THE SUPREME COURT OF THE STATE OF CALIFORNIA

THE PEOPLE OF THE STATE OF CALIFORNIA, Plaintiff and Respondent, v. ANDRES QUINONEZ REYES, Defendant and Appellant.	**Case No. S270723** Court of Appeal Case No. G059251 Orange County Superior Court Case No. 04CF2780

AMICUS CURIAE BRIEF OF THE JUVENILE INNOCENCE & FAIR SENTENCING CLINIC IN SUPPORT OF APPELLANT REYES

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INTEREST OF AMICUS

The Juvenile Innocence & Fair Sentencing Clinic (JIFS Clinic) represents juvenile offenders sentenced to long prison sentences, including resentencing, wrongful conviction, parole, felony murder resentencing litigation, and juvenile transfer hearings. Founded in 2012, in the wake of *Miller v. Alabama*, the JIFS Clinic is the largest live-client clinic in the country devoted solely to the representation of juvenile offenders on post-conviction. Under the supervision of faculty and staff attorneys, certified law students in the JIFS Clinic represent juvenile clients pro bono in superior court, the court of appeal, and before the Board of Parole Hearings. In court, JIFS students have litigated resentencing and mitigation hearings pursuant to *Miller v. Alabama* and *People v. Franklin,* as well as hearings under Penal Code section 1170(d), section 1170.03, and significantly, section 1170.95.[1] The clinic has achieved positive results for hundreds of clients, including the release from prison for over 50 clients. The JIFS Clinic therefore has a particular interest in the fair treatment of juvenile offenders in California courts, including the appropriate use of juvenile brain science to inform a court's determination of proportionate culpability and sentencing.

This Court has specified the issues on review as:

> 1. Does substantial evidence support the conclusion that petitioner acted with implied malice?

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[1] Unless otherwise specified, all subsequent statutory references are to the California Penal Code.

2. Does substantial evidence support the conclusion that petitioner's actions constituted murder or aided and abetted murder?

The interest and the argument of the JIFS Clinic is limited to a single issue with two parts: First, should juvenile brain science inform a court's determination of whether the mens rea element of implied malice murder is satisfied? Second, how much, and in what detail?

Put differently, in deciding whether a 15-year-old defendant "knows that his conduct endangers the life of another and . . . acts with conscious disregard for life," to what extent should a court consider the inherent incapacity of the juvenile brain to evaluate risk and danger? (*People v. Soto* (2018) 4 Cal.5th 968, 974, internal citations and quotation marks omitted.)

SUMMARY OF ARGUMENT

Should triers of fact consider juvenile brain science?

The purpose of this amicus brief is to move the issue of juvenile mens rea out of the realm of what "any parent knows" (*Roper v. Simmons* (2005) 543 U.S. 551, 569 (*Roper*)), and into the area of scientific theory, where defined terms and precise explication of brain physiology provide a more complex, more complete picture. While that was the focus of Dr. Elizabeth Cauffman's testimony at petitioner's evidentiary hearing (RT 130-182), the trial court's and prosecution's comments on the record suggest that her cogent explanation of the science behind juvenile brain development did not find its way into the court's reasoning. Had it done so, the result of the hearing would have been different.

The commitment to considering juvenile brain development touches nearly every area in which children come in contact with the law. Moreover, the particular issue in this case – a child's ability to evaluate risk – is a primary reason the law distinguishes between adults and children. The law limits a child's capacity to engage in inherently risky activities, such as buying or consuming alcohol and drugs, purchasing or using firearms, executing contracts, or consenting to sexual activity. (Bus. & Prof. Code, § 25658; Pen. Code, § 29610; Fam. Code, § 6701; Pen. Code, § 261.5.)

More pertinently, a child is considered less responsible for his actions in the criminal justice context - specifically, in the areas of sentencing (*Miller v. Alabama* (2012) 567 U.S. 460 (*Miller*) and its progeny), in-custody interrogation (*J.D.B. v. North Carolina* (2011) 564 U.S. 261 (*J.D.B.*); *In re Art T.* (2015) 234 Cal.App.4th 335 (*Art T.*)), parole (§ 4801, subd. (c).), felony murder resentencing, where it is widely accepted that the defendant's "youth and its hallmark characteristics" must be accounted for when deciding whether he is a major participant (*People v. Harris* (2021) 60 Cal.App.5th 939, 960 (*Harris*).) or acted with reckless indifference to human life (*In re Moore* (2021) 68 Cal.App.5th 434 (*Moore*)), and finally, with specific regard to Reyes, in the Welfare and Institutions Code, which states that – were Reyes charged today – his case could only be adjudicated in juvenile court. (Welf. & Inst. Code, § 707, subd. (a).)

Despite this widespread agreement by the courts that juvenile brain development is relevant to a minor defendant's mens rea, the People argue

that this Court should confine its consideration of juvenile brain development to the mens rea element of felony murder only: whether the defendant displayed "reckless indifference to human life" rather than "conscious disregard for human life." (Respondent's Answer Brief on the Merits (RABM) at 38-39 & n.5.) The People argue that, "[w]hile the two standards are similar and youth may be relevant to both, they are not identical, and the law is not yet clear that substantial evidence of one would necessarily suffice to meet the other." (*Ibid.*)[2]

Leaving aside the similar phrasing, and the fact that "indifference" and "disregard" are basically synonymous nouns,[3] it defies logic to suggest

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[2] For this proposition, the People rely on *People v. Johnson* (2016) (*Johnson*) 243 Cal.App.4th 1247, 1285, where the court distinguished between the *Banks* requirement of "reckless indifference to the *significant risk of death* his or her actions create," (*Ibid.* (quoting *People v. Banks* (2015) 61 Cal.4th 788, 800-801) (emphasis in *Johnson*) versus the "defendant's awareness of engaging in conduct that *endangers the life of another* – no more, and no less." (*Ibid.*, quoting *People v. Knoller* (2007) (*Knoller*) 41 Cal.4th 139, 143 (emphasis in *Johnson*).)

This does not help the People's case. Both "reckless indifference to human life" and "conscious disregard for human life" have an objective and a subjective component. (See *People v. Clark* (2016) 63 Cal.4th 522, 622 (*Clark*).) However, the aspect of mens rea at issue here is the *subjective appreciation* of risk – i.e. how the juvenile brain processes risk - not how objectively risky the act itself is.

[3] Compare "Indifference: the quality, state, or fact of being indifferent," which is in turn defined as "marked by a lack of interest,

that a child's brain development should be considered only in the context of the more culpable mens rea required for felony murder, and not the less culpable mens rea required for implied malice murder. Therefore, the answer to the first question is, "Yes, of course."

To what extent should triers of fact consider juvenile brain science?

During the past decade, it has become commonplace to order courts and parole boards to "consider youth" in making criminal justice decisions. (See, e.g., Pen. Code § 1170, subd. (a)(6)(B) (eff. Jan. 1, 2022) (ordering the sentencing court to impose the low term of a determinate sentence if "[t]he person is a youth, or was a youth as defined under subdivision (b) of Section 1016.7 at the time of the commission of the offense.")) The content of the word "consider," however, is frequently left up to the court's discretion, with varying results.[4] The court's discretion is complicated by

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enthusiasm, or concern for something" with "Disregard: the act of treating someone or something as unworthy of regard or notice." Merriam-Webster Dict., available at https://www.merriam-webster.com/dictionary/. In both cases, the person to whom the adjective refers must know or at least identify the "something" with which he or she is not concerned.

[4] An especially dramatic example is *People v. Palafox* (2014) 231 Cal.App.4th 68, a *Miller* resentencing case. Palafox and his co-defendant Hoffman carried out a particularly brutal double burglary-murder of an

the fact that the scientific literature explaining juvenile brain development is highly technical, abstruse, and – particularly frustrating for the legal mind – seemingly unable to come to clear conclusions.

Nonetheless, the clinical literature on brain science is necessary. It clearly demonstrates a physiological basis for juveniles' impulsivity and lack of temperance or perspective. Functional magnetic resonance imaging vividly illustrates how the juvenile brain struggles to communicate with itself. None of these brain processes is a "choice," though they do affect what we call choice.

