Behavior genetics and the prospect of “personalized social policy”

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Abstract

I develop “personalized social policy” as a speculative exercise to examine the possibility that policy makers and service providers, making decisions under conditions of uncertainty, could use genetic information to divide clients into “treatment groups” receiving differential service goods to better meet individual needs or achieve efficiency. Using real and hypothetical examples from genetics and social services, I show how personalized social policy might work and discuss its implications for the practical organization and theoretical justification of social policy. The analysis suggests that behavior genetics could dramatically impact social policy, not by sowing fatalism about change, but by offering specific, practical tools that would reorganize the institutional and professional composition of social services delivery and bolster functionalist rationales for social welfare. Policy analysts should focus on specific ways genetic information might affect policy decisions to prepare proactive responses should the prospect of personalized social policy become a reality.

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Introduction: moving beyond genetic fatalism

What are the social policy implications of behavior genetics?

When behavior geneticists discuss the implications of their research, they often interpret the findings of genetic influences on behavioral or intellectual traits as limiting their mutability, constraining the kinds of interventions that might be effective, or indicating that effective change will demand substantial, perhaps unreasonable, efforts. Jensen (1969) launched years of controversy by arguing that educational policy aiming to close the IQ and school achievement gap between black and white students is doomed to fail because these gaps are largely fixed genetically. Herrnstein (1973) argued that the high heritability of IQ indicates that inequalities in American society (among whites at least) are largely due to genetic differences in individual intellectual capacities, and thus social policies to reduce inequality would serve to disrupt what is largely a meritocratic society. Scarr (1992) claimed that behavior genetics demonstrated that the majority of schools are “good enough” to enable kids to reach their full “genetic potential” in intelligence. David Rowe argued that genes limit the impact parents can have on their children’s personality and behavior, therefore, “changes in parenting style may make only a small dent in the sum total of our social problems. . . . If environmental interventions are to succeed, they must be truly novels ones, representing kinds of treatments that will be new to most populations” (1994, p. 223). Lykken and Csikszentmihalyi (2001) have described people’s happiness as having genetically established “set points” that limit the range of their feeling.

As many commentators have argued, explaining social problems in terms of individuals’ flawed genetic endowments rather than social environments, and interpreting heritable traits as resistant to change, encourages policy
retrenchment and the abandonment of collective senses of social responsibility (e.g., Alper & Beckwith, 1994; Kaplan, 2000). “Genetic fatalism” is the wedding of these quasi-deterministic interpretations of behavior genetics to arguments about the futility of policy interventions for attacking social problems. The fatalistic interpretation of behavior genetics has led many to interpret the science as supporting conservative policy positions (Fukuyama, 2002; Lewontin, 1992; Nelkin and Lindee, 1995; Seligman, 1994). Harwood (1979) traced the rise of behavior genetics in the 1960s and 1970s to the demand among policy makers for justifications of the failure of Great Society social programs and arguments for heading off their expansion. Nelkin (1999) has shown that political conservatives in the 1980s and 1990s used behavior genetic claims to argue for the dismantling of the welfare state. Behavior genetics provides ample resources for the discourses of futility, perversity, and jeopardy that Hirschman (1991) has labeled the “rhetoric of reaction.”

But this dominant interpretation misses a countervailing trend which is the notion that behavior genetics can help policy makers and service providers design more effective interventions. Behavior geneticist Nick Martin has suggested that “teachers could be designing classes for individual children based on their genetic makeup” (Aldhous, 1992, p. 164). Rutter (2006), an eminent psychiatric geneticist, has argued that genetic, psychosocial, and environmental research will combine to reveal the etiology of mental disorders and other behaviors, and this information will expand the range of possibilities for ameliorating related social problems. In my research I have interviewed dozens of behavior geneticists, and barely heard them express the genetic fatalism with which their work is often associated. If anything, the reverse is true—one quipped that even researchers studying mouse aggression cite reducing domestic violence and ending war as motivations for their work. The issue of policy fatalism dominates much of the public debate about behavior genetics, but it does not exhaust the way scientists think about their work nor the possible ways it is likely to affect social policy.

This paper interrogates some of the policy implications of this optimistic, interventionist brand of behavior genetics. The tack I take is to build an analogy from the idea of “personalized medicine” to propose that behavior genetics might enable “personalized social policy” to become a possibility. Personalized medicine is the idea that doctors will soon use genetic information to divide patients into treatment groups in order to identify pharmaceuticals and therapies most likely to be beneficial with the fewest side effects. Personalized social policy would use behavior genetic studies of how individuals with different genotypes respond to targeted sets of environmental conditions to enable policy makers and social service providers to craft differential interventions most likely to be effective for particular sets of people in particular circumstances.

