

# Scientific support for a developmentally informed approach to Miranda rights

Compiled by the *Scientist Action and Advocacy Network*. For questions or comments, email [info@scaan.net](mailto:info@scaan.net).

---

May 2nd, 2018

## Introduction

Miranda warnings were instituted by the Supreme Court in 1966 in order to help protect an individual's Fifth Amendment right to decline to answer self-incriminating questions.<sup>1</sup> While this constitutional protection extends to juveniles, adolescents are more likely to waive their Miranda rights than adults, with about 90% of youth (vs. about 80% of adults) choosing to waive their rights.<sup>2,3</sup> This discrepancy in Miranda waivers calls into question whether juvenile waivers meet the knowing, intelligent, and voluntary requirements for a valid waiver.

Developmental neuroscience research has shown that the human brain continues to develop well into adulthood, with neural systems associated with reasoning and self-control being some of the last to mature.<sup>4</sup> While there is currently not a clear consensus as to what age range defines adolescence, there is little debate that 13- to 17-year-olds are indeed adolescents, experiencing pronounced changes in brain and behavior. It is this same age range that is critical to consider in the context of this brief, as individuals 13–17 are able to waive their Miranda rights (after consulting with parents in many cases, as described below) but likely do not adequately understand their rights. Given the large differences in neural maturity between juveniles and adults, research regarding development of cognitive and

emotional faculties such as language comprehension, decision-making, and social sensitivities may shed light on whether current Miranda practices are fully protecting our youth.

## 1 Adolescents may not fully understand the Miranda warning and their legal rights.

Language comprehension, both generally and as it pertains to legal terminology, continues to develop through adolescence. Due to the typical development of language comprehension, many adolescents cannot understand the conceptual content of the Miranda warning. Difficulty comprehending the Miranda warning is especially problematic for adolescents in custody who tend to have lower IQs or lower reading levels.<sup>5,6</sup>

## Developmental differences in comprehending the Miranda warning influence the ability to decide whether or not to waive one's rights.

- **The ability to comprehend one's Miranda rights increases with age.** The general ability to comprehend abstract texts and main-

tain information in mind continues to develop throughout adolescence.<sup>7,8</sup> Specifically, between adolescence and young adulthood, the ability to extract relevant meaning from more abstract texts improves significantly. This poses a challenge for juveniles in custody who are read their Miranda rights, an abstract and complex piece of text. Research has demonstrated that juveniles do, in fact, struggle to comprehend the Miranda warning. In one study, researchers asked 13- to 18- year-old boys to explain the meaning of sentences from the standard Miranda warning. The study found that even after controlling for IQ, age significantly predicted Miranda Rights comprehension, with younger adolescents struggling to understand their rights and demonstrating worse comprehension than older adolescents.<sup>9</sup> However, even older adolescents do not fully understand their rights when read the Miranda warning. In one study, more than 80 percent of juveniles tested on their comprehension of the Miranda warning exhibited 10 or more erroneous beliefs regarding their rights, with even the individuals categorized as “high maturity” failing to accurately recall almost half of the content they were read.<sup>10</sup>

- **Over 100 versions of the child Miranda warnings have been developed, but the inherent complexity of the warning limits their comprehensibility.** Research suggests that the current “child friendly” versions of the Miranda warning do not effectively adjust the level of difficulty to account for adolescents’ comprehension capabilities. Even when tested on comprehension of a simplified, juvenile version of the Miranda warning used by police in California, 81 out of 90 juveniles did not understand their rights.<sup>11</sup> Furthermore, there is no standard version of the child Miranda warning: One study investigated 122 versions of juvenile Miranda warnings used across the country and found that they varied dramatically in their length, reading level, and content.<sup>12</sup> These studies, which have investigated modified versions of the warning, suggest that the concept of the warning itself may be too chal-

lenging to effectively communicate to adolescents through a brief, verbal warning.