Juvenile brain function is complex, and the scientific evidence is hard to interpret. As a result, psychologists find themselves explaining complex scientific findings in language tailored to a layperson's understanding – and there the trouble begins, because the layperson

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elderly Bakersfield couple and were each sentenced to two consecutive terms of life without the possibility of parole (LWOP). (*Id.* at pp. 73-74.) At the *Miller* hearing, the resentencing judge heard extensive testimony regarding Palafox's "very disruptive and relatively chaotic background," his "family's issues with drugs, alcohol, gangs, domestic violence, and delinquent activities," and the fact that he was "quiet, withdrawn, and young-minded," and frequently engaged in "self-injurious behavior." (*Id.* at pp. 75-76 & n. 8-9.) Despite this, the court focused disproportionately on the nature of the crime. (*Id.* at pp. 80-81.) The court of appeal affirmed, noting that the *Miller* court required, ""mandates *only* that a sentencer follow a certain process--considering an offender's youth and attendant characteristics--before imposing a particular penalty." (*Id.* at p. 91 (emphasis in original).)

terms used carry with them their own baggage – as do the laypersons themselves.

One particularly problematic example of translating juvenile brain science to legal doctrine is how to describe "conscious disregard for human life" in a way that considers the unique properties of the juvenile brain. One common – and unfortunate - simplification is this: juveniles have the same "knowledge" of danger as adults because their cognitive development is complete by age 16.[5] Despite this "knowledge," however, juveniles have poor "impulse control"[6] and therefore choose to do that which they "know" to be dangerous.

In fact, what is really dangerous is the oversimplification the above statements represent. To say that a child "knows" the risks involved with a certain activity overemphasizes the role of cognitive function in this

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[5] See, e.g., Scott & Grisso, *Developmental Incompetence, Due Process, and Juvenile Justice Policy* (2005) 83 N.C. L. Rev. 793, 814 & n.70 (noting that "certain logic structures reach an equilibrium point" at age 14-15, but that recent studies show "[c]ognitive psychologists now accept that skills develop at different rates in different domains, and competence to make one kind of decision cannot be generalized.")

[6] See, e.g., RT 146. "Dr. Cauffman: In our measures of impulse control, it means to stop yourself from doing something you know you shouldn't." This explanation is a good example of a psychologist trying to explain a complex scientific concept in language tailored to "laypersons." Intended to be helpful, it becomes entangled in moralistic language. Note that Dr. Cauffman specifically discusses "impulse control" only in the context of studies that measure that particular deficit. She also discusses "temperance" and "perspective" in layman's language (RT 144-145), but the court focuses solely on "impulse control."

element and discounts the very real part played by psychosocial maturity in assessing risk.[7] In fact, as discussed below, adolescent evaluation of risk is a complex hybrid of cognitive and psychosocial functions, with the emotional centers of the brain laboring to communicate with the reasoning centers, both impaired by immaturity.

It is also dangerous to use ordinary terms in a specialized way, without explaining their particular meaning, or their context. For example, the term "impulse control" is a term freighted with cultural bias. For some conservative criminal justice theorists, it invokes a bygone age, where youth prioritized "self-control" over "free expression"; only to give in to impulse during a morally degraded era of "cultural relativism."[8] When scientists use everyday terms because they are less threatening than actual scientific terms, they forget that these terms are less threatening because they have been used repeatedly in other context, and in the service of other ideologies. Theorists such as John DiIulio used "juveniles"

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[7] See generally section I. B., *infra.*

[8] See, e.g., Wilson, *Thinking About Crime* (1975; rev. ed. 2013) (with a new foreword by Charles Murray, author of *The Bell Curve*) (contrasting the "investment in impulse control" of the 19th century, which consisted of finding a way, "other than the family, to instill 'character'" in the population. (*Id.* at pp. 216-217) with the "contemporary period" (1975), whose "dominant element is individual expression, and closely linked with that, immediate gratification." (*Id.* at pp. 225-226.) Wilson lays some of the blame for this on the comparative cultural anthropology of Margaret Mead and Franz Boas (*Id.* at p. 223).

and "impulsivity" to formulate a social condition of "moral poverty" and predict a coming surge of homicidal violence in the 1990s; this in turn led to the "super-predator" theory, which contributed heavily to mass incarceration of youth in California and across the country.[9]

It is understandable that actors in the legal system bring their philosophies to legal decision-making; but that cannot justify ignoring a well-established model of the human brain in adolescence. It is very easy for the conversation about juvenile brain development to slide into this type of formulation: "He knew what he was doing was bad, but he just couldn't (or didn't) stop himself." But this oversimplification results in serious injustices – as it did in this case. Contrary to the above formulation, the "knowing" part of the brain and the "impulsive part of the brain are deeply intertwined. Rather than let the rule dictate the science, the science should inform the rule.

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[9] See DiIulio, *The Coming of the Super-Predators*, (Nov. 27, 1995) The Weekly Standard at pp. 23-26 ("[B]ig-city prosecutors inundated me with war stories about the ever-growing numbers of hardened, remorseless juveniles who were showing up in the system. 'They kill or maim on impulse, without any intelligible motive,' said one." (*Id.* at p. 23.) " In recent decades each generation of youth criminals in this country has grown up in more extreme conditions of moral poverty than the one before it." (*Id.* at p. 25.) *See also* Simon, *The Return of the Medical Model: Disease and the Meaning of Imprisonment from John Howard to* Brown v. Plata (2013) 48 Harv. C. L. – C. L. L. Rev. 217, 240-244 (explaining how Wilson's and DiIulio's theories were used to justify mass incarceration of juveniles).

This Court should explicitly acknowledge the reality that brain science -- in all its complexity – has a role to play in evaluating implied malice mens rea in cases involving youthful defendants. According, it should reject the People's attempt to limit *Moore* and *Ramirez* to their facts.

I.
THIS COURT SHOULD EXPLICITLY HOLD THAT THE SCIENCE OF JUVENILE BRAIN DEVELOPMENT IS RELEVANT TO WHETHER PETITIONER EXHIBITED "CONSCIOUS DISREGARD FOR HUMAN LIFE" IN THE CASE AGAINST HIM FOR IMPLIED MALICE MURDER.

A. Summary of Argument.

The development of the adolescent brain is broadly relevant to a juvenile's criminal liability, especially the elements of liability that go to his or her state of mind and subjective appreciation of risk.

Laurence Steinberg and Elizabeth Scott, in their seminal study of the youthful brain, "Less Guilty by Reason of Adolescence," focus on appreciation of risk as the most characteristic and the most baffling aspect of the adolescent brain.[10] When viewed through the lens of adulthood, adolescent risk-taking seems incomprehensible. This qualitative difference between the adult and adolescent brains frequently leads

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[10] See generally Steinberg & Scott (2003*) Less Guilty by Reason of Adolescence: Developmental Immaturity, Diminished Responsibility, and the Juvenile Death Penalty*, 58 Am. Psychologist 1009.

lawmakers, judges, and prosecutors to take the cognitively easy step from "incomprehensible" to "monstrous."[11] This in turn leads to the oversentencing and adultification of children in the justice system.[12]

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[11] Surprisingly, adults' habitual oversimplification of juvenile behavior is also attributable to brain science, as Nobel prize winning psychologist Daniel Kahneman has pointed out in his book, *Thinking, Fast and Slow*. (Kahneman, *Thinking, Fast and Slow* (2011)) Reduced to a phrase (which is itself an oversimplification), this is Kahneman's thesis: "[W]hen faced with a difficult question, we often answer an easier one instead, usually without noticing the substitution." (*Id.* at 12.) This accurately describes legal minds trying to shoehorn the complex science of juvenile brain development into the clarity and simplicity of a legal rule. Rather than answering the more complex question of what a child actually "knows" about the set of risks in a given situation, we assign the child constructive "knowledge" of the risk and then quickly move on to the question of why he "ignored" it.

[12] Adultification occurs when children are treated like adults, including in the criminal justice system. In Goff et al. (2014) *The Essence of Innocence: Consequences of Dehumanizing Black Children*, 106 Journ. of Personality & Social Psych. 526, psychologists studied various participants' estimates of the ages of White, Black and Latinx children that they were told had been accused of crimes. Participants significantly overestimated Black children's ages; less so for Latinx children and significantly less so for White children. (*Id.* at pp. 529-532.) Police officer participants, who formed their own cohort in the study, severely overestimated the ages of Black and Latinx children and underestimated the ages of White children. (*Id.* at pp. 533-535.)

For an example of adultification that led to oversentencing, see, e.g., Rachel Aziz, *No Remorse* (Jan. 2, 2012) The New Yorker, at p. 54, which

The inscrutability of adolescents' behavior is compounded by the fact that children, by mid-adolescence, are in some respects cognitively[13] indistinguishable from adults. It is their psychosocial immaturity, not their lack of intelligence, that primarily leads them to miscalculate risk. And yet this formulation is also too categorical because not all cognitive functions mature during adolescence, and the efficiency of the cognitive brain varies depending on the situation. The facts of the present case are a good illustration of this truth.

