Published in final edited form as:

J Forens Psychiatry Psychol. 2016 ; 27(4): 586–600. doi:10.1080/14789949.2016.1173718.

Judges' views on evidence of genetic contributions to mental disorders in court

Colleen M. Berryessa^{a,b}

^aCenter for Biomedical Ethics, Stanford University, CA, USA

^bDepartment of Criminology, University of Pennsylvania, Philadelphia, PA, USA

Abstract

This preliminary analysis assesses how judges view the use of behavioral genetics evidence on genetic influences to mental disorders in court. Twenty-one semi-structured interviews, analyzed using constant comparative analysis, were conducted with California trial court judges. Most judges reported the beneficial effects of this evidence being presented in court, particularly as a mitigating factor for sentencing. Yet some judges viewed it as an aggravating factor and expressed concerns about genetic privacy. Judges described initial reactions to being potentially presented with evidence on genetic influences to mental disorders as apprehension, curiosity, and sympathy. Judges also reported putting significant trust in experts on these issues. Findings suggest some judges are skeptical of this evidence, but largely open to its presentation. Sympathetic reactions may result in mitigating attitudes of some judges. As judges significantly trust experts, some judges could also be overly trusting of genetic evidence and expert opinion on these issues.

Keywords

Judges; court; behavioral genetics; mental disorder; expert witness

Introduction

The power of judicial discretion is an established principle of American jurisprudence, allowing judges discretion in their fact-finding roles, evidentiary hearings, and pretrial hearings (Pattenden, 1982; Rosenberg, 1970). Most criminal trials are bench trials, in which a judge exhibits the sole fact-finding role (Lynch, 2014), and are occasions for substantial judicial discretion, allowing legal decisions to be rendered based upon the judge's interpretation of the facts and evidence (Pattenden, 1982). Further, evidentiary hearings are also subject to judicial discretion; judges are allowed to determine what evidence is allowed or disallowed from being presented in court, which ultimately affects how a case is argued, if evidence is heard by a jury, and how evidence is considered by the court (Pattenden, 1982). Thus, judicial discretion is a powerful practice, ultimately influencing the legal decisions and outcomes of cases.

CONTACT: Colleen M. Berryessa berrco@sas.upenn.edu.

Disclosure statement

No potential conflict of interest was reported by the author.

The power of judicial discretion is especially interesting when considering the substantial increase in the number of U.S. judicial opinions in criminal cases citing behavioral genetics evidence over the last decade (Denno, 2011; Farahany, 2016), suggesting that judges are more likely than ever to use their discretionary powers to allow behavioral evidence into court proceedings and to use it in their judicial opinions (Denno, 2011). Behavioral genetics is the scientific study of genetic influences on behavior (DeVries & Nelson, 2007). In court, behavioral genetics evidence most often includes either or both of two types of evidence. First, behavioral genetics evidence may be presented on the family history of an offender, which may be used to establish the inheritance or genetic predisposition to a mental disorder or specific behavior; second, behavioral genetics evidence garnered from direct testing of the defendant's genetic or physiological makeup, such as evidence on gene variants or candidate genes that may contribute to an offender's mental disorder or behavior, may be presented (Denno, 2011). In the large number of these cases in which behavioral genetics evidence has been presented, it has been utilized as a potential mitigating factor for capital sentencing in an attempt to offer evidence and diagnosis of a defendant's mental disorder or condition that has genetic contributions (Denno, 2011; Farahany, 2016; Farahany & Bernert, 2006). For example, a 2011 longitudinal study of the use of behavioral genetics evidence in criminal cases reported that the areas in which behavioral genetics evidence have primarily been used in recent years have been to confirm the presence of a substance abuse disorder, followed by its use to confirm the existence of other unspecified or specified mental disorders of an offender (Denno, 2011). Behavioral genetics evidence seen in substance abuse disorder cases has been used to argue a genetic predisposition to substance abuse problems, either due to a family history of a disorder or the genetic makeup of the offender (Denno, 2011). Thus, to date, the majority of behavioral genetics evidence presented has been on genetic influences to an offender's mental disorder.