- **Comprehension difficulties are even more pronounced in individuals in custody, who often score lower on measures of general intelligence and language comprehension.** Youth in custody generally exhibit lower general intelligence and greater incidence of learning disabilities than non-delinquents their age.<sup>5,6,13</sup> This suggests that the population in question — those who are likely to be read the Miranda warning — have even greater difficulty understanding the warning than their peers.<sup>5</sup>

### **Poorer comprehension of Miranda Rights predicts the likelihood of unknowingly waiving one’s rights or offering false confessions.**

- **Misinterpretation of the Miranda warning can lead adolescents to unknowingly waive their rights.** In one study, more than 95 percent of juveniles chose to waive their rights, but of these, fewer than 6 percent fully understood the Miranda warning.<sup>11</sup> Additionally, juveniles who understood their rights are more likely to assert them. For example, among adolescents who asserted their rights, 84 percent of them demonstrated adequate comprehension of them. However, among adolescents who waived their rights, only around 25 percent of them understood the warning.<sup>14</sup>
- **Difficulty comprehending the Miranda warning is linked to the likelihood of offering a false confession.** Researchers have found that differences in comprehension had additional consequences beyond invalidly waiving one’s rights — adolescents who demonstrated poorer comprehension of their Miranda rights were more likely to report that they would offer false confessions.<sup>9</sup> Similarly, McLachlan, Roesch, and Douglas<sup>15</sup> found that adolescents who misunderstood their rights were more influenced by leading questions used by officers during interrogation, regardless of previous experience with law enforcement.

Considering that adolescents are more likely than adults to offer false confessions in simulated laboratory settings<sup>16</sup> and that younger individuals more often misinterpret the Miranda warning, these studies demonstrate that adolescents are highly susceptible to offering false confessions as a result of their youth and failure to comprehend the Miranda warning.

- **When people falsely confess to crimes, they are more likely to be convicted and given harsher verdicts,** even if the confession is later deemed to be coerced and there is no evidence that the defendant committed the crime.<sup>3</sup> False confessions are particularly problematic for an innocent teen who feels he has nothing to hide by speaking openly with a police officer.<sup>17</sup>

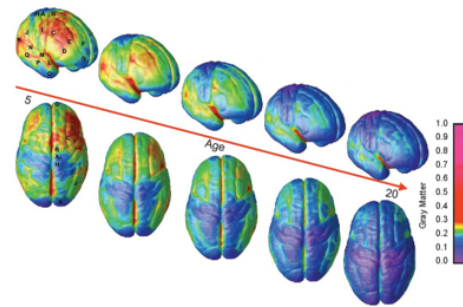
## 2 Adolescents often make impulsive decisions, particularly in emotional situations.

### Adolescents prioritize immediate over long-term consequences of their choices.

The decision to invoke or waive Miranda rights can have ramifications on later case outcomes (e.g., due to false confessions during interrogation). Such legal outcomes occur months, and sometimes years, following the initial Miranda decision, so the ability to understand and prioritize future outcomes is crucial for making a choice about Miranda rights. Adolescents' bias towards prioritizing immediate over future outcomes may cause them to take action (e.g. waiving their rights and falsely confessing) to escape custody without adequately considering the more distant consequences of this choice.

- **The ability to think about long-term goals continues to develop in adolescence, and may be supported by neural changes in the prefrontal cortex.** Cognitive neuroscience research suggests that as the prefrontal cortex develops<sup>18</sup> (Figure 1), connections between the prefrontal cortex and other parts of the brain also strengthen from childhood to adulthood. During this process, individuals demonstrate improvements in the ability to reason

abstractly.<sup>19,20</sup> Additionally, relative to adults, adolescents are less likely to consider temporally abstract events. For example, adults outperform adolescents on tasks of prospective memory in which individuals are told to remember information that will be needed in the future.<sup>21</sup> These results indicate that adolescents may not as readily imagine themselves encountering future scenarios that are likely to occur. The ability to think critically about relationships between abstract or novel events may be particularly important when individuals are faced with decisions with consequences for the future, like the decision to waive one's Miranda rights.