Petitioner was 15 years old when he joined a group of fellow gang members riding bicycles through a contested strip of gang territory. (RT

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explores the story of 14-year-old Dakotah Eliason, who, in 2010, incomprehensibly shot and killed his sleeping step-grandfather, only minutes after he contemplated killing himself with the same gun. Dakota's flat affect and muddled motives for the crime led prosecutors to describe him as a "monster" with "no remorse." Sentenced pre-*Miller* to life without the possibility of parole, Dakotah was resentenced to 30 years to life in 2015. See https://www.wsjm.com/2015/06/26/dakotah-eliason-resentenced-for-step-grandfathers-murder/.

[13] This amicus brief uses the scientific definition of "cognitive" rather than the dictionary definition because psychologists frequently distinguish between "cognitive maturity" (i.e. maturity where reasoning or thinking dominates) and "psychosocial maturity" (i.e. maturity where emotion or affect dominates or overwhelms reasoning and thinking). The categories do not have clear borders, and the two systems interact constantly. See, e.g., Steinberg & Cauffman, *Maturity of Judgment in Adolescence: Psychosocial Factors in Adolescent Decision Making* (1996), 20 Law & Human Behavior 249, 250. ("To date, psychological investigations of adolescent immaturity within a legal context have emphasized cognitive factors, rather than emotional or social ones."

195.) He and his companions bicycled from El Salvador Park to visit friends in an area near Monte Vista Street and Mark Street. After less than an hour, they bicycled back along Sullivan Street, a wide thoroughfare. (RT 190-192.) Petitioner was aware that one of his older companions had a firearm. (RT 187-188.) He was on his bicycle, on the sidewalk, 30 feet away when Frank Lopez, 20, shot the victim through the rear window of his car. (RT 210-212, 262.) Later, petitioner himself was in possession of the gun used in the murder, though he did not fire the gun himself. (RT 201-204.)

As discussed below, this situation plainly implicates the juvenile ability to assess risk – but the term "plainly" does not equate to "simple." One cannot simply say that petitioner "*knew* he was riding into possibly lethal danger" but "could not *control* his impulses." In fact, it is likely that habit, more than impulse, dictated the events of the day. All of the youths were riding bicycles from a familiar location to another familiar location – and then back to the original location. Petitioner could not explain why he took the route he took, but that was likely habitual as well. (RT 213.)

Petitioner's act of riding a bicycle is not itself inherently risky; but riding along the edge of rival gang territory is more risky. However, other variables – the time of day, the speed of the bikes, which route the riders chose, the youths petitioner rode with, how many people were armed, whether they rode in the street or on the sidewalk – all were being processed in petitioner's brain. Add to that the fact that both El Salvador Park and the Monte Vista/Mark Street house were places of safety that he

was eager to reach quickly, and the calculation becomes even more complex – and this is just the "cognitive" aspect of the task.

An adult might have stayed at the park, thinking his own safety was not worth the exhilaration of taking a fast bike ride through a potentially dangerous area to a house where he wanted to "hang out." Had this hypothetical adult then chosen to take that bike ride, he would have done so consciously, taking on the risk of potential violence. A 15-year-old, surrounded by other youths, was working with a different definition of "conscious." The undeveloped part of his brain – not the cognitive or moral part - was physiologically challenged to compare the "benefits" of such a bike ride between places of safety, to the risks that they would encounter rival gang members and violence might result.[14]

Accordingly, this Court should evaluate whether petitioner "consciously disregarded" a risk to human life with reference to his brain's capacity to be fully conscious of risk in the first place.

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[14] The identification of "cognitive" and "moral" capacity in juveniles is one the American Psychological Association employs in its amicus brief in *Hodgson v. Minnesota*. (Brief for the APA as Amicus Curiae, p. 7, *Hodgson v. Minnesota* (1990) 497 U.S. 417 ("Psychological theory and empirical research on adolescents' moral development reaches virtually the same conclusions as found in cognitive development.")

B. A child's inability to evaluate or appreciate risk is one of the "hallmark" characteristics of youth.

As Dr. Elizabeth Cauffman testified during petitioner's evidentiary hearing, the calculation of risk involves advanced brain activity and implicates the pre-frontal cortex, literally the last part of the brain to reach full maturity. [15] This widely-accepted science is reproduced in numerous judicial opinions, including *Miller v. Alabama*, where the Supreme Court lists the "hallmark features [of] youth] - among them, immaturity, impetuosity, and *failure to appreciate risks and consequences*." (*Miller, supra* 567 U.S. at p. 477 (emphasis added).) The Court includes these particular "features" for two reasons: first, scientists have exhaustively studied the youthful brain's reaction to risk; and second, deficient calculation of risk is the trait *most* likely to appear in the criminal context and much less likely to appear in a non-criminal context.

Dr. Cauffman's testimony and visual aids demonstrate that the youthful brain matures rapidly until around age 25, with the prefrontal lobes developing last, usually during between ages 20 and 25. (Defense Ex. A, pp. 8-10 (Cauffman, E., graphics demonstrating brain maturation in children and adolescents).) This late-stage development, however, is not

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[15] See, e.g. Kolk & Rakic (2021) *Development of Prefrontal Cortex,* 47 Nature (Psychopharmacology) 41, 42 (noting that the prefrontal cortex is the last region of the brain to fully mature, and does not reach full maturity until the third decade of life).

even-handed; nearly all of the frontal lobe development is psychosocial – not cognitive.

1. Two kinds of brain maturity.

Certain aspects of cognitive maturity – which include working memory, verbal fluency, and digit span facility[16] - reach their apex at age 16 and improve only incrementally after that. (Defense Ex. A, p. 4[17]) Cognitive brain maturity implicates "logical reasoning in structured situations and basic information processing skills."[18] For example, studies that test cognitive maturity focus on "slow" decision-making, such as an "individual[']s ability to understand court proceedings," or "competence to provide informed consent" for a medical procedure.[19]

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[16] This refers to the "digit span test," in which subjects are asked to repeat back to the researcher a lengthening set of numerical digits, both forwards and backwards, as a test of short-term retention. (Blackburn & Benton, *Revised administration and scoring of the Digit Span Test* (1957) 21 *Journal of Consulting Psychology* 139–143.)

[17] Dr. Cauffman's chart is drawn from a 2009 study authored by Laurence Steinberg and Dr. Cauffman, comparing types of adolescent decision-making in different situations. (Steinberg, Cauffman et al (2009) *Are Adolescents Less Mature Than Adults? Minors' Access to Abortion, the Juvenile Death Penalty, and the Alleged APA "Flip-Flop"* 64 Am. Psych. 583 & Fig. 2.)

[18] Ibid.

[19] Ibid.

On the other hand, psychosocial maturity - the type of maturity most implicated in decision-making and evaluation of risk - does not keep pace with cognitive maturity. At age 16, the youthful brain can handle logic problems almost as well as a 25-year-old. However, when scientists test that *same* brain's ability to assess risk in a stressful or rapidly evolving situation – suddenly that cognitively mature brain is a decade younger.

This model of the juvenile brain – that works like an "adult brain" in certain contexts, but like a "child brain" in other contexts - is difficult to square with "common sense." In fact, the model seems unreliable, a reality recognized by the American Psychological Association when it responded to criticism for its two seemingly inconsistent positions: first, that children are less culpable than adults when acting in a fast-moving, criminogenic situation; but just as competent as adults when making a reasoned, long-term decision about a medical procedure. In their 2009 article (*see* footnote 17, *supra*), Steinberg, Cauffman and a team of scientists sought to explain that distinction. In doing so, they created the dichotomy that informs judicial thinking about the juvenile brain: there are two types of brain maturity – psychosocial and cognitive - and they develop on different timetables.

They also come into play in different situations, the difference depending on the role that emotion or stress plays in the situation.

Scientists sometimes describe these contrasting situations using the terms "hot cognition" and "cold cognition."[20]

"Cold cognition" describes a situation "that permit[s] more deliberative, reasoned decision-making" - for example, a decision about whether or not to have a particular medical procedure.[21] When an adolescent decides about medical treatment, the subcortical region of the brain is not communicating very well with the cortical region, but it doesn't matter; the amygdala and the limbic system are only glancingly implicated. It's not that the decision is trivial; frequently the decision is difficult and morally fraught. The difference is the speed of decision and the intensity of the emotional context.

"Hot cognition" describes a fast-moving, risky situation such as the one in petitioner's case. These situations are "characterized by high levels of emotional arousal or social coercion, or that do not encourage or permit consultation with an expert who is more knowledgeable or experienced."[22] Again, the situation does not need to be a life-or-death

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[20] See generally Salehinejad et al, (2021) *Hot and cold executive functions in the brain: A prefrontal-cingular network,* 5 Brain and Neuroscience Advances 1, 3 (distinguishing between "hot cognition," which is reward- or affective-dominant and "cold cognition," in which cognitive functions dominate, and identifying the regions of the brain most implicated in these cognitions); see also Steinberg, Cauffman et al (2009), *supra* note 17, at p. 586.