Yet, the fact that judges are increasingly using their discretionary powers to allow and consider behavioral genetics evidence in court, especially about genetic influences to mental disorders, does not come without its concerns. Indeed, there has been substantial apprehension that most judges, even if they choose to allow it in court, neither have the background or training to effectively make legal decisions based upon behavioral genetics evidence, nor the ability to distinguish the scientific validity of evidence (Appelbaum, 2005; Rothstein, 1999). Examples of potentially difficult types of behavioral genetics evidence that may be heard by judges could be forensic family genograms, which visually display the genetic relationships between family members and a defendant (Barsky, 2012), or phylogenetic analysis, which estimates the genealogical relationships between genes (Clement, Posada, & Crandall, 2000; Vogel, 1997). Although one would hope that judges would bring in trained experts if they feel they do not have the proper background to make decisions based upon genetic evidence, Denno (2011) writes that some judges feel that they do not require expert testimony on behavioral genetics evidence and that an expert is not necessary to testify about behavioral genetic factors because the judge or the jury should be readily capable of understanding that an offender's predisposition to a mental disorder is due to familial inheritance or other genetic factors without expert help. Even if judges do bring in expert testimony on these issues, there has also been concern that judges may be overly trusting of experts, whether they are credible or not, in both evidentiary hearings and court

proceedings; many fear that some judges may take genetic evidence at face value or overestimate its importance without knowing its scientific soundness, which could potentially lead to some judges making misguided decisions based upon this evidence (Berryessa & Cho, 2013; Dreyfuss & Nelkin, 1992; Rothstein, 1999).

Currently, there is very little literature on how judges perceive or comprehend behavioral genetic evidence concerning mental disorders, both in the U.S. and internationally. There has been far more research on how mock jurors or the U.S. public view this evidence (e.g. Appelbaum & Scurich, 2014; Appelbaum, Scurich, & Raad, 2015; Cheung & Heine, 2015; Scurich & Appelbaum, 2015). Concerning literature on judges specifically, a study in which U.S. state court judges were presented with evidence that an offender was genetically predisposed to psychopathy reported that the presentation of the evidence significantly reduced the severity of the judges' sentences and the extent to which judges considered the offender's disorder as an aggravating factor in sentencing (Aspinwall, Brown, & Tabery, 2012). A recent German study attempting to replicate the findings by Aspinwall et al. (2012) with a sample of German judges showed that genetic evidence had no mitigating effects on sentence severity or the status of psychopathy as an aggravating factor, but did result in judges rating an offender as less legally responsible and more likely to be psychiatrically committed (Fuss, Dressing, & Briken, 2015). Denno (2011) notes that in cases in which potential behavioral genetics evidence was reviewed by judges, judges almost unanimously allowed that genetic evidence to be presented in court, sometimes with evidence coming from non-experts. Beecher-Monas and Garcia-Rill (2006) write that judicial skepticism on behavioral genetics evidence to date has prevented the widespread use and allowance of such evidence in criminal trials.

Behavioral genetics evidence concerning genetic contributions to behavior or mental disorders has to date been largely used at the appellate level (Denno, 2011; Farahany, 2016), but recent U.S. state court opinions have suggested that many judges are amenable to use their judicial discretion to consider arguments and admit evidence concerning genetic contributions to mental disorders or types of behavior in court (Hoffmann & Rothenberg, 2007). This shows that this evidence may soon appear more often in other U.S. courts at the federal and state levels moving forward. Given the power of judicial discretion to influence whether evidence is admitted, how it is considered, and how legal decisions are rendered, understanding how U.S. judges at different court levels may understand and synthesize behavioral genetics evidence in court proceedings, especially since there is only limited literature on how judges perceive this evidence, is imperative as the number of cases involving behavioral genetics evidence continues to increase. Further, as evidence on genetic contributions to mental disorders has been what has been most often admitted and considered in court with regard to behavioral genetics evidence, understanding the views of judges on this type of behavioral genetics evidence specifically is also likely important.

Building upon this framework, this research aims to fill a gap in this literature by undertaking a preliminary analysis to assess the perceptions of judges at the state trial level on the presentation and consideration of behavioral evidence surrounding genetic contributions to mental disorders in court. This study utilizes preliminary data from interviews with 21 U.S. trial court judges from the Superior Court of California. As previous

literature has touched upon judges' perceptions of behavioral genetics evidence on mental disorders having either mitigating or aggravating effects, as well as the importance of expert testimony and judges' trust of experts on these issues, this preliminary inquiry focuses on asking questions that explore these issues, as well as judges' more general attitudes and reactions towards offenders diagnosed with mental disorders that are presented in court to be in some way genetically influenced.

