 2024

An Evidence-Informed Family Systems Decision Tree for Intervening in Parent-Child Contact Problems with Leslie M. Drozd, PhD, and Michael A. Saini, PhD, Association of Family and Conciliation Courts, Chicago, IL, May 12, 2022

Post-Divorce Issues and Parenting Plans that Stimulate Growth, American Academy of Forensic Psychology, Portland, OR, November 16, 2018, *Guest speaker* with Robin Deutsch, Ph.D., ABPP, and Marsha Kline Pruett, Ph.D., MSL, ABPP

Considerations in Developing Parenting Plans for Special Needs Children: Focus on Autism Spectrum and ADHD, Association of Family and Conciliation Courts, Seattle, WA, September 22, 2018

Child Custody Research & Issues with IPV & Child Abuse, 22nd International Summit on Violence, Abuse & Trauma, Speaker Plenary Panel, San Diego, CA, September 26, 2017

Comprehensive Parenting Evaluations: Steps with Emphasis on Abuse & Trauma Assessment, San Diego, CA, IVAT September 27, 2017

Assessing Trauma, Alienation, and Abuse in Parenting Evaluations, International Hawai'i Summit on Preventing, Assessing & Treating Trauma Across the Lifespan. March 29, 2017