[21]Steinberg, Cauffman et al (2009), *supra* note 17, at p. 592.

[22] Ibid.

scenario; the speed of the decisions and the emotional context again primarily dictate brain function, rather than the magnitude of the risk.

To compare "hot" and "cold" cognition is to compare apples to oranges. They implicate different parts of the brain and different types of communication between parts of the brain, as described in the following sections.

2. Cognitive maturity and "cold cognition"

As noted above, a large part of the cognitive juvenile brain is fully developed in the mid-teens -- assuming trauma, drugs, disability, or other physiological deficits have not delayed its growth.[23] This cognitive part of the brain is surprisingly good at abstract thought, which is why a teenager can work out the general difference between right and wrong or exercise informed consent about medical treatment, frequently consulting with an adult or mentor in a deliberative atmosphere. This is the type of decision-making, and the type of atmosphere the APA had in mind when it discussed the "informed consent" model of decision-making in its amicus brief for *Hodgson*. (*Hodgson v. Minnesota* (1990) 497 U.S. 417.) The APA noted that "early adolescence is marked by emergence of the adult's capacity to form moral principles," and "it is now generally accepted that by mid-adolescence (14-15) … adolescents … do not differ from adults in

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[23] See, e.g., Buckingham, *Trauma-informed Juvenile Justice* (2016) 53 Am. Crim L. Rev. 641, 649, 659 (noting the various developmental delays to the juvenile brain caused by trauma).

their capacities to understand and reason *about medical and psychological treatment alternatives*, or in their abilities to comprehend and consider risks and benefits *regarding treatment alternatives*." (Brief for the APA as Amicus Curiae, p. 7, *Hodgson v. Minnesota* (1990) 497 U.S. 417.) (emphasis added).

The APA amici applied this cognitive/moral model to the issue of whether an adolescent girl was capable of deciding whether to have an abortion. In doing so, the APA brief relied on studies that tested "knowledge of pregnancy-related laws," "positive emotions associated with mothering" or "financial concerns." (*Id.* at p. 9-10.) Significantly, the issue of legal abortion did not involve a calculation of the risk of death or serious bodily harm, because abortion carried "a low risk of negative psychological consequences for adolescents" (*Id.* at 11-12); moreover, it was established that legal abortion carries a very low risk of medical complications. (*Id.* at p. 14 & n. 16 (noting that "abortion is safer than carrying to term for almost all adolescents.")[24]

Accordingly, an adolescent's decision about a medical procedure – usually involving two or three people, at least one of them a mature adult – differs substantially from the situation that implicates the juvenile brain in a risky, fast-moving situation with several youths. The APA brief in

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[24] See also, generally, National Academies of Science (2018) *The Safety and Quality of Abortion Care in the United States* (National Academies Press, Washington, D.C.) (finding that legal abortions in the United States are safe and have few complications).

Hodgson acknowledges this, noting that most adolescents facing an unwanted pregnancy voluntarily take the time to consult with parents or other adults before deciding. (*Id.* at p. 14-15.) There are even more important differences between the two situations, however – and these implicate distinct areas of the juvenile brain.

It is also important to understand how the juvenile brain communicates with itself, particularly in a high-stress situation like the one in petitioner's case. As Dr. Cauffman explained, two things happen as the brain reaches full development, at around age 25. First, in the mid-20s, the cortical (i.e. executive function) regions of the develop fully develop. At the same time, the sub-cortical regions of the brain (which control emotion) begin to communicate more efficiently with the cortical regions. (RT 154-155; Ex. A at p. 10.) This allows the cortical regions to regulate the sub-cortical regions, which in turn generates more traditionally "mature" behavior. In other words, in the juvenile brain, psychosocial maturity – which arises from the communication of the subcortical and cortical regions – catches up with cognitive maturity at around age 25.[25]

As Steinberg & Albert noted in their 2008 study, *Age Differences in Sensation Seeking and Impulsivity as Indexed by Behavior and Self-Report: Evidence for a Dual Systems Model*, this intra-brain communication between the subcortical region and the cortical region is the single most

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[25] Steinberg, Albert et al (2008) *Age Differences in Sensation Seeking and Impulsivity as Indexed by Behavior and Self-Report: Evidence for a Dual Systems Model*, 44 Developmental Psychology 1764-1778.

important factor in the task of evaluating risk. It has also been demonstrated that juveniles are biologically awful at this task. One psychologist likened it to "starting the engine without a skilled driver behind the wheel."[26]

This is not to say that juveniles do not reason; they do. But the battle is not equal between the reasoning and emotional regions of the brain. One region – the subcortical region, which includes the limbic, or socio-emotional system – is fully developed in early adolescence. Other parts of the brain, which handle abstract logic, are also well on their way to full development. The third region – the cortical region, which includes the cognitive control system – is still in the process of developing and will not be fully developed for a decade.

One particular area – the orbitofrontal cortex – communicates frequently with the socio-emotional system. It is responsible for choice and risk evaluation. Like most of the pre-frontal cortex, it matures quite late; in fact, it may be the very last part of the brain to fully mature.[27]

However, communication between the cortical and subcortical regions of the brain is complicated by incomplete myelination and

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[26] Ibid.

[27] See generally Salehinejad et al, (2021) *Hot and cold executive functions in the brain: A prefrontal-cingular network,* 5 Brain and Neuroscience Advances 1, 3 (distinguishing between "hot cognition," which is reward- or affective-dominant and "cold cognition," in which cognitive functions dominate).

inadequate synaptic pruning. Put simply, the "wires" leading from one part of the adolescent brain to another are badly insulated and hopelessly tangled.[28] Sending a neurological message through these wires is fraught with risk. The message may never reach its destination, and if it does, it may be mixed up with other messages. When it finally reaches its destination – the prefrontal cortex – it discovers an under-resourced stock of regulation, and struggles to send reinforcements back to the reward centers, traveling again through the tangled, chaotic wires of under-myelinated synapses.

Of course, adolescents need their prefrontal cortexes the most when they are in emotionally charged situations. However, during those situations, the adolescent limbic system is pumping out way too many impulses for the cortical regions to handle. This is distinct from the situation when the adolescent is in the position to make a calm, reasoned decision.

3. Psychosocial maturity and "hot cognition."

As Dr. Cauffman testified, *psychosocial* "maturity," rather than being a simple concept, in fact includes three distinct aspects: responsibility, temperance and perspective. (RT 144-147.; Ex. A at p. 5.) As noted

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[28] Dr. Cauffman explains synaptic pruning this way: "Your brain is filled with all of those roads. When you're born, there's lots of them. As we get older, we prune away the roads we don't need. It's like getting rid of a detour. It's much faster to go the direct route than to take a lot of detours. (RT 151-152.)

elsewhere, these three terms are vague, and freighted with built-in value judgments; "responsibility," "temperance" and "perspective" are typically considered, not cortical states, but virtues, and therefore choices.[29] In fact, these terms – in the present context - describe very specific, brain-based deficits of adolescents, and demonstrate how bad the juvenile brain is at regulating or even communicating with itself.

a. Responsibility and Temperance

"Responsibility" and "temperance" describe two different types of brain regulation. In both cases, the "regulator" is the same – it's the pre-frontal cortex, which introduces a measure of caution into non-reasoning actions. What distinguishes the terms is the function that is regulated: "responsibility" describes the regulation of impulsivity; "temperance" describes the regulation of sensation-seeking. Adolescent brains struggle with both of these functions.

In their study, *Maturity of Judgment in Adolescence: Psychosocial Factors in Adolescent Decision Making,*[30] Steinberg and Cauffman discuss several models that explain underdeveloped responsibility in adolescents.

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[29] Cicero defines "Sôphrosynê," one of the cardinal virtues of stoicism as "temperance," among other virtues of moderation. Cicero, *Tusculan Disputations* at p. 270-71 (Loeb Classical Library, Tr. J.E. King). See also Wilson, *supra* note 7 at pp. 216-217 (valorizing "impulse control" as a defining virtue of an earlier age.)

[30] Steinberg & Cauffman (1996) *supra*, note 13 at p. 249.

But as to mens rea, the only explanation that matters is this: in adolescents, identity and autonomy are biologically deficient, because adolescents are not fully autonomous.[31] Simply put, an adolescent's mind is not entirely under his own control; some of that control is ceded to a peer group, and the larger and more active the peer group, the less control. Moreover, with the presence of peers, the region of the brain that generates impulsivity or sensation-seeking struggles to communicate with the region of the brain that regulates these functions.