Methods

General procedure

The data described in this analysis were gathered and analyzed in conjunction with a larger project on judges' perceptions of offenders with High-Functioning Autism and other genetic mental disorders, of which the general procedure has been previously documented (Berryessa, 2014a, 2014b), but will be also be briefly described here.

In the current study, 21 U.S. trial court judges from the California Superior Court were interviewed via telephone; these judges volunteered their participation in this research by indicating their willingness to be interviewed when returning a brief mail survey, of which is not reported here, that was sent to a random sample of 500 California Superior Court Judges. There are 1705 California Superior Court Judges (California Courts, 2015), and the mailing addresses of all California Superior Court Judges were gathered from publically available county court websites. Five-hundred judges were randomly selected to be sent a short two-page survey on their perceptions of criminal offenders with High-Functioning Autism and genetic mental disorders as they relate to criminal offending. Surveys were sent via U.S. mail in March 2013. At the end of the survey, judges were asked if they would be willing to participate in a 30-minute interview on general issues touched upon in the survey, and if so, to indicate their willingness on the returned survey by providing either an email address or phone number at which they could be contacted. Participants were informed that participation in the interviews was voluntary and was not contingent upon or related to their answers on the survey. Sixty-one judges returned the survey, and 22 judges designated their willingness to be interviewed.

Using provided contact information, 22 judges were contacted via email or phone between 1 and 4 times in order to schedule the interviews between April 2013 and July 2013. I was able to secure participation of 21 of these judges; one judge could not be reached. A study information sheet was sent to each judge via email prior to the interview that included a description of the project, the risks and benefits of the research, and contact information for the Stanford University Institutional Review Board (IRB). All 21 judges were contacted via telephone at their scheduled interview time, provided verbal informed consent prior to the start of the interview, and provided confirmation that they had read the study information sheet and had no questions. Interviews lasted 25 minutes and judges were not recontacted after their participation. This research was approved by the Stanford IRB.

Participants

Participants in these telephone interviews included 21 U.S. trial court judges from the Superior Court of California. California Superior Court Judges were selected as a sample for this research because they have jurisdiction over all criminal (felony and misdemeanor) and civil cases in the state of California. Over eight million cases are often filed each year in these courts (California Courts, 2015). Therefore, Superior Court Judges handle many different types of cases and defendants. This sample included judges that handle both civil and criminal cases, although specific data on types of cases handled are not reported to ensure anonymity of the judges. The demographics of interviewed judges are found in Table 1. No participants had any previous experiences with genetics evidence in court proceedings. Lack of previous experience with these types of evidence was not an aspect of the selection criteria for this study, but it is not surprising, as interviewed judges are judges at the state trial level and the large majority of this evidence to date has been presented at the appellate level.

Interviews

This study utilized semi-structured telephone interviews. A standard 20-question interview protocol was used for all participants. This protocol consisted of three sections of questions: (1) judges' perceptions of offenders with High-Functioning Autism; (2) judges' perceptions of media portrayals of offenders with High-Functioning Autism; and (3) judges' perceptions of offenders with mental disorders that have known genetic influences and the use of behavioral genetics in the courtroom. This protocol was formulated by the author after a thorough literature review on judges and issues surrounding criminal offenders diagnosed with High-Functioning Autism, as well as literature discussed in this paper's introduction on the use of behavioral genetics evidence as it relates to mental disorders in the legal system. Questions relevant to the data reported in this current analysis, which were all open-ended and included in the third section of the interview protocol, included the following: 'What is your reaction when you hear that a criminal offender has a genetic disorder?', 'How might an offender be affected favorably or adversely, in and out of court, if evidence about the offender's genetic disorder were known?', 'Tell me your thoughts about having an expert testify in court about behavioral genetics/the genetic propensity of a specific condition,' and 'How much do you trust psychiatrists or other clinical/scientific experts to give you completely accurate information on these issues?' It is also worth noting that the term 'genetic disorder' was described to judges as connoting a mental disorder with genetic influences, rather than any other type of genetic disorder.

