

## Additional file 1

### Judicial Decision-making based on Interpretations of Science – Interview Protocol

#### Interviewee Code:

#### Date of Interview:

I first want to thank you again for your time and willingness to participate. Your consent to be audio-recorded is not required in order to be interviewed. Before we begin, please read the informed consent sheet.

- Do you have any questions?
- If you understand and agree to the terms on this sheet, I will need your verbal consent to participate.
- As you see at the bottom of the consent sheet, I also will need your verbal consent to be audio-recorded.

Thank you. I will start with a short introduction to this interview. I am conducting a research study that examines how judges interpret scientific evidence and how they relate this type of information to criminal behavior and to punishment. The Rutgers University Institutional Review Board has approved the study. As a reminder, please know that your participation in this interview is completely voluntary. Feel free to let me know at any time if you need a break or if you don't want to talk about a certain topic or if you need to stop the interview. You are also free to skip any question at any time. The interview will take between 30-60 min. Interviews are confidential and will be anonymized; none of your answers will be traceable back to you.

Before we begin, I would like to define exactly what I mean when I ask you about *innate* or *acquired behavioral disorders*. Behavioral disorders are those that affect a person's behavior (such as psychiatric disorders or mental health problems) and are either present at birth (for example a genetic psychiatric disorder such as schizophrenia) or they are acquired through life experiences (if someone has experienced abuse in the past, for example, they could have behavioral difficulties as a result). So, by *behavioral disorders* I mean any type of psychiatric, psychological or other mental health problem that affects behavior, and sometimes we will differentiate that this disorder is *innate* or is *acquired* later through life experiences. Do you have any questions for me before we begin?

Q1. First, I will describe to you a short fictional criminal case, and I would like you to select the sentence that you find most appropriate based on a few different types of evidence presented:

Imagine an offender, a 29-year-old man, a first-time offender, that is found guilty of aggravated assault of a delivery driver, after getting into a traffic-related altercation with him. The victim was hospitalized for two weeks and eventually made a full recovery. I will ask you about three different types of evidence. The guidelines for this level of offense allow for discretionary sentencing, without minimums or maximums.

- a. When the offender's attorney has not made any mention of the defendant having undergone a medical or psychiatric evaluation, and there is **no scientific evidence of any behavioral disorder**. Would you opt for:
  1. No prison time, but only treatment/rehabilitation
  2. No prison time, but supervised probation or community service
  3. Imprisonment: how many months/years?
- b. Now imagine the offender's attorney has presented as scientific evidence **a brain scan indicating the presence of an innate behavioral disorder**, that research shows can increase aggressive or antisocial behavior. Would you opt for:
  1. No prison time, but only treatment/rehabilitation
  2. No prison time, but supervised probation or community service

3. Imprisonment: how many months/years?

- c. And finally, what if the offender's attorney has presented as scientific evidence **a behavioral disorder caused by a clinically assessed past traumatic experience, such as abuse during childhood**, that research shows may increase aggressive or antisocial behavior.

Would you opt for:

1. No prison time, but only treatment/rehabilitation
2. No prison time, but supervised probation or community service
3. Imprisonment: how many months/years?

Q2. I will now ask you to rate five sentencing goals, from 1 (not at all important) to 5 (completely important). Thinking about sentencing the first defendant described above, where **no scientific evidence of any behavioral disorder** has been presented, how important do you consider the punishment goal of:

- a. Rehabilitation—helping the offender to change their behavior and stop committing crimes.
- b. Restoration—achieving justice by allowing reconciliation with the victim or community.
- c. Deterrence—discouraging similar crimes by showing that crimes like this one get punished.
- d. Retribution—making the offender “pay” for his crime.
- e. Incapacitation—keeping the offender from committing crimes by removing him from society.

Q3. Thinking about the same defendant, where there was **no evidence of any behavioral disorder**, rate how much you agree with the following statements from 1 (completely disagree) to 5 (completely agree).

- a. The offender's behavior is more likely based on his biological make-up than his life experiences. (*Nature/nurture*)
- b. The offender is dangerous. (*Dangerousness*)
- c. Regardless of interventions, the offender will remain this way for life. (*Immutability*)
- d. There are no effective treatments for the offender. (*Treatability*)
- e. The offender is responsible for his present situation. (*Personal responsibility*)
- f. I could be friends with the offender. (*Social acceptance*)
- g. I think the cause of the offender's situation can be controlled by the offender himself. (*Free will*)

Q4. Thinking again about sentencing goals, but now in the case where **a brain scan** has been presented as evidence that the defendant has a behavioral disorder, how important (from 1 to 5) do you consider the punishment goal of:

- a. Rehabilitation—helping the offender to change their behavior and stop committing crimes.
- b. Restoration—achieving justice by allowing reconciliation with the victim or community.
- c. Deterrence—discouraging similar crimes by showing that crimes like this one get punished.
- d. Retribution—making the offender “pay” for his crime.
- e. Incapacitation—keeping the offender from committing crimes by removing him from society.

Q5. Thinking still about the case where **a brain scan** has been presented as evidence of a behavioral disorder, rate how much you agree with the following statements from 1 (completely disagree) to 5 (completely agree).