**Figure 1:** The prefrontal cortex continues to develop into the 20s. Darker blue areas indicate more adult-like brain structure. Adapted from Gogtay et al. (2004).<sup>18</sup>

- **Developmental differences in the ability to think about future events may lead adolescents to prioritize immediate rewards when making decisions.** The fact that adolescents demonstrate reduced future-oriented thinking relative to adults has functional consequences for decision-making. Specifically, in experimental tasks in which participants must choose between an immediate small reward and a larger reward later (e.g., receive \$5 now or \$50 in a month) adolescents are more likely to choose the smaller reward sooner, foregoing the larger reward that they would need to wait for.<sup>22</sup> Individuals' preferences for the immediate reward relate to their scores on surveys that measure future-oriented thinking — those who are less likely to consider future consequences are more likely to prioritize immediate outcomes when making decisions.<sup>23</sup> In the case of an adoles-

cent in custody, the tendency to prioritize immediate reward rather than considering long-term consequences could cause an adolescent to offer a confession in order to receive positive feedback from a law enforcement agent or to stop the interrogation, rather than considering the longer-term benefits of remaining silent.

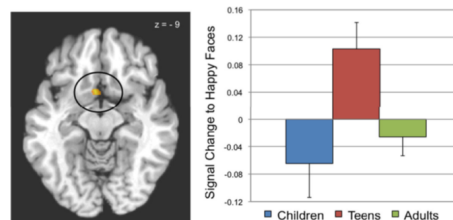
- **Age differences in decision-making likely emerge due to the normative, protracted development of their underlying neural circuitry.** Specifically, connections between the prefrontal cortex and the striatal circuitry that underlies reward processing continue to develop into late adolescence and early adulthood.<sup>22</sup> Additionally, these developmental differences in decision-making are largely the same across cultures. Studies examining over 5000 individuals ages 10 to 30 in eleven economically and culturally diverse countries have shown that adolescence is a time of heightened impulsive decision making, suggesting that decision making without regard for future consequences is a common characteristic of this stage of development.<sup>24,25</sup>

### Adolescents often make poor decisions in emotional situations.

While adolescents are often capable of making informed decisions when given sufficient time and information, decision making often breaks down in the heat of the moment, particularly in emotionally charged situations.<sup>4</sup> The events leading up to and including being in police custody likely involve heightened emotions, which may influence an adolescent's decision on whether to waive their rights.

- **Adolescents are particularly sensitive to emotional inputs from the environment.** Relative to both children and adults, adolescents show a greater sensitivity to emotional information. Converging evidence from developmental studies of both humans and animals suggest that dynamic changes in neural circuitry during adolescence occur alongside this increase in emotional reactivity.<sup>26</sup> Adolescents have been shown to react more impulsively than adults in response to both positive<sup>27</sup> and

negative emotional cues,<sup>28,29</sup> including cues that signal potential threats. Impulsivity to positive cues is paralleled by increased brain activity in a reward center of the brain, the ventral striatum<sup>27</sup> (Figure 2), while impulsivity to cues of potential threat is paralleled by increased brain activity in cortical brain areas implicated in processing emotions.<sup>29</sup> Taken together, these studies suggest that adolescents demonstrate increased reactivity in response to emotions.