This reality is illustrated by the "Segalowitz Driving Study," the results of which are detailed in the article, *Adolescent Peer Interaction and Trait Surgency Weaken Medial Prefrontal Cortex Responses to Failure*, and much discussed in petitioner's resentencing hearing. The study was highlighted by Cauffman, and the court questioned her about the results and findings. (RT 169, 178-181, 296.)[32] In the study, adolescent boys, age 15-16, participated in a simulated driving program.[33] The boys participated in the study, first alone, and later with two self-selected friends in the simulator. The boy in the simulator could control the speed of the simulated car by pressing a button to start or stop. Points were awarded for safely completing a segment of the course faster than a pre-

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[31] *Id.* at p. 255.

[32] Segalowitz, et al (2012) *Adolescent Peer Interaction and Trait Surgency Weaken Medial Prefrontal Cortex Responses to Failure*, 7 Social Cognitive & Affective Neuroscience 115.

[33] *Id.* at 117.

set time (the "high score") without crashing.[34] The variable, however, was a virtual "brick wall" that would appear at random, giving the boy between 1 and 20 seconds to stop without crashing. If the boy "crashed into the wall," he lost all his points for that segment of the trial. Importantly, "Participants could neither change the speed of the car, nor did they know when the wall would appear."[35]

To assess risk appreciation, the researchers measured the activity of the medial prefrontal cortex ("mPFC") and the ventromedial prefrontal cortex ("vmPFC") in each male adolescent. These are the areas of the brain that are responsible for "self-regulation of reward-driven behavior."[36] Increased activity in these regions demonstrated strong regulation of impulsive and sensation-seeking behavior; lower activity showed suppression of that regulation.

While the boys were alone in the driving simulator, their self-regulation was quite high, and their mPFC and vmPFC regions showed robust activity. In other words, although they sought "rewards" by driving fast in the simulator, their mPFC regions regulated that reward-seeking, and made them "run into the brick wall" less often.[37]

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[34] *Ibid.*

[35] *Ibid.*

[36] *Ibid.*

The results were dramatically different when the boys' peers were with them in the simulator. Immediately, the activity in the mPFC and vmPFC regions all but disappeared, and impulsivity and sensation-seeking dominated. The subjects' points went down, as they were less able to keep from "crashing."

It is important to understand that the subjects did not *intentionally* crash into brick walls. They didn't think they were invulnerable; nor did they willfully screw up the test. Instead, they unconsciously ceded part of their autonomy to their peers, and their regulatory brain activity plummeted, as well as the mature caution that would help them avoid crashes.

None of this loss of autonomy was consciously chosen. Instead, it was the result of incomplete synaptic pruning, poor subcortical-cortical communication, and an underdeveloped prefrontal cortex. The conclusion of the study was that "[a]dolescent boys, perhaps more than younger children or adults, are at risk for making dangerous decisions in contexts of high arousal, peer presence and real-life time pressures."

As demonstrated by the Segalowitz study, mature reflection in a "hot cognition" situation is very difficult, particularly for a child in mid-adolescence, and particularly if that child is surrounded by peers. Repeated "driving test" studies under different conditions have confirmed these results: in the Chein study, adolescent subjects were tested under similar conditions to the Segalowitz study – except that this time, their peers were watching them remotely, from another room. The results were the same: "presence" of peers drove up reward-seeking, sensation-

seeking and risk-taking in adolescents. Adults did not experience the same cortical changes.[38]

A third study by Gardner and Steinberg demonstrates even better the difference between "hot" and "cold" cognition, even in a group situation. In their 2005 study, *Peer Influence on Risk Taking, Risk Preference, and Risky Decision Making in Adolescence and Adulthood: An Experimental Study*[39], groups of adolescents (13-16), youths (18-22) and adults (24 and older) were evaluated in three different tests: a "risk-taking" test (the familiar "stop-go" driving test from the two studies already discussed); a "risk-preference" test (the Benthin Risk Perception Measure, in which the participants read different risk-oriented scenarios off index cards, and were asked to weigh the costs and benefits of each scenario on a numerical scale); and finally, a "risky decision-making" test (the Youth Decision-Making Questionnaire (or YDMQ), in which participants were asked questions about different scenarios, informed that the scenario would possible have negative outcomes, and asked to rate their likelihood of going through the scenario).[40] Each of the tests was administered both individually and in a group. Group participants were

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[38] Chein, Albert, et al (2011) Peers Increase Adolescent Risk Taking by Enhancing Activity in the Brain's Reward Circuitry, 14 Developmental Science F10.

[39] Gardner & Steinberg (2005) *Peer Influence on Risk Taking, Risk Preference, and Risky Decision Making in Adolescence and Adulthood: An Experimental Study*, 41 Developmental Psychology 625.

[40] *Id.* at pp. 627-629.

allowed to discuss the scenarios but did not need to come to a consensus.[41]

The "driving test" had predictable results: the younger the subject, the more likely he or she was to take driving risks in groups; dramatically so for the "adolescent" group.[42] The "risk-preference" and "risky decision-making" tests, however, had divergent results. In the "risk-preference" test (where the participants were asked to rank scenarios based on degree of risk), peer presence made little difference, though both in solo and group testing, adolescents were much more likely to overestimate the benefits versus costs in a risky situation than were adults.[43] In the "risky decision-making" test, peer presence had similar effects to the "driving test."[44]

Classifying the results, the predictable outcome was the "driving test," where the results tracked those in Segalowitz (2012) and Chein (2011), confirming that in "hot cognition" situations, especially with peers, adolescents assess risk poorly. However, as the "risky decision making" test illustrates, adolescents also evaluate risk poorly among peers when they decide whether or not to engage in a risky activity. As discussed below, this test implicates "perspective," not impulse control or sensation-

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[41] *Id.* at p. 629.

[42] *Id.* at p. 630.

[43] *Id.* at p. 633.

[44] *Id.* at p. 630.

seeking. If adolescent brains were merely "impulsive," then they would be able to weigh risks and benefits like adults in a testing situation, surrounded by peers. As the test demonstrates, they could not.

Only when they are asked to evaluate risk in the abstract (with discussion), do they behave like adults. This confirms the APA's intuition that, in "cold cognition" situations where adolescents discuss costs and benefits of a largely abstract scenario, they will reason like adults. This is consistent with the findings of the Colby-Kohlberg "moral reasoning" study, detailed in subsection b., *infra*.

In sum, the adolescent brain is not unitary. The subcortical region (which includes the limbic system and the amygdala) stops communicating with the medial pre-frontal cortex in situations of intense emotion or sensation. This leads to unmediated impulsivity or sensation-seeking, causing the type of risky behavior we expect from young adolescents. This type of behavior could be consciously regulated by the application of *perspective*, or future-orientation, but as examined in more detail below, this regulatory function is also poorly developed in adolescents.

b. Perspective and Moral Reasoning.

Calculating risk involves visualizing or anticipating various future outcomes, and then comparing them to each other: something that adolescent brains also do very poorly. "Perspective" – the blanket term for this set of traits - involves the ability to frame a decision within "a bigger

picture"; to see both short- and long-term consequences; and to consider multiple costs and benefits of a single action.[45]

As noted above in the discussion of *Hodgson v. Minnesota*, and as confirmed by Gardner and Steinberg (2005), *supra*, adolescents are fairly advanced with regard to "conventional" moral judgment, at least in a "cold cognition" environment. The major study of moral development in juveniles, a 1983 study by Colby and Kohlberg, posits that "conventional moral reasoning" rapidly develops in middle to late adolescence, and often does not advance beyond that, even in adults.[46]

This makes sense; as Colby and Kohlberg point out, "moral reasoning" is primarily a "cognitive-developmental" process, not primarily a psycho-social process. Moreover, the Colby-Kohlberg study was a classic "cold cognition" setting. All of the tests of moral reasoning were composed of a series of in-person interview questions, involving the verbal

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[45] Steinberg & Cauffman (1996), *supra* note 5, at pp. 262-263.