Qualitative analysis

To analyze the data described in this analysis, the transcribed interviews were imported into and coded using NVivo 13 software. Using a constant comparative method, a qualitative coding scheme was established by an open coding of 10 interviews, followed by an iterative coding process during data collection (see Berryessa, 2014a, 2014b). Constant comparative method (CCM) is a widely used inductive qualitative analytic method which involves iteratively coding qualitative data into themes, then coding categories, as data are collected in order to form conclusions about the data; thus, researchers generate themes as the data are

collected and repeatedly code the data as new themes emerge (Glaser & Strauss, 1965; Jasper, 1994; Maykut & Morehouse, 1994; Morgan, 1993). In order to establish an initial coding scheme, a process called open coding is utilized once a portion of the data have been collected to identify initial themes of the data (Strauss & Corbin, 1990) and the coding scheme is then revised as the remaining data are collected and reviewed. Researchers finalize their coding scheme (usually in the form of a written codebook) when theoretical saturation of data occurs, which means that no additional themes are emerging from the data (Maykut & Morehouse, 1994). For this analysis, data saturation was observed and a formal codebook was created. A single coder coded all 21 interviews using the codebook. Six interviews were randomly selected for co-coding by a second coder to validate the coding scheme; high interrater reliability was confirmed (Cohen $k = 0.89$).

The current analysis focuses judges' perceptions of behavioral genetics evidence. Under this core category, data were coded into the following categories, followed by descriptions of their codebook definitions. The first category was *Initial Reactions* (judges' answers to the question, 'What is your reaction when you hear that a criminal offender has a genetic disorder?'). The second category was *Effects of Behavioral Genetics Evidence*, divided into the subcategories of *Positive* (when asked the question, 'How might an offender be affected favorably or adversely, in and out of court, if evidence about the offender's genetic disorder were known?', judges' mentioned positive effects) and *Negative* (when asked the question, 'How might an offender be affected favorably or adversely, in and out of court, if evidence about the offender's genetic disorder were known?', judges' mentioned negative effects). The final category was *Expert Witness* (judges' answers to the questions, 'Tell me your thoughts about having an expert testify in court about behavioral genetics/the genetic propensity of a specific condition.' and 'How much do you trust psychiatrists or other clinical/scientific experts to give you accurate information on these issues?').

Findings

Initial reactions

When judges were asked what their initial reactions would be if they were told or were presented evidence that an offender has a mental disorder with genetic influences, 16 of the judges' initial reactions fell into three areas. First, eight judges discussed their reactions as ones of curiosity about the genetics of disorder and the evidence's potential influence on the case at hand. For example, one judge stated, 'I would say my reaction is one first of curiosity, like okay, how, if at all, does [the genetics of the disorder] affect the criminal defendant's behavior and ability to conform their behavior to the norms of society' (Interview 4). Five of the judges whose reactions were ones of curiosity also reported their openness to hearing and weighing this evidence without being prompted, with responses such as, '[My reaction] is one where I'd be open minded to hearing more about the impact [of genetics] on the events' (Interview 16).

The second category of reactions from five judges was apprehension on how to properly handle an offender due to the genetic contributions to his mental disorder; a characteristic response in this category included, 'Well [the genetics of the disorder] is one of those features that causes...judges to put on the brakes when that kind of material comes in front

of them, and it would for me' (Interview 18). The third category of reactions from three judges was expressions of compassion for the offender and his family upon learning of the genetic contributions to the offender's disorder. For example, one judge expressed, 'You know, I actually feel sorry for him and his family. I have some compassion. I guess it's my initial reaction. It's not a legal one ... but it's my initial one' (Interview 15).

For judges whose responses did not fit within these categories, two judges plainly stated that they had no reaction at all. Two judges said that it would entirely depend on the disorder, and chose not elaborate on this sentiment. One judge said he personally was much more interested in environmental and social, rather than any genetic, influences on the disorder; this was not because he had any hesitation about the genetics evidence, but because he generally considers environmental and social factors more important.