**Figure 2:** The ventral striatum (circled) is more active in adolescents relative to children or adults in response to emotional cues. Adapted from Somerville et al. (2011).<sup>27</sup>

- **Emotional situations impair adolescent decision making.** Adolescents' choices have been shown to be particularly different from adult decision making under emotionally arousing as compared to neutral conditions.<sup>30</sup> Furthermore, a recent study showed that adolescents' performance on an emotional task, but not a non-emotional task, predicted greater risk-taking in a task that required them to make quick decisions.<sup>31</sup> Adolescents have also been shown to perform similarly in low- and high-stakes conditions, while young adults show better performance under high stakes. Increases in connectivity between the prefrontal cortex and striatum were associated with better performance in high-stakes conditions,<sup>32</sup> suggesting that continued maturation of neural circuits involved in decision making and emotion may lead to poor decisions in certain emotional situation during adolescence.
- **Interactions with authority figures can affect the way an adolescent may act in a high stakes situation.** A study of over 4000 adolescents' recent self-reported communication experiences found that bad communica-

tion was most prevalent when adolescents interacted with adults outside their family.<sup>33</sup> In a follow-up study, adolescents expressed that many communication problems resulted from power imbalances between themselves and the adult figure.<sup>34</sup> These power dynamics are likely prevalent in interrogation scenarios when adolescents are questioned by law enforcement officials. Researchers have found that the power imbalance present during police interrogation can sway adolescents toward compliance with police requests. In one laboratory study, young people under age 16 – both incarcerated and non-incarcerated – were more likely than young adults (ages 18–24) to accept plea agreements and confess in response to vignettes involving requests from police officers.<sup>5</sup>

### 3 Parent presence is not sufficient protection for youth.

Because adolescents may have difficulty making a Miranda decision, police in New York must attempt to contact a parent to consult with their child in making this choice (although if an attempt is made and the parents are not reachable, the child may still waive his or her own rights without consulting a parent). However, parents may be unable to make an informed decision about Miranda rights due to a lack of knowledge or situational factors.

- **Parents are susceptible to police coercion when present in the interrogation room on behalf of their child.** Police are trained to marginalize parents during an interrogation if they are present. They encourage parents to believe they are not acting in their child's best interest. In turn, they may push children to waive their own rights and talk to the police themselves.<sup>35</sup> In this way, adolescents may still need to understand complex scenarios and make temporally abstract decisions on their own behalf, even if their parents or guardians are present.
- **Lack of legal knowledge as well as the emotionally charged context may prevent parents from making the best decisions for**

**their child.** While parents may be better able to understand the Miranda rights than their children, they are not necessarily well-versed in police practices or other legal protections, or possess the knowledge to effectively advocate on behalf of their child.<sup>36</sup> In stressful and emotionally charged situations in particular, parents may also struggle to make rational, future-oriented decisions on behalf of their children.<sup>36,37</sup> Currently, no resources are provided to parents to help them make these difficult decision on behalf of their children.<sup>37</sup>

- **The nature of the parent-child relationship presents conflicts of interest that may affect the interrogation process.** During adolescence, parent-child relationships increase in conflict and decrease in warmth,<sup>38–40</sup> meaning that adolescents and their parents' views on the best outcome of an interrogation process may differ. Furthermore, when deciding whether to waive their child's Miranda rights, parents must decide what role they would like to play to their child in these situations; it is difficult to know if they should play the role of educator and moral guardian, or legal protector.<sup>41</sup> Parents' decision making processes may also be influenced by the immediate and long-term consequences their advice might have on their relationship with their child.<sup>42</sup> They may additionally consider factors beyond their child's well-being in these decisions, such as the well-being of their other family members, or personal considerations.<sup>35,41</sup>

Because parents' interests may not be fully aligned with those of their children, they are not an appropriate resource for consulting in a Miranda waiver decision. An alternative possibility is for teens to make their own Miranda waiver decisions, but under the guidance of an attorney, outside of the emotionally charged context of the arrest. Such a policy would result in Miranda decisions that are in the best interest of the child, with insight from an expert with experience in the justice system.

## 4 Conclusion

The literature summarized above demonstrates adolescents' relative lower comprehension of Miranda warnings, difficulty imagining the future and prioritizing long-term outcomes and heightened propensity to make impulsive decisions. These factors, which are facets of healthy adolescent brain development, likely preclude most adolescent waivers from meeting the knowing, intelligent and voluntary requirements for a valid Miranda waiver. Further, the current protections that are in place, are insufficient to promote just outcomes for juveniles in custody.