[46] Colby, Kohlberg et al (1983) *A Longitudinal Study of Moral Judgment*, 200:48 Monographs of the Society for Research in Child Development 1. Colby & Kohlberg recognize 6 stages of moral judgment: (1) Preconventional, (2) Individualism, (3) Conventional, (4) Social System & Conscience, (5) Postconventional or Principled, and (6) Universal Ethical Principles. (*Id.* at pp. 3-4.) Moral principles were tested by means of interviews, conducted at 3 to 4-year intervals, starting in 1955-56 and ending in 1976-77. (*Id.* at pp. 17-18.) The subjects were all males from the Chicago suburbs, ages 10, 13 or 16 years at the beginning of the study, selected for diversity of class, education, religion, and ethnicity. (*Id.* at pp. 14-16.)

communication of a moral hypothetical.[47] This is the psychological testing equivalent (with some added detail) of asking a 15-year-old about the difference between right and wrong. In this controlled situation, adolescents demonstrated moderate levels of moral reasoning, which depended on one type of perspective (i.e., basic weighing of costs and benefits).

Other, more complex types of perspective, however, do not develop until late adolescence or early adulthood. Specifically, social perspective in adolescence is defined as "third party," meaning that the adolescent can understand how the thoughts or actions of another person might differ from his thoughts or actions.[48] A more advanced version of perspective – termed "societal" perspective, includes the understanding that "the perspectives people have on each other are complicated and influenced by larger forces than individuals can control."[49]

In the adolescent brain, it is easy to see how this "third party" stage of perspective can be overwhelmed in an emotionally charged situation. In fact, the appreciation of the feelings and views of a "third party" may not go further than the adolescent's peer group. While we consider "fellow feeling" or "unit cohesion" a positive attribute in the armed forces or in

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[47] *Id.* at pp. 1, 9-10.

[48] Steinberg & Cauffman (1996), *supra* note at p. 264 (citing generally Selman (1980) *The Growth of Interpersonal Understanding* (Academic Press).)

[49] Steinberg & Cauffman (1996) at pp. 264-265.

team athletics, it is not a recipe for reflective maturity. While there is very little fMRI data on social or moral perspective, it is unreasonable to think that the same brain that repeatedly fails the "driving test" when in the presence of peers will simultaneously develop "societal" perspective while in the same "hot cognition" situation.

In sum, the adolescent brain's cognitive regions demonstrate parity with the young adult brain. The same is true of the adolescent brain's "moral reasoning" – in "cold cognition" situations. So, if the evaluation of mens rea was simply a cognitive test, imposed as a series of moral hypotheticals or thoughtful decisions, we could treat juveniles the same as adults in the criminal law.

However, the typical criminogenic situation – well-illustrated by petitioner's case – involves "hot cognition," a rapidly-evolving situation, and the presence of peers. It implicates not only the "cognitive" regions of the brain, but also the "emotional" and "regulatory" regions. At age 15, the regulatory regions are underdeveloped and communicate poorly with the emotional regions. The cognitive brain, which functions fairly well in "cold" situations, ceases to function when an adolescent is in "hot" situation surrounded by peers. Accordingly, it is impossible that an adolescent "knows" about risk or danger the way an adult "knows." The very presence of sensation and danger changes the brain, impairing its ability to appreciate risk.

Recent law, particularly in California, acknowledges this reality about the adolescent brain, as detailed below.

C. California criminal law recognizes that juvenile brain development is an essential part of evaluating state of mind in general and mens rea in particular.

As noted above, courts have incorporated the science of juvenile brain development into the law in many areas, particularly criminal law. Starting with the juvenile death penalty, and then moving on to juvenile life without parole, the U.S. Supreme Court has affirmed the central role of brain science in determining the culpability of juveniles for the purposes of sentencing. California has gone further: "youth" or "minority" is an essential factor in determinate sentencing, parole, *Franklin* proceedings, and section 1170(d) actions. Similarly, being a "juvenile" categorically protects children from the enforcement of certain laws and restricts them from exercising certain rights that they will automatically acquire as adults. (See, e.g., Pen. Code, § 190.5 [barring the imposition of the death penalty upon minors] and § 29610 [barring minors from possessing firearms].)

In the criminal context, for example, brain development is an important issue in juvenile interrogations. In *J. D. B. v. North Carolina*, the Supreme Court held that a juvenile's perception of whether he was free to leave a school conference room, when he was being questioned by a uniformed police officer, was a factor in determining whether he was "in custody." (*J. D. B., supra,* 564 U.S. at pp. 266, 274-275.) In *In re Art T.*, the California Court of Appeal held that Art T.'s invocation of his *Miranda* rights, "Can I have a lawyer? Because that's not me," was sufficient to halt a police interrogation, because of his young age. (*Art T.*, *supra*, 234 Cal.App.4th at p. 338.) In 2017, Senate Bill 395 added section 625.6 to the

Welfare & Institutions Code, banning custodial interrogations of juveniles 15 and younger, with the legislative finding that "the human brain undergoes 'dynamic changes throughout adolescence and well into young adulthood'"[50] In 2020, Senate Bill 203 extended that protection to all juveniles, with the legislative finding that "[c]hildren characteristically lack the capacity to exercise mature judgment and possess only an incomplete ability to understand the world around them."[51]

Mens rea, however, is different: it is a necessary element of a crime, determinative of legal guilt. Here, the use of juvenile brain science has been more modest, but nonetheless significant. In both *In re Moore* and *People v. Ramirez*, courts applied the principles of *Graham*, *Miller,* and *J. D. B.* to the section 1170.95 requirement that the People prove that a juvenile petitioner "acted with reckless indifference to human life." (*In re Moore. supra,* 68 Cal.App.5th at p. 454; *People v. Ramirez* (2021) (*Ramirez*) 71 Cal.App.5th 970, 987 (quoting the language in *Moore*).)

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[50] Senate Bill 395 (2017-2018), Legislative Counsel's Digest, available at https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB395, (quoting Bonnie, et al., (2013) *Reforming Juvenile Justice: A Developmental Approach* (National Research Council) p. 96, and Chapter 4).)

[51] Senate Bill 203 (2019-2020), Legislative Counsel's Digest, available at https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB203.

The reasoning in *Moore* and *Ramirez* is remarkably consistent with the findings of Steinberg, Cauffman, Segalowitz and other developmental psychologists, albeit in less scientific language: ""Children 'generally are less mature and responsible[52] than adults'" and "'often lack the experience, perspective,[53] and judgment to recognize and avoid choices that could be detrimental to them'[54] ...." Thus, "children characteristically … possess only an incomplete ability to understand the world around them."[55]

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[52] Accord, Steinberg & Cauffman, *supra* note 5 (1996), 20 Law & Human Behavior at p. 249 (explaining the cortical and subcortical bases of psychosocial immaturity in adolescents).

[53] See also *id.* at pp. 262-263 (explaining that "perspective" is one of the higher cortical functions and only fully develops well after adolescence).

[54] Accord, Segalowitz (2012) *supra* at note 19, 7 Social Cognitive & Affective Neuroscience at p. 116 ("adolescents' cognitive judgment may be clouded by emotion and arousal.")

[55] See also Steinberg & Cauffman, *supra* note 5 (1996), 20 Law & Human Behavior at p. 263 (noting that adolescents perform poorly at "decentration": meaning, they cannot shift focus from the most immediate and vivid aspect of a problem (the "center," the present, the obvious costs and benefits) to the peripheral and less well-defined aspects (other persons and values; the future; less obvious costs and benefits).

The authors also note that this lack of perspective is in part a late-developing *cognitive* function. See*, e.g.,* p. 251 ("[T]he distinction between psychosocial and cognitive aspects of maturity … is imperfect," (citing Asch, *Opinions and Social Pressure* (Nov. 26, 1955) Nature at p. 1009 (college students participating in cognitive experiment "perceived" falsely that a line was longer than two other lines when a majority of peers stated that the line was longer.)

(*Moore, supra,* 68 Cal.App.5th at p. 453 (quoting *J. D. B.*, *supra,* 564 U.S. at p. 272-273); see also *Ramirez, supra,* 71 Cal.App.5th at p. 987 (quoting *Moore*).)

Because "reckless indifference to human life" has both an objective and a subjective element, courts have generally applied the principles of juvenile brain development to the subjective element. "As to the subjective element, '[t]he defendant must be aware of and willingly involved in the violent manner in which the particular offense is committed,' and he or she must consciously disregard 'the significant risk of death his or her actions create.'" (*People v. Scoggins* (2020) 9 Cal.5th 667, 677 (*Scoggins*) (quoting *People v. Banks* (2015) 61 Cal.4th 788, 801) (*Banks*).) Again, it makes sense that the subjective element would incorporate the nature of the juvenile brain; the objective, or "reasonable person" standard encompasses adulthood. However, according to *J. D. B.,* even under an objective or "reasonable person" standard, "the common law has reflected the reality that children are not adults." (*J. D. B., supra,* 564 U.S. at p. 274.)