Effects of behavioral genetics evidence

Judges were then asked about the ways in which an offender may be affected if evidence about the genetic contributions of the offender's mental disorder was presented in court. Five judges stated that they had no opinion on how an offender may be affected. Eleven judges reported that they believed it would be almost exclusively favorable or beneficial for the offender if evidence about the offender's genetic disorder was presented in court, specifically as a potential positive or mitigating effect on sentencing of the offender. One characteristic response on this issue was the following:

I think in the criminal realm, I don't think it has a bad stigma. In fact, I think for me, it works the opposite. It probably gives him a break while I would not be giving a break to someone that does not [have a genetic disorder]. (Interview 12)

However, five judges focused their responses on the negative effects of such evidence. Three judges discussed this evidence having a potential negative or aggravating effect on sentencing; for example, one judge commented that learning about the genetic influences of an offender's mental disorder may show him 'that there's some fairly high propensity for it to repeat itself in the future' (Interview 20), which could have an impact on his sentence for the offender. The two other judges who were less enthusiastic about the presentation of this evidence cited genetic privacy concerns for the offender as a negative effect of this type of evidence being presented in court; one respondent said, 'There could very well be privacy issues that would...outweigh any benefit, that might be gained by presenting [genetic] evidence in a courtroom' (Interview 4), and another judge commented that, 'I worry ... about the person with the [mental disorder with genetic contributions] having their privacy rights completely obliterated because in the courtroom... they might be forced...to share this information about this condition to explain their behavior' (Interview 19).

Expert witness

Overall, all 21 judges reported their potential reliance on and the importance of expert testimony or evidence in cases involving genetic contributions as it relates to mental disorders. These 21 judges stated that, although they would need to evaluate the credibility and credentials of witnesses, they put a significant amount of trust in experts and would need to rely on experts on these issues because 'this is their business' (Interview 14). These

judges also said they would welcome the admittance and presentation of this evidence or testimony on these issues, as they do not feel that they themselves have the appropriate background, knowledge or education on genetics and mental disorders to properly use this evidence on their own when making legal decisions. For example, one judge stated the following regarding genetic evidence:

That would be important information. It would be hard without a lot of foundational testimony for the court to figure out what kind of weight to put on that testimony ... Courts rely on expert witnesses all the time, especially if it's a topic that's really outside common experience, then that just makes the expert testimony even more important. I don't personally have any real direct experience dealing with [genetics of mental disorders]. I just don't have that background knowledge or experience. (Interview 11)

Even though interviewed judges universally reported that they would put significant weight on and trust in expert evidence, six judges did voice some hesitations on the admittance of this kind of expert evidence and concerns on the reliability and trust of experts on these issues, with responses such as this:

So many issues are subject to...valid different interpretations. You kind of have to apply common sense when you're hearing that testimony, hear their credentials, try and discern what their biases are, and how reasonable their testimony is in light of what they're saying and in light of the other evidence that comes out. (Interview 11)

Discussion

Overall, judges reacted in varying ways when asked about being faced with knowledge that an offender has been diagnosed with a mental disorder with genetic influences, with the majority expressing reactions of curiosity, apprehension, and sympathy. Reactions of curiosity regarding this type of behavioral genetics evidence likely show that these judges would be open to evaluate the credibility of this evidence and also potentially open to hear its presentation in court, especially since the majority of judges who expressed reactions of curiosity also reported that they would be willing to hear and weigh behavioral genetics evidence without being prompted. As literature has shown that the effects of judges' emotions can extend and influence legal contexts, including the mitigating effects of a judge's sympathy on sentence length or rendered verdicts (Wistrich, Rachlinski, & Guthrie, 2014), reactions of sympathy may indicate that the emotions of some judges towards offenders diagnosed with mental disorders with genetic influences could be influential and potentially mitigating during an offender's court proceedings. Finally, reactions of apprehension may indicate that judges are uncomfortable with behavioral genetics evidence concerning these offenders; this could potentially be due to the fact that they feel that they do not have the background or training to effectively make legal decisions based upon genetic evidence nor the ability to distinguish the scientific validity of evidence, which would support past concerns (Appelbaum, 2005; Rothstein, 1999). Reactions of apprehension would also support why skepticism by judges on behavioral genetics evidence has to date prevented its widespread use (Beecher-Monas & Garcia-Rill, 2006).