- a. The offender's behavior is more likely based on his biological make-up than his life experiences. (*Nature/nurture*)
- b. The offender is dangerous. (*Dangerousness*)
- c. Regardless of interventions, the offender will remain this way for life. (*Immutability*)
- d. There are no effective treatments for the offender. (*Treatability*)
- e. The offender is responsible for his present situation. (*Personal responsibility*)
- f. I could be friends with the offender. (*Social acceptance*)
- g. I think the cause of the offender's situation can be controlled by the offender himself. (*Free will*)

- Q6. Finally, thinking again about sentencing goals, but now in the case where evidence of **past trauma** was presented as evidence that the defendant has a behavioral disorder, how important (from 1 to 5) do you consider the punishment goal of:
- Rehabilitation—helping the offender to change their behavior and stop committing crimes.
  - Restoration—achieving justice by allowing reconciliation with the victim or community.
  - Deterrence—discouraging similar crimes by showing that crimes like this one get punished.
  - Retribution—making the offender “pay” for his crime.
  - Incapacitation—keeping the offender from committing crimes by removing him from society.
- Q7. Thinking about the case where evidence of **past trauma** was presented as evidence of a behavioral disorder, rate how much you agree with the following statements from 1 (completely disagree) to 5 (completely agree).
- The offender's behavior is more likely based on his biological make-up than his life experiences. (*Nature/nurture*)
  - The offender is dangerous. (*Dangerousness*)
  - Regardless of interventions, the offender will remain this way for life. (*Immutability*)
  - There are no effective treatments for the offender. (*Treatability*)
  - The offender is responsible for his present situation. (*Personal responsibility*)
  - I could be friends with the offender. (*Social acceptance*)
  - I think the cause of the offender's situation can be controlled by the offender himself. (*Free will*)
- Q8. Have you recently come across a case similar to any of the circumstances described above? Have you ever seen or heard evidence of a behavioral disorder presented to explain the aggressive behavior?
- Q9. As a judge, could you please list some factors that you may consider if you heard a criminal case involving an offender presenting evidence of a behavioral disorder (for example, a psychiatric disorder).
- Q10. Generally, what are your thoughts or opinions about scientific evidence (whether brain scans, genetic tests, clinical/psychological assessments, etc.) as explanations for criminal behavior?
- Q11. In what ways, and how strongly, do you think a person's inherited traits and genes influence their behavior, character attributes, personality, etc.?
- Q12. In what ways, and how strongly, do you think a person's life experiences and their family or upbringing influence their behavior, character attributes, personality, etc.?
- Q13. Would you consider an offender with a behavioral disorder, as compared to one without, to be more or less:
- Dangerous? Why?
  - Responsible for their behavior and situation? Why?
  - Amenable to treatment or rehabilitation? Why?
- Q14. On a scale from 1 to 5 (with 1 being not at all and 5 being completely), to what extent do you think a person's environment influences their biology (for example, the way their brain forms, hormonal changes, or susceptibility to neurological or psychiatric problems)?
- Q15. On the same scale from 1 to 5, to what extent do you think a person's biology influences their behavior, character attributes, personality, etc.?
- Q16. On the same scale from 1 to 5, how would you rate your knowledge of biological or behavioral science, as compared to an average person?

- Q17. Please list where any of your current knowledge on behavioral disorders has come from (e.g., media, workshops, high school biology, scientific publications, etc.)?
- Q18. Roughly, what percentage of your knowledge of these topics would you say comes from the media?
- Q19. If you are comfortable, do you have any personal experiences with biological, behavioral, or psychiatric disorders (personal life, family, work)?
- Q20. Now I am going to read you a few short statements. Please rate them from 1 to 5, with 1 being strongly disagree and 5 being strongly agree.
1. People's biological makeup determines their talents and personality.
  2. Chance events seem to be the major cause of human history.
  3. People have complete control over the decisions they make.
  4. Psychologists and psychiatrists will eventually figure out all human behavior.
  5. People must take full responsibility for any bad choices they make.
  6. People can overcome any obstacles if they truly want to.
  7. Science has shown how your past environment created your current intelligence and personality.
  8. Luck plays a big role in people's lives.
  9. What happens to people is a matter of chance.
  10. People have complete free will.
- Q21. Have you attended any education seminars, conferences or professional training relating to scientific evidence about behavioral disorders (e.g., biological or psychological research, neuroscience or genetics evidence, etc.)? If so, how many approximately, where were they, and on what type of information?
- Q22. Have you attended any education seminars or professional training relating to statistics, probabilities, algorithms, or artificial intelligence? If so, how many approximately, where were they, and on what type of information?
- Q23. Do you think you and your judicial peers would benefit from training opportunities on scientific bio-behavioral research? Yes / No – why?
- Q24. Please provide:
- a. Your age range: X (Under 30, 30 – 39, 40 – 49, 50 – 59, 60 – 69, 70 – 80)
  - b. Year range of how long you have been a judge: X (under 5, 5 – 9, 10 – 19, 20 – 29, 30 – 40)
  - c. The nature of your previous work: prosecutor, defense attorney, other namely.
  - d. Your broad educational background (degrees, disciplines of study, not school names).
  - e. Do you consider yourself to be more conservative, more liberal, or somewhere in the middle?
  - f. Are you spiritual and/or do you believe in a higher power?
  - g. What is the nature of cases over which you usually preside or have presided in the past?