The same insights apply to the actus reus of major participation in the underlying felony. As this Court noted in *Clark,* major participation and reckless indifference to human life "'significantly overlap both in this case and in general, for the greater the defendant's participation in the felony murder, the more likely that he acted with reckless indifference to human life.'" (*People v. Clark* (2016) 63 Cal.4th 522, 615 (*Clark*) (quoting *Tison v. Arizona* (1987) 461 U.S. 137, 153) (*Tison*).)

Therefore, it is not surprising that the court in *People v. Harris* took the defendant's youth into account in deciding whether his indirect participation in a firebombing was "major participation": "[G]iven Harris's youth at the time of the crime, particularly in light of subsequent case law's recognition of the science relating to adolescent brain development, it is far from clear that Harris was actually aware 'of particular dangers posed by the nature of the crime, weapons used, or past experience or conduct of the other participants.'" (*Harris, supra,* 60 Cal.App.5th at p. 960 (quoting *Banks, supra,* 61 Cal.4th at p. 803) (internal citations omitted).) It seems the element of "major participation" also has a subjective element: it requires the defendant to be *aware* of the dangers in which he is participating.

The elements of implied malice murder – in particular, the mens rea requirement that the defendant "knows that his conduct endangers the life of another and ... acts with conscious disregard for life," (*People v. Soto* (2018) 4 Cal.5th 968, 974 (*Soto*) (quoting *People v. Watson* (1981) 30 Cal.3d 290, 300) (*Watson*)), it is apparent that the defendant's youth must also be a factor in this element. First, the formulation in *Soto* – "acts with conscious disregard for life" - is virtually identical to the *Scoggins* formulation, "consciously disregard[s] 'the significant risk of death his or her actions create.'" (Compare *id*. at p. 974 with *Scoggins, supra,* 9 Cal.5th at p. 677 (internal quotation marks omitted).) Given that this phrase – "consciously disregard" is also used in *Moore, Ramirez,* and *Harris*, there is no principled reason to discount juvenile brain development in a theory of implied malice murder. Second, the very idea of "conscious disregard"

begs the question of what the juvenile brain is disregarding, and whether juveniles are equally able to disregard things of which their brains are not even consciously aware.

While the phrase "wanton disregard for human life" has been used before to describe the subjective mens rea component of implied malice murder, this Court in *People v. Dellinger* held that the terms "wanton disregard" and "conscious disregard" are essentially the same: they both incorporate a subjective awareness of risk, i.e. that the defendant "*actually appreciated* the risk [to human life] involved." (*People v. Dellinger* (1989) 49 Cal.3d 1212, 1218-1219 (*Dellinger*) (emphasis in original) (citing *People v. Thomas* (1953) 41 Cal.2d 470, 480 (*Thomas*).)

"Actually appreciate"; "consciously disregard": these phrases describe states of mind that are hard to define in law, and even harder when the definitions must incorporate complex questions about juvenile brain function. In such cases, juries struggle to comprehend or agree on a theory of indirect mens rea; they did in this case. (RT 60.)

In a felony murder resentencing hearing, the issue is usually more straightforward: there is a target crime with a target intent that can be transformed to lethal intent. With implied malice, there is no target; there is only free-floating, inchoate risk. In *Moore*, the juvenile defendant struggled to comprehend a risk to human life when he was riding in a stolen car and actively discussing committing a robbery or a carjacking. (*Moore, supra*, 68 Cal.App.5th at pp. 440-441.) In implied malice murder, there is no intent on which to build; the juvenile defendant is attempting to predict and avoid future risks based on only the most speculative

outcomes Thus, consideration of the defendant's juvenile brain is critical the context of implied malice.

D. Petitioner's case illustrates the dangers of oversimplifying the science of juvenile brain development.

Petitioner's case is an object lesson in the dangers of cutting juvenile brain science down to a few phrases. Specifically, the court's reiteration of the Segalowitz driving study misconstrued both the methods used in the study and the meaning of the results. (RT 178, 180-181.) This erroneous version of cognitive and psychosocial immaturity was parroted back by the prosecution in its closing argument. (RT 296.) Finally, in its ruling, the court superimposed its own crude model of the juvenile brain on petitioner's state of mind, creating a self-affirming feedback loop. (RT 297-298.)

As discussed above, the subjective aspect of "conscious disregard for human life" is difficult to pin down where the subject is an adolescent, because, as the court noted in *Moore,* "children characteristically … possess only an incomplete ability to understand the world around them." (*Moore, supra,* 68 Cal.App.5th at p. 453 (quoting *J. D. B.*, *supra,* 564 U.S. at p. 272-273). That difficulty is compounded when the "danger" that the adolescent is supposed to "consciously disregard" is vague, or the situation ambiguous.

The People's way of resolving the dilemma is to simply argue that the objective risk of lethal danger is obvious, rendering moot the defendant's subjective appreciation of the danger. That also occurred in this case, during the prosecution's closing argument: "[T]he defendant left

El Salvador Park with his fellow gang members with the gun, he went on the hunt … They found exactly what they were looking for. It's no coincidence that they're down there on a corner that belongs to another gang," (RT 241.) The prosecution also quoted heavily from Detective Rondou's gang expert testimony in the original trial: "The shooting of a rival gang member in rival territory is a big prize." "Guns are huge in the gang culture … because that's how they get things done." (RT 238-239.)[56]

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[56] The court explicitly considered Detective Rondou's gang testimony as evidence of petitioner's subjective awareness, even though petitioner's counsel cautioned the court that it would violate *People v. Sanchez* to consider Detective Rondou's gang testimony for the truth of the matter asserted. (*People v. Sanchez* (2016) 63 Cal.4th 665, 684 (*Sanchez*) (when an expert recites case-specific facts as basis evidence, that testimony is hearsay and cannot be considered by the finder of fact unless there is a statutory exception.) SB 775 clarified that evidence at a section 1170.95, subdivision (d)(3) hearing must be admissible under "current law." (§ 1170.95 subd. (d)(3) (eff. Jan. 1, 2022 ("the court may consider evidence previously admitted at any prior hearing or trial *that is admissible under current law*") (emphasis added).

There may be another reason to reject Detective Rondou's testimony: recently, a 2012 Orange County murder conviction was overturned because a prosecution witness, Craig Gonzales, testified he had lied on the stand because Detective Rondou promised him "an unspecified sum of money" for his testimony as a jailhouse informant. Rondou claimed that the money was for Gonzales's "burial expenses," despite the fact that Gonzales was not terminally ill. A federal magistrate judge specifically found that "[a] reasonable factfinder would not credit Detective Rondou's testimony about the money to Gonzales." (Saavedra, *Santa Ana murder*

Although a court's factual findings are entitled to great deference, when a court grossly misconstrues the primary study used to demonstrate the function of the juvenile brain, that plain error is not entitled to deference. Here, the court did just that: it used its own miscasting of the Segalowitz driving study to mischaracterize what petitioner knew about the danger of bicycling along the edge of rival gang territory.

The court clearly stated that the act petitioner committed, the natural and probable consequences of which were dangerous to human life, was to ride his bicycle along the edge of Myrtle Street territory, together with five older members of the F-troop gang, one of whom was

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conviction overturned due to misuse of jailhouse informant (June 22, 2022) Orange County Register, available at https://www.ocregister.com/2022/06/22/santa-ana-murder-conviction-overturned-due-to-misuse-of-jailhouse-informant/. See also *Alvarez v. Montgomery* (C.D. Cal. Jan. 27, 2022) __ F.Supp. ___, 2022 WL 868889) at p. *1. Mark Geller, the prosecutor in petitioner's trial, was also the prosecutor in the *Alvarez* case. He testified in a deposition that he did not know about the payment to Gonzales until after the trial was over, contradicting Rondou's statements. (*Id.* at *9.)

In their brief, the People argue that the court, as the finder of fact, was entitled to make credibility determinations with regard to experts and has the "sole province to assign the testimony whatever weight it thought was warranted." (RABM at 38.) In its ruling, the court did not mention Dr. Cauffman's testimony at all, but it did discuss gang evidence as a basis for finding petitioner engaged in an inherently dangerous act. (RT at 297.) While the court indeed has the power to weigh evidence and judge credibility of experts, it should be noted that only one expert in the hearing below had demonstrated credibility issues, and that was Detective David Rondou.

armed. (RT 297-298.) Next, the court stated that while doing this act – riding his bicycle through rival gang territory – petitioner "knew the act was dangerous to human life." (RT at 298.) The court's language is conclusory and sparse, so it is necessary to analogize the court's reasoning to a different analysis, where the court *did* explain what it meant by "[knowing] the act was dangerous to human life" – specifically, the court's discussion of the Segalowitz driving study – the only study it discussed in detail.

