



Rethinking Individual and Group Harms in the Age of Genomics and Big Data

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Disclosure

*I have no relevant
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with respect to this educational activity*

Topics for Today

Predictive Genetic Testing for Research on Social Behavioral Disorders

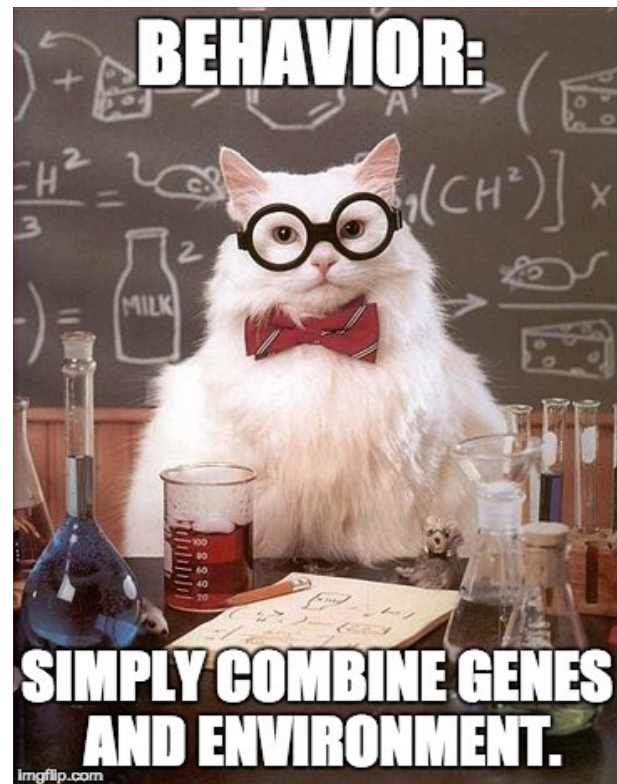
- Ethics of Sharing Genetic Results with Parents

Broad Consent for Identifiable Information/Biospecimens

- Evaluating Individual and Group Rights and Harms

Predictive Genetic Testing: New Solutions to Preventing Old Problems?

- Conduct problems
- Substance use
- Early sexual behavior
- Academic problems
- Emotional problems



Predictive Genetic Testing for Behavioral Problems: The New Frontier

- Longitudinal studies are conducted at schools or after-school programs and often involve asymptomatic children
- **Non-intervention studies:** Relative contribution of genes & environment on development of behavioral problems
- **Intervention studies:** Relative contribution of genes & environment on responsiveness to programs to prevent behavioral problems

Sharing Results of PGT for Behavioral Problems: Ethical Challenges

Studies indicate behavioral problems....

- Derive from multiple genetic and non-genetic factors
- May be the result of 100s of different genes that independently influence the same behaviors
- Genetic effects account for only a small proportion of individual differences (heritability)
- Test results lack individual utility because currently gene-intervention effects are probabilistic

How Are Results Shared?

- **Directly** through individualized feedback to parents
- **Directly** through aggregated feedback to parents
- **Indirectly**, simply through assignment of child to intervention implemented in schools or community-based programs
- **Indirectly** through publication or media dissemination of research results

Risks of Sharing Results: Genetic Determinism

- Asymptomatic children may be treated differently by parents, schools and practitioners
- Negative self-identification
- Misuse of genetic findings for psychiatric diagnosis, criminal justice decisions, educational placement



The “Child’s Right to an Open Future”

- Sharing may violate the child’s right to withhold information from others that may be detrimental to their self-interests
- Parents, school personnel and others have access to private information of which the participant him/herself is unaware
- Results can create an irreversible risk to child’s self-concept, social standing, educational or other opportunities

REMEMBER

In school-based prevention studies the child’s genetic “risk” may be *indirectly* shared simply through study inclusion

Sharing Results: Risk of Shifting Roles

Social-behavioral scientists *are not*
clinicians or genetic counselors

- There is no evidence based guidance for whether or how information should be shared with children
- Difficult to predict how parents will react to results shared
- Parents may have unrealistic expectations regarding the value of such information
- The probabilistic nature of genetic influences → sharing individual results → over or underestimation of risk

Sharing Results: Who Decides?