Judges' reactions of curiosity and apprehension both potentially have interesting implications for judicial discretion in allowing this evidence. The willingness of some judges to hear and possibly weigh behavioral genetics evidence in their fact-finding roles shows that some judges would likely allow evidentiary hearings on these types of evidence, potentially based on their curiosity about such evidence. Conversely, some judges' apprehension and potential skepticism of hearing and possibly weighing behavioral genetics evidence may show that some judges would be less likely to allow evidentiary hearings on these types of evidence, potentially based on their initial or inherent discomfort with genetic evidence.

Further, the majority of judges reported that behavioral genetics evidence about the genetic influences of an offender's mental disorder would be almost exclusively beneficial for the offender if it was presented, especially as a potential mitigating factor for sentencing, which aligns with how the manner of this evidence has been used to date (Denno, 2011; Farahany, 2016; Farahany & Bernet, 2006). However, it is interesting that five judges felt that it would almost be exclusively negative, either as an aggravating factor for sentencing or due to the potential privacy concerns. This may show that certain judges could be less likely to allow or admit genetic evidence in their courtrooms because of potential privacy concerns they might perceive.

Judges also universally reported the necessity and importance of experts in cases in which behavioral genetics evidence on genetically influenced mental disorders would be presented. As previous literature has reported that some judges feel they do not require expert testimony on behavioral genetics evidence (Denno, 2011), it was encouraging to see judges universally supportive of hearing from experts, especially since there has been apprehension that most judges do not have the background to alone evaluate the validity and role of behavioral genetics evidence (Appelbaum, 2005; Rothstein, 1999). However, even though judges expressed that they would disallow evidence or testimony from experts if they appeared unqualified, all interviewed judges did note that they put a significant amount of trust in experts on behavioral genetics evidence, with only six expressing any hesitation on trusting these experts. As behavioral genetics is not most judges' area of expertise and since judges reported putting such a significant amount of trust in experts on this evidence, it is possible that some judges could be overly trusting of genetic evidence, either mistakenly allowing in unqualified testimony because they do not know the scientific validity of the evidence or potentially taking evidence from qualified experts at face value or overestimating its importance. This may suggest, consistent with previously voiced concerns, that some judges could potentially misuse genetic evidence in their decision-making (Berryessa & Cho, 2013; Dreyfuss & Nelkin, 1992; Rothstein, 1999).

Relatedly, these findings may be especially interesting when considering how behavioral genetics evidence could be assessed under the Daubert standard, by which a trial judge, acting as a 'gatekeeper' to allow or disallow evidence in court, exercises judicial discretion over expert evidence that goes before the court (McGarity, 2005). The Daubert standard is a set of criteria, established in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993), used by trial judges to assess whether expert evidence or testimony, based on its scientific validity, reliability, methodological soundness, and relevance to assist the trier of fact, should be allowed in court. The judge also considers if the technique, science, and data associated with

the evidence have been empirically tested, peer reviewed, and generally accepted by the scientific community, as well as related standards and potential error rates (Daubert v. Merrell Dow Pharmaceuticals, Inc., 1993). Although Daubert evidentiary hearings to determine whether expert evidence is admissible, a judge is not required to hold a hearing, and can choose to include or exclude expert evidence based on their interpretations of the evidence under the Daubert standard (*Broussard v. Maples*, 2013).

Although the Daubert standard is supposed to help guide judges to consider and weigh difficult and complex evidence and increase the confidence of judges when reviewing scientific expert evidence (Cecil, 2005), related to this analysis, it is unclear whether this standard may actually increase the confidence of many judges when reviewing the evidentiary value of behavioral genetics evidence. The results reported here appear to suggest that at least some judges feel that they might not be able to determine the validity, reliability, methodological soundness, and relevance of behavioral genetics evidence, which is at the heart of the Daubert standard. Indeed, although generally very open to hearing and considering these types of evidence, most judges noted that they feel that they do not have the appropriate background knowledge on genetics or mental disorders to assess or use this evidence in court, and many judges expressed apprehension about this evidence possibly for this reason. This apprehension likely extends to evidentiary hearings as well. Further, due to their lack of background on these issues, judges reported significant reliance on and trust of expert testimony and evidence; in fact, only six judges in total noted any hesitation at all on trusting experts on these issues. As discussed above, due to this level of trust, it is possible that some judges could very well be overly trusting of experts, both in court as well as in evidentiary or Daubert hearings. Further, since Daubert hearings are not required, judges may alone make the decision whether to admit evidence under the Daubert standard based on their own interpretations of the evidence, without a hearing, challenge of opposing counsel, or hearing the evidence explained by an expert in court; based on judges' reporting that they feel that they do not have the appropriate level of knowledge on behavioral genetics evidence to utilize it in legal contexts, it is unlikely that many judges would feel comfortable determining the validity, reliability, methodological soundness, and relevance of behavioral genetics evidence by themselves.