The court questioned Dr. Elizabeth Cauffman quite closely about the Segalowitz study and what it meant – and failed utterly to absorb its lessons. Specifically, the court repeatedly refers to the study as if it evaluates how adolescents assess risk when "they're actually driving the car towards a brick wall." (RT 180.) The court goes on to elaborate: "*From what these studies show* is that whether that's a 16-year-old, a 17-year-old, an 18-year-old, or a 15-year-old, they know that if that car collides with the brick wall, somebody is going to get killed. It's just whether they're willing to take that risk?" (RT 180-181 (emphasis added).)

As noted in more detail above, this is not "what these studies" show. Driving studies, or "risk-taking tests" evaluate the adolescent brain's ability to anticipate and plan for an uncertain danger. In the test, the "brick wall" will appear at some point, but the participants do not know when it will appear, how much time they will have to stop, or how fast they can drive without hitting it. (See *supra*, subsection 3.) In addition, participants are processing the likelihood and desirability of two different

rewards: the long-term outcome of accumulating points in the simulation and the short-term outcome of camaraderie with their friends in the simulator. As noted in the Gardner & Steinberg study, adolescents in groups are not very good even at the "cold cognition" decision of whether to take a particular risk – and this was after discussion and debate.[57]

As noted in this brief, (see *supra,* Interest of Amicus), the court's characterization of the juvenile brain tracks the too-simple model of "knowledge plus impulsivity." But as Dr. Cauffman's own research demonstrates, adolescent's difficulty in assessing not only implicates "responsibility" (regulation of impulse control) but also "temperance" (regulation of sensation seeking) and "perspective" (weighing choices).

It is "perspective" -- the weighing of choices -- that is potentially most at issue in petitioner's case. In both petitioner's case and the Segalowitz driving study, adolescents had to weigh a number of variables against each other in a "hot cognition" scenario. In both cases, the risks were uncertain: the possibility that a "brick wall" could appear in the driving test, or the possibility that rival gang members would appear on Sullivan Street. In fact, the likelihood of encountering a rival gang member in Santa Ana was far less than the likelihood of encountering a brick wall in the study, where random obstacles appeared in *every* segment of the test. Imagine a test where brick walls appear only in certain segments of the test, or possibly not at all; *that* is a proper measure of the risk petitioner

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[57] Gardner & Steinberg (2005), *supra* note 39, at p. 630.

ran by bicycling along the edge of Myrtle Street territory. Although impulsivity plays a role in petitioner's bicycle ride, perspective – a cognitive/psychosocial hybrid function - plays a much greater role.

For that reason, the prosecutor's formulation of the test at the section 1170.95, subdivision (d)(3) hearing– "Ms. [sic] Cauffman that we heard earlier, yesterday, she specifically says that they're still going to crash into the brick wall" – is even worse than the court's. It mischaracterizes the conditions of the study and, by extension, the facts of the case. It does, however, fit neatly into the crude "knowledge plus impulsivity" version of juvenile brain function. In the People's formulation, petitioner knew he was going to encounter a lethal situation (like a "brick wall") and couldn't or wouldn't stop himself.[58]

Like the participants in the driving study, petitioner was 15 years old. Unlike the participants in the driving study, petitioner was surrounded, not by 2-3 peers of his own age, but 5 older gang members, ranging from age 16 to age 21. (RT 261-262.) California law recognizes

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[58] This is not to say that juveniles "cannot" assess lethal risk, particularly when it is obvious – for example, when the juvenile offender is armed with a firearm and simply fails to fire the fatal shot. However, when the risks are *not* obvious, and they are one of a number of variables, the juvenile brain fails to quantify risk where an adult brain would do better.

how volatile the presence of older cohorts can be to a young adolescent, adding an aspect of authority to the element of "peer pressure."[59]

In the driving study, the presence of peers had a severe, detrimental effect on the participants' calculation of risk. Their limbic systems took over and failed to communicate with the regulatory regions of their brains. During this time, their "perspective" – future-oriented, choice-driven – plummeted. Rather than comparing different possible outcomes and deciding what level of risk they could tolerate, their subcortical regions did not compare outcomes at all. They could no longer "actually appreciate the risk" involved in driving fast. (*Dellinger*, *supra,* 49 Cal.3d at pp. 1218-1219.) Their "knowledge" of risk was in fact quite low, and that knowledge resided in a part of their brains that was underdeveloped and hard to communicate with. They could not "disregard" what they only dimly perceived.[60]

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[59] See, e.g., §§ 1170, subd. (d)(2)(C) and subd. (d)(6)(C) (identifying as a threshold factor *and* a discretionary mitigation factor in juvenile LWOP resentencing whether "[t]he defendant committed the offense with at least one adult codefendant

[60] See Senate Bill 203 (2019-2020), Legislative Counsel's Digest, *supra* note 51. ("[C]hildren characteristically lack the capacity to exercise mature judgment and possess only an incomplete ability to understand the world around them." See also *Moore*: "children characteristically … possess only an incomplete ability to understand the world around them." (*Moore, supra,* 68 Cal.App.5th at p. 453 (quoting *J. D. B.*, *supra,* 564 U.S. at p. 272-273). This is precisely what is meant by "perspective," and it applies to this case.

In petitioner's case, the potential danger did not actually appear until he and the others were less than a mile from El Salvador Park. No one said they expected to encounter the victim, Pedro Rosario. Petitioner never spoke to Rosario; he never got off his bike. He did not shoot Rosario or encourage Frank Lopez to shoot him. He never held a gun at all until later, when he got in a brawl with another gang member his own age. (RT 201-204.)

Like the participants in the driving study, petitioner was trying to calculate risks that were inherently challenging for a 15-year-old brain, a decade away from full maturity. In a "cold cognition" situation, he might have been able to appreciate risk; but he was in a fast-moving situation with five older peers. At such a time, the sensation-seeking, emotional region of his brain dominated and even negated the functions of his medial prefrontal cortex. He never "knew" there was a "brick wall" waiting for him on that bike ride. As a result, there was insufficient evidence that he consciously disregarded any risk to human life.

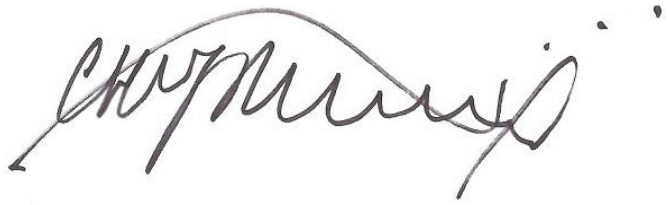
II.
CONCLUSION

Scientific knowledge of juvenile brain development informs numerous areas of the criminal law, including the element of "reckless disregard for human life" in felony murder, after the enactment of Penal Code section 1170.95, and the decisions in *Moore* and *Ramirez.* Courts require guidance in the use of brain science; otherwise, cultural and intellectual habits cause the finder of fact to oversimplify the model of the

juvenile brain. A modest extension of this existing rule to the mens rea element of implied malice – specifically "conscious disregard for human life" - is consistent with both existing law and developmental psychology. Therefore, amici urge this Court to so extend this rule, and to clarify the role of juvenile brain development in evaluating mens rea.

DATED: July 6, 2022

Respectfully submitted,



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CERTIFICATE OF COUNSEL

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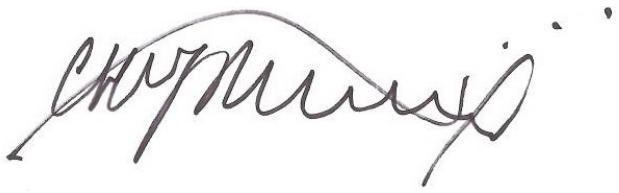

CHRISTOPHER HAWTHORNE
Juvenile Innocence & Fair Sentencing Clinic

DECLARATION OF SERVICE

Case Name: ***People v. Reyes***
Case Number: **Supreme Court Case No. S270723**
Orange County Superior Court
No. 04CF2780
4DCA Case No. G059251

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The Honorable Richard King Judge of the Superior Court Orange County Central Justice Center 700 Civic Center Drive West Santa Ana, CA 92701

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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Signed on **July 6, 2022**, at Los Angeles, CA.

_____

CLAIRE DAVEY

STATE OF CALIFORNIA
Supreme Court of California

PROOF OF SERVICE

STATE OF CALIFORNIA
Supreme Court of California

Case Name: **PEOPLE v. REYES**
Case Number: **S270723**
Lower Court Case Number: **G059251**

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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

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Date

/s/Christopher Hawthorne

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Hawthorne, Christopher (210578)

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Juvenile Innocence & Fair Sentencing Clinic

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