The science establishment has traditionally determined appropriate human subjects protections

- Societal trends toward transparency, self-determination and parental rights in research, healthcare and consumerism
- As research moves out of the lab/hospital and into schools & communities → less control over indirect dissemination and misconceptions

Informed Consent

“Genetic Literacy”

Are guardians familiar with and can they apply information about the use of genetic data to make appropriate research participation decisions? (Fisher & McCarthy, 2013)

Genetic literacy is necessary for parents to make an informed participation decision whether or not the researcher and IRB have decided the child’s individual genetic information will be shared

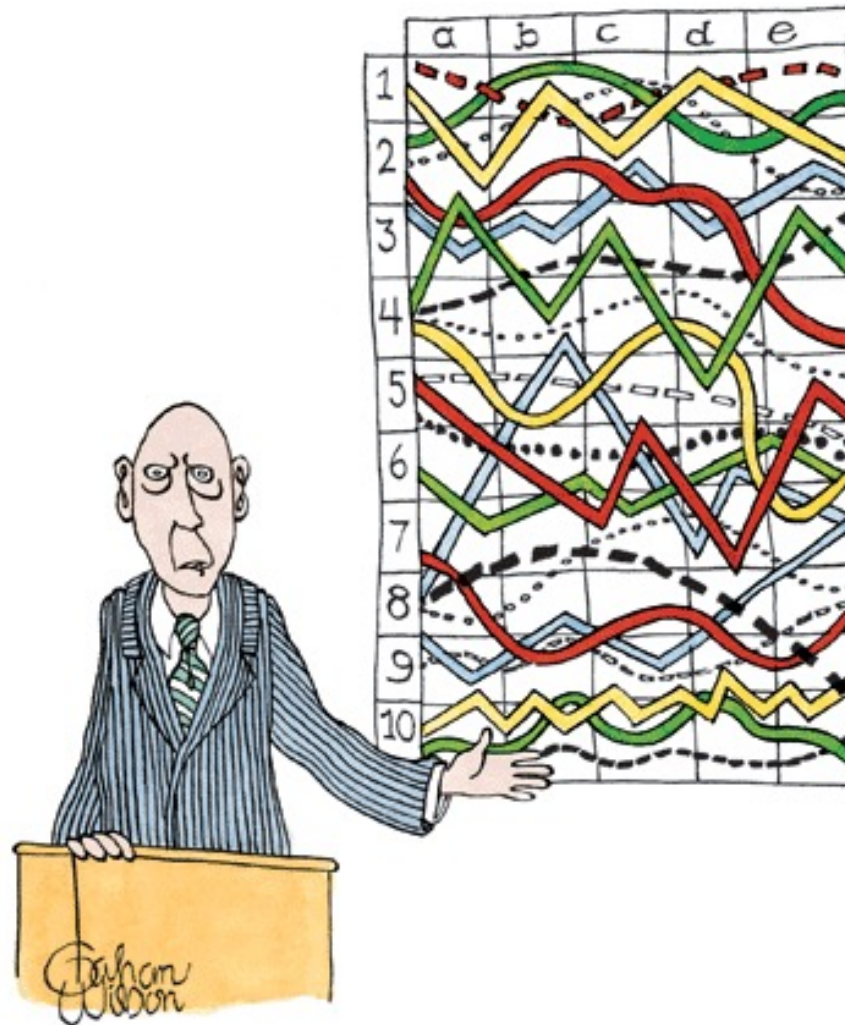
Informed Consent and Genetic Literacy

What Parents Need to Know

- Evidence supporting the role of genetic factors for both predicting risk and intervention responsiveness
- Multifactorial and probabilistic nature of genetic and environmental influences
- Genetic effects account for only a small proportion of individual differences (heritability)
- Lack of predictive ability for individual children

Informed Consent and Genetic Literacy

- How genetic information may qualify or disqualify child from participation---including non-verification of paternity
- Possibility of incidental findings during genetic analysis--and if findings will be shared
- Risks of over- or under-estimation of individualized or aggregated results
- Clarification of researcher's role
- Availability of adequate genetic counseling
- Right not to receive results



"I'll pause for a moment so you can let this information sink in."

Sharing of Results: IRB Questions for Investigators

- Have sufficient efforts been made to ensure genetic literacy during consent?
- Is there evidence that sharing genetic information has predictive utility for individual children?
- If not shared directly, are there adequate protections against indirect sharing of results?
- If information is directly or indirectly shared is debriefing and dissemination adequate to address individual needs or to reduce parental, school, or societal misconceptions?

Majority of PDT Studies on Behavior Problems Involve Ethnic Minority Youth

The NIMH Violence Initiative

- Inner city youth with a genetic predisposition to violence (an older sibling with a criminal record) would receive biomedical psychiatric intervention to prevent future delinquency (Goodwin, 1992)

The “Family School Partnership”

- Youth (80% African American) with a genetic predisposition to aggressive behavior (BDN SNPT cluster) received an early childhood school based intervention to reduce aggressive behavior in early adolescence (Musci et al., 2013)

Justice and Sharing of PGT: What is the Role of IRBs?