- **Knowing.** Waivers intended for juveniles are written in language that averages around a 7th grade reading level.<sup>43</sup> However, juvenile delinquents tend to score substantially lower on general intelligence tests<sup>5,6</sup> and exhibit higher rates of intellectual disabilities than their non-delinquent peers.<sup>44</sup> Because age predicts comprehension of Miranda<sup>9</sup> it is unlikely that an adolescent in custody will be able to understand the warning to sufficiently provide a knowing waiver.
- **Intelligent.** Given their relative difficulty imagining the future,<sup>19,21</sup> it is unlikely that juveniles making Miranda decisions are able to understand and appreciate the future consequences of a Miranda waiver. Similarly important to imagining future outcomes is the necessity to prioritize those future outcomes in rendering a Miranda decision. Adolescents' increased prioritization of present outcomes (e.g. the desire to return home) over future outcomes (e.g., court outcomes<sup>22,45</sup>), paired with their heightened sensitivity to the rewards inherent in present outcomes,<sup>46</sup> especially in emotional contexts,<sup>26,27</sup> likely increase adolescents' tendency to waive their rights. Further, adolescents in custody may already be more prone to risk taking (as risky decision-making often contributes to criminal activity), increasing the likelihood of these contextual factors playing a role in Miranda decisions.
- **Voluntary.** The clear power dynamic between

an adolescent in custody and an adult interrogator, and social norms favoring compliance with authority<sup>47</sup> calls into question the voluntariness of a juvenile's waiver.<sup>41</sup> Further, because adolescents may have difficulty communicating with adults in high-pressure situations,<sup>33,34</sup> a waiver may be misinterpreted by an adult, or a desire to stop interrogation may not be perceived by an the interrogator.

### **The current standard practice in New York (to rely on parent input to make a Miranda decision) is not in the best interest of the adolescent or the parent.**

Parents are also susceptible to coercion when their children are in custody, and also may encourage their children to "tell the truth" to police.<sup>35</sup> Further, parents may not have adequate knowledge of the legal system to counsel their child on the costs and benefits of waiving their rights.<sup>36</sup> Finally, a parent may have additional conflicts precluding them from making a decision in the best interest of the child.<sup>41</sup>