There are a few limitations to this research (see Berryessa, 2014a, 2014b). First, although interrater reliability was confirmed in an attempt to better establish the validity of these findings, there are many known limitations to qualitative methodology, including the use of self-reported data and limited generalizability (for limitations, see Anderson, 2010). One limitation is that interview responses discussed in this analysis were confined to judges who volunteered their time to participate in the research; as previously noted, many judges did not return the brief survey or volunteer their participation in these interviews. Therefore, it is unknown how the demographics or views of judges who declined participation may differ from the 21 who chose to participate. It is impossible to know if the opinions of these judges may differ from the greater population of California Superior Court Judges. Thus, this analysis should be viewed as an insight into the attitudes of some California Superior Court judges, rather than illustrative of the population as a whole. Further, it is possible that since these judges had no previous experiences with behavioral genetics evidence in court, their views may be different than those of judges who have admitted and considered these types

of evidence first-hand. Additionally, these interviews did not probe how genetic evidence may be viewed or weighed in relation to other types of evidence; therefore, it is unknown how these views may relate to other types of evidence. Some demographic characteristics of judges could also not be reported, including the types of cases handled or judges' specific counties, because this may have provided information on participants' identities. Finally, although the sample size was limited due to the difficulty in securing the research sample, the data did reach theoretical saturation and therefore the size of the sample should not influence the validity of these findings.

As the presentation of behavioral genetics evidence on mental disorders in courts continues to increase, the author hopes this analysis, although preliminary in nature, may provide the basis for other literature on judges' perceptions of behavioral genetics evidence. Additionally, these findings should be useful for forensic psychiatrists and psychologists who may be asked to present evidence, serve as expert witnesses, or serve as consultants in legal contexts involving offenders with mental disorders with genetic influences, or be involved in situations in which other psychiatrists or psychologists are presenting such evidence. This data should also be important for lawyers in trials where this type of evidence may be presented. Recognizing the potential reactions of judges towards evidence on offenders with genetic mental disorders may be useful for these practitioners to predict or understand how a judge may perceive behavioral genetics evidence if it is presented, as well as how it may influence sentencing and how open judges may be to the presentation of such evidence.

The largest takeaway, however, should be the fact that judges, who may not have training in these areas and could be unable to recognize the significance or scientific soundness of behavioral genetics evidence, do rely heavily on and put a significant amount of trust in the testimony and synthesis of evidence by experts on these issues. Therefore, forensic psychiatrists or psychologists that may serve as experts in these trials should craft and communicate expert testimony with utmost care and clarity to better ensure that judges and juries fully understand the evidence and are able to make effective legal decisions based upon it. Future research should probe the use of behavioral genetics evidence as it relates to genetic influences to mental disorders with samples of judges at different court levels, probe how genetic evidence may be viewed or weighed in relation to other types of evidence, and also utilize mixed methodologies, resulting in methodological triangulation, that can enhance the credibility of findings on these issues.

Acknowledgments

Funding

This work was supported by the National Institute of Health [grant number P50 HG003389-09] (Center for Integration of Research on Genetics and Ethics).

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Table 1

Judge demographics, n = 21.

Demographic	n/% of interviewed judges
<i>Age</i>	
40–49	1 (4.8%)
50–59	11 (52.4%)
60+ 9	(42.9%)
<i>Gender</i>	
Male	14 (66.7%)
Female	7 (33.3%)
<i>Education</i>	
J.D.	21 (100%)
M.B.A	1 (4.8%)
<i>Time on the bench</i>	
<1 year	2 (9.5%)
1–5 years	4 (19.1%)
6–10 years	7 (33.3%)
11+ years	8 (38.1%)
<i>Cases handled per day</i>	
0–5	5 (23.8%)
6–10	2 (9.5%)
11–15	1 (4.8%)
16+ 13	(61.91%)