New “biologically based” or “population specific” diseases may be created for behaviors resulting from social inequities →

Potential for genetic group stereotyping → segregated group based interventions

- Has investigator included sufficient environmental factors to adequately assess genetic influences?
- Is race, gender, sexual orientation used as biological markers for health disparities in absence of social-environmental-economic factors?
- Are marginalized populations recruited as samples of convenience for studying behavioral disorders?

BIG DATA, BROAD CONSENT AND INDIVIDUAL AND GROUP RIGHTS AND HARMS

Big Data: The New Frontier

Creation of **large aggregated data** sets from a **variety of sources** and research studies.



Statistical patterns and health trends that would not be apparent in smaller data sets



Changes to the Common Rule: New Definitions

§__.102 (5 - 7)

Identifiable Information/Biospecimen

- *Information for which the identity of the subject is or may readily be ascertained by the investigator or associated with the information. §__.102 (e) 5-7*

Human Subject

- Obtains, uses, studies, analyzes or generates identifiable private information or identifiable biospecimens §__.102 (e)1 (ii)

New Requirements for IC Waivers

§__.116 f. 3

- (i) Minimal risk
- (ii) Could not practicably be carried out without waiver
- (iii) If the research involves using identifiable private information or identifiable biospecimens, the research could not practicably be carried out without using such information or biospecimens in an identifiable format.**
- (iv) Will not adversely affect rights and welfare of subjects
- (v) Whenever appropriate, provided with additional pertinent information after participation

Waiver Challenges for IRBs

- How does one assess minimal risk for identifiable information/biospecimens?
- What are criteria for privacy and confidentiality risks for identifiable genomic and other biospecimens?
- §111.7(i) The Secretary of HHS ... will issue guidance to assist IRBs in assessing what provisions are adequate to protect the privacy of subjects and to maintain the confidentiality of data.

Big Data and Broad Consent

Perceived Benefits of Big Data



Inclusion of Identifiable Biospecimens as Human Subjects



Ability of IRBs to waive consent for use of identifiable biospecimens



Broad Consent

What is Broad Consent?

§__.116 (d)

Participants consent to:

- **Future** use of **identifiable** information/biospecimens
- For a range of **specified or unspecified future research**
- Subject to **a few content and/or process restrictions** overseen by an IRB.

Big Data & Broad Consent: The New Ethics Frontier

A prolonged life course of identifiable data use by researchers

- who were not the originator of the data,
- are not regulated by the original IRB,
- who are studying issues that may be far removed from the original research questions and
- who may not be subject to traditional oversight.

Criteria for Broad Consent

Types of Future Research

§__.116 (d)2.

A general description of the

- **Types of future research that may be conducted** with identifiable info/biospecimens
- **Sufficient** such that a **reasonable person** **would expect** the type of future uses

What-If-Whom

§ __.116 d(3)

- **Type of data** that might be used in research,
- Whether **sharing** might occur
- **Types of institutions or researchers** that might conduct research with the IPI/IB;

Time Period

§__.116 d(4)

For how long will the data be

- **Stored and maintained** (which could be indefinite) and
- **Used for research purposes** (which could be indefinite)

Disclosure of Future Use

§ __.116 d(5)

A statement that

- They will not be informed of the details of any future studies using their identifiable I/B
- They might have chosen not to consent to some of those specific research studies

Challenges for IRB Approval of Broad Consent Language

- What is “sufficient” information to make a decision regarding “types” of future research use?
- Who is the “reasonable person” and what type of information “would they expect”?
- What are the types of institutions and researchers permitted to use the data in the future?
- Should investigators be required to convene CAB or provide other evidence that their consent language is sufficiently informative to the “reasonable” participant population?

Challenges for IRB Approval of Broad Consent Language

- How does the language of §__.116 d(5) “**they may have chosen not to consent**” fit with our notions of autonomy and voluntary consent?
- Should the original broad consent include the opportunity for participants to list future uses for which they do not give approval?

Secondary Use of Identifiable Information and Biospecimens Justice and IRB Oversight

Limited IRB Review of Subsequent Research following Broad Consent

§__.111(a)(8).iii.

When broad consent is obtained, subsequently proposed research uses of the data would not require additional consent, waiver or de-identification and may be exempt If....

- Appropriate documentation of consent was obtained
- As long as the proposed use is consistent with the terms of the consent
- As determined by a “limited IRB review”

IRB Challenges for “Limited” Review

How will investigator and IRB access the original broad consent?

Did the original broad consent provide “sufficient” information”?

What are criteria for determining secondary use is “consistent” with broad consent?