## References

- [1] URL: <http://www.mirandawarning.org/>.
- [2] Kim E Drake et al. "A national study into temperament as a critical susceptibility factor for reported false confessions amongst adolescents". In: *Personality and Individual Differences* 111 (2017), pp. 220–226.
- [3] Barry C Feld. "Real interrogation: What actually happens when cops question kids". In: *Law & society review* 47.1 (2013), pp. 1–36.
- [4] BJ Casey. "Beyond simple models of self-control to circuit-based accounts of adolescent behavior". In: *Annual review of psychology* 66 (2015), pp. 295–319.
- [5] Thomas Grisso et al. "Juveniles' competence to stand trial: a comparison of adolescents' and adults' capacities as trial defendants." In: *Law and human behavior* 27.4 (2003), p. 333.
- [6] Jodi L Viljoen, Patricia A Zapf, and Ronald Roesch. "Adjudicative competence and comprehension of Miranda rights in adolescent defendants: A comparison of legal standards". In: *Behavioral Sciences & the Law* 25.1 (2007), pp. 1–19.
- [7] Marilyn A Nippold. "Language development during the adolescent years: Aspects of pragmatics, syntax, and semantics". In: *Topics in Language Disorders* 20.2 (2000), pp. 15–28.
- [8] Heather M Conklin et al. "Working memory performance in typically developing children and adolescents: Behavioral evidence of protracted frontal lobe development". In: *Developmental neuropsychology* 31.1 (2007), pp. 103–128.
- [9] Naomi E Sevin Goldstein et al. "Juvenile offenders' Miranda rights comprehension and self-reported likelihood of offering false confessions". In: *Assessment* 10.4 (2003), pp. 359–369.
- [10] Richard Rogers et al. "Mired in Miranda misconceptions: A study of legally involved juveniles at different levels of psychosocial maturity". In: *Behavioral sciences & the law* 32.1 (2014), pp. 104–120.
- [11] A Bruce Ferguson and Alan Charles Douglas. "A study of juvenile waiver". In: *San Diego L. Rev.* 7 (1970), p. 39.
- [12] Richard Rogers et al. "The comprehensibility and content of juvenile Miranda warnings." In: *Psychology, Public Policy, and Law* 14.1 (2008), p. 63.
- [13] Connie L Kvarfordt, Patricia Purcell, and Patrick Shannon. "Youth with learning disabilities in the juvenile justice system: A training needs assessment of detention and court services personnel". In: *Child and Youth Care Forum*. Vol. 34. 1. Springer. 2005, pp. 27–42.
- [14] Rosa Abramovitch, Karen L Higgins-Biss, and Stephen R Biss. "Young persons' comprehension of waivers in criminal proceedings". In: *Canadian J. Criminology* 35 (1993), p. 309.
- [15] Kaitlyn McLachlan, Ronald Roesch, and Kevin S Douglas. "Examining the role of interrogative suggestibility in Miranda rights comprehension in adolescents". In: *Law and Human Behavior* 35.3 (2011), pp. 165–177.
- [16] Allison D Redlich and Gail S Goodman. "Taking responsibility for an act not committed: The influence of age and suggestibility." In: *Law and human behavior* 27.2 (2003), p. 141.
- [17] Lindsay C Malloy, Elizabeth P Shulman, and Elizabeth Cauffman. "Interrogations, confessions, and guilty pleas among serious adolescent offenders." In: *Law and Human Behavior* 38.2 (2014), p. 181.
- [18] Nitin Gogtay et al. "Dynamic mapping of human cortical development during childhood through early adulthood". In: *Proceedings of the National academy of Sciences of the United States of America* 101.21 (2004), pp. 8174–8179.
- [19] Carter Wendelken et al. "Fronto-parietal network reconfiguration supports the development of reasoning ability". In: *Cerebral Cortex* 26.5 (2015), pp. 2178–2190.
- [20] Carter Wendelken et al. "Frontoparietal Structural Connectivity in Childhood Predicts Development of Functional Connectivity and Reasoning Ability: A Large-Scale Longitudinal Investigation". In: *Journal of Neuroscience* 37.35 (2017), pp. 8549–8558.
- [21] Mareike Altgassen, Anett Kretschmer, and Katharina Marlene Schnitzspahn. "Future thinking instructions improve prospective memory performance in adolescents". In: *Child Neuropsychology* 23.5 (2017), pp. 536–553.
- [22] Wouter Van Den Bos et al. "Adolescent impatience decreases with increased frontostriatal connectivity". In: *Proceedings of the National Academy of Sciences* 112.29 (2015), E3765–E3774.
- [23] Laurence Steinberg et al. "Age differences in future orientation and delay discounting". In: *Child development* 80.1 (2009), pp. 28–44.
- [24] Natasha Duell et al. "Age patterns in risk taking across the world". In: *Journal of youth and adolescence* 47.5 (2018), pp. 1052–1072.
- [25] Laurence Steinberg et al. "Around the world, adolescence is a time of heightened sensation seeking and immature self-regulation". In: *Developmental science* 21.2 (2018).
- [26] BJ Casey et al. "Development of the Emotional Brain". In: *Neuroscience letters* (2017).
- [27] Leah H Somerville, Todd Hare, and BJ Casey. "Frontostriatal maturation predicts cognitive control failure to appetitive cues in adolescents". In: *Journal of cognitive neuroscience* 23.9 (2011), pp. 2123–2134.
- [28] Julia E Cohen-Gilbert and Kathleen M Thomas. "Inhibitory control during emotional distraction across adolescence and early adulthood". In: *Child development* 84.6 (2013), pp. 1954–1966.