How does consistency relate to advances in privacy risks and protections?

Does the study meet the participant’s “reasonable expectations”

- For the purpose of study?
- For qualifications of institution or investigator?

Ethical Justification for Broad Consent

Scientific and social benefits of future big data research should be privileged over the burden of continually requiring consent....but

- Government regulates both big science and ethics oversight.
- **What happens when there is a blending of agendas?**



Assumptions of Science Establishment

- Knowledge gathering is a fundamental good
- The scientific method is objective and should be value free
- Scientists are not responsible for the potential goods and harms of how others may use data in the future



The Scientific Pluralism Fallacy

- Science is not conducted in a socio-political vacuum.
- Science goes where the money is and majority of research \$\$ controlled by the gov't or industry.
- Funding priorities (or their absence) driven by political or economic concerns of the majority
- Priorities may not reflect participant values or may produce policies disadvantageous to marginalized populations

Consent by Others

- Broad consent is consent for governance of the use of one's private information by others.



- This works when the “others” share participants’ values and are knowledgeable about and motivated to protect the participants best interests.
- How can IRBs fulfill that role?

Public Perceptions

- Cancer patients more concerned with the secondary use of their medical data than with the sensitivity of information in their medical records (Grande).
- Patients in Great Britain objected to use of biospecimens for: biological weapons, study human evolution, genetic basis of criminal behavior, sexual orientation(Papoutsis)
- Havasupai nation objections to use samples to study schizophrenia, alcoholism, and inbreeding resulting in closing of biobanks and suspension of research projects

Social Value vs. Social Harms

African American Community Perspectives

Fisher & Wallace (2000)

- *“They know the reason why [there is violence]...ghettos...racism...and prejudices, but...they want to say it’s in their genes...to make a cover story.”*
- *“So they take...an honor student...the kid’s been doing great and then you’ve got that violent gene and we’re going to start treating you for this gene problem when the problem is not there”*
- *“I think we’ve been duped to think that any of the results will be used to improve the African community...because too much has been used against us”*

- To be of benefit an “experiment should be such as to yield fruitful results for the good of society”

Nuremberg Code, 1946, Principle 2

Who Determines the Good?

Broad consent for *future, unspecified* use of identifiable information/biospecimens eliminates participant's ability

- To know how their information is being used to benefit, or put at risk, themselves or others
- Remove their data from future research

WHAT DID I
AGREE TO?



Is there a Pathway to Secondary Use Transparency?

- The broad consent document provide participants with a code to follow future data use?
- The broad consent document (with code) posted on gov't website (e.g. the new clinical trials consent requirement)?
- Approved secondary analysis must post a brief study description and original data set code on institutional or federal website
- Participants can track the secondary use of original data set



The Social/Scientific Value Paradox

§__.111 Criteria for IRB approval of Research a. (2)

Risks to subjects are reasonable in relation to anticipated benefits, if any, to subjects, and the importance of the knowledge that may reasonably be expected to result....

The IRB should **not consider possible long range effects** of applying knowledge gained in the research (e.g., the possible effects of the research on public policy)

IRB Challenges: Individual Future Harms

Absence of criteria for who can use secondary
identifiable data



New collaborators may not be competent or
trustworthy



Privacy intrusions



Individual harms

Dove & Ozdemir (2015)

IRB Challenges: Future Group Harms

- Aggregation of big data and interconnectedness can increase statistical significance



false positive and negatives



Over-estimation of biological Influences on health



Group Harms

IRB Challenges: Criteria for Limited Review?

- Access to and careful evaluation of the original broad consent?
- The qualifications of secondary data users?
- The scientific and social benefit of the proposed secondary use..... *especially when the original broad consent was vague or unspecified?*
- Potential for individual privacy violations?
- Potential for group harm?

Limited Review and Social Justice

Who is Morally Responsible?

- Funding for health and social-behavioral research often driven by economic and political concerns of the majority
- These may have little to do with or are antithetical to the concerns and social circumstances of participant groups
- Subject representation within the aggregated data set equitable, or based on convenience or social bias?
- New “biologically based” or “population specific” diseases may be created for behaviors resulting from social inequities
- Potential for biological stereotyping → Group stigmatization → lack of or segregated group based interventions

- To be of benefit an “experiment should be such as to yield fruitful results for the good of society”

Nuremberg Code, 1946, Principle 2

If it can be approved, should it?

"The key is Dr. Fisher, that when you...talk to your counterparts...ask yourselves what will others do with this research?"

No matter what role that you have played to make this happen, you could have the purist intention, but if it gets into the wrong hands then it becomes a weapon"

Thank You