- [29] Michael Dreyfuss et al. "Teens impulsively react rather than retreat from threat". In: *Developmental neuroscience* 36.3-4 (2014), pp. 220–227.
- [30] Bernd Figner et al. "Affective and deliberative processes in risky choice: age differences in risk taking in the Columbia Card Task." In: *Journal of Experimental Psychology: Learning, Memory, and Cognition* 35.3 (2009), p. 709.
- [31] Morgan Botdorf et al. "Adolescent risk-taking is predicted by individual differences in cognitive control over emotional, but not non-emotional, response conflict". In: *Cognition and emotion* 31.5 (2017), pp. 972–979.
- [32] Catherine Insel et al. "Development of corticostriatal connectivity constrains goal-directed behavior during adolescence". In: *Nature communications* 8.1 (2017), p. 1605.
- [33] John Drury et al. "Exploring teenagers' accounts of bad communication: a new basis for intervention". In: *Journal of adolescence* 21.2 (1998), pp. 177–196.
- [34] John Drury. "Adolescent communication with adults in authority". In: *Journal of Language and Social Psychology* 22.1 (2003), pp. 66–73.
- [35] Steven A Drizin and Greg Luloff. "Are juvenile courts a breeding ground for wrongful convictions". In: *N. Ky. L. Rev.* 34 (2007), p. 257.
- [36] Jennifer L Woolard et al. "Examining adolescents' and their parents' conceptual and practical knowledge of police interrogation: A family dyad approach". In: *Journal of Youth and Adolescence* 37.6 (2008), pp. 685–698.
- [37] Cath Jackson, Francine M Cheater, and Innes Reid. "A systematic review of decision support needs of parents making child health decisions". In: *Health expectations* 11.3 (2008), pp. 232–251.
- [38] Susan Branje. "Development of Parent–Adolescent Relationships: Conflict Interactions as a Mechanism of Change". In: *Child Development Perspectives* (2018).
- [39] Kristine Marceau, Nilam Ram, and Elizabeth J Susman. "Development and lability in the parent–child relationship during adolescence: Associations with pubertal timing and tempo". In: *Journal of Research on Adolescence* 25.3 (2015), pp. 474–489.
- [40] Roberta L Paikoff and Jeanne Brooks-Gunn. "Do parent-child relationships change during puberty?" In: *Psychological bulletin* 110.1 (1991), p. 47.
- [41] Hayley Cleary. "Applying the lessons of developmental psychology to the study of juvenile interrogations: New directions for research, policy, and practice." In: *Psychology, Public Policy, and Law* 23.1 (2017), p. 118.
- [42] Stephen A Small, Gay Eastman, and Steven Cornelius. "Adolescent autonomy and parental stress". In: *Journal of Youth and Adolescence* 17.5 (1988), pp. 377–391.
- [43] Hayley MD Cleary and Sarah Vidal. "Miranda in actual juvenile interrogations: Delivery, waiver, and readability". In: *Criminal Justice Review* 41.1 (2016), pp. 98–115.
- [44] Malika Closson and Kenneth M Rogers. "Educational needs of youth in the juvenile justice system." In: (2007).
- [45] Laurence Steinberg et al. "Age differences in sensation seeking and impulsivity as indexed by behavior and self-report: evidence for a dual systems model." In: *Developmental psychology* 44.6 (2008), p. 1764.
- [46] Laurence Steinberg. "A social neuroscience perspective on adolescent risk-taking". In: *Developmental review* 28.1 (2008), pp. 78–106.
- [47] Stanley Milgram and Christian Gudehus. *Obedience to authority*. 1978.