To frame behavior genetics’ implications this way is to suggest that social policy and service provisioning are beset by “information problems” that behavior genetics research could help solve. Doctors have long known that patient responses to treatments are heterogeneous, but they typically begin with a standard treatment regime because they have no way of knowing how the patient in front of them will respond. The dream of personalized medicine is that genetic information will fill this information gap. Similar situations can arise in the realm of social policy. For example, many policies give individuals the same interventions but produce different outcomes. Sometimes equal treatment is a matter of right, but this justification might conceal the fact that, as in the medicine example, we simply have no knowledge of whether differential treatment might be more effective. When policies should treat people uniformly and when differentially (and on what basis different treatment should rest) is a complicated matter. Only sometimes will the decision turn on information, and only sometimes will the relevant information concern differences in the ways individuals respond to particular environments. But in these instances, behavior genetics could help fill the information gap, and the result would be personalized social policy.

Briefly, what do I mean by “social policy”? Social policy scholars typically understand the term as “efforts of states to address economic insecurity and inequality due to risks to regular income” (Amenta, Bonastia, & Caren, 2001, p. 213), for example social security or old-age pensions, unemployment compensation, minimum income guarantees and the like. These are not the forms of social policy I am considering. Rather the state programs that help produce a healthy and productive population, such as education and health care, and the “means tested social assistance and social service programs” which scholars often see as having a “secondary role” (ibid, p. 215) are the ones that concern me most here. From another perspective, the notion of personalized social policy is relevant to policy settings where information about an individual’s capacities or needs is useful in deciding whether to provide them services and which services to give them.

I explore the idea of personalized social policy in a three part argument. After a brief epistemological critique of behavior genetics, I describe the concept of personalized medicine to build the analogy to the policy realm. Just as doctors hope to use genetic information to divide patients into treatment groups, social workers, educators, and other
service providers might use genetic information to divide their clients into groups receiving different interventions or
to “triage” the provision of scarce resources. To flesh out how personalized social policy might work, I use a
combination of actual and hypothetical examples of genetics research and social policies to show how behavior
genetics could fill information gaps in policy and service provisioning.

The next two parts of the argument consider practical and theoretical implications of personalized social policy.
Regarding practice, whatever improvements to service delivery genetics might yield, they would also involve the
professional and institutional reorganization of service provision. Doctors, scientists, medical institutions, and
laboratories would become important in an area previously dominated by social workers, lawyers, bureaucrats, and
government and non-profit agencies. Biotech companies would see profit potential in developing tests and perhaps
treatments. These changes in the distribution of expertise, incentives, and power could dramatically affect both the
conduct of service delivery and the prospects for governing it democratically.

Personalized social policy also has implications for the theoretical justification of social policy in welfare states. At
the most abstract level we justify social policy with a combination of (1) solidaristic appeals to citizenship and rights
and (2) functionalist appeals to social efficiency. I argue that personalized social policy serves to strengthen the latter
and undermine the former by reframing issues of rights into problems of information, encouraging differential
treatment, and opening up socially divisive questions about which needs are worth satisfying. Previous authors have
argued that genetic fatalism undermines collective commitment to the welfare state by suggesting social policy is futile
(e.g., Alper & Beckwith, 1994; Nelkin, 1999). But I argue that, ironically, it is precisely through claims to effectiveness
that behavior genetics can undermine the solidaristic basis for such a collective commitment.

Personalized social policy does not yet exist, but converging trajectories in genetics research and social policy
practice could produce it. This paper is thus meant to be an exercise in “speculative non-fiction” as I trace the logical
continuation of those trajectories past their current states. “Social policy” is, by definition, targeted at populations, so
the notion of “personalized social policy”—using genetic information to “individualize” policy interventions—is
oxymoronic. This oxymoron is intentional; it is meant ironically to provoke us to consider how a reconfiguration of
policy that aims to resolve contradictions between individual and social needs in public provisioning by “shifting
level” from populations toward individuals would generate new contradictions at multiple levels through practical,
institutional, and ideological transformations.

I want to be clear that I am not advocating that behavior genetics should have a role in policy making or
implementation. Nor am I analyzing its feasibility or effectiveness. Rather, by imagining the practical logic by which
 genetics could be brought to social policy and then tracing the potential far-reaching implications, I intend to encourage
policy makers and others to think seriously and proactively about how genetics can and should be used. Personalized
social policy would involve modest, targeted interventions motivated by finding pragmatic improvements to specific
problems, not reengineering human nature, developing miracle pills, or reviving quasi-eugenic social classifications. To
the extent that our debates about and critiques of genetics in social policy are animated by such dramatic hopes and fears,
we are likely to miss much more imminent possibilities. Behavior genetics is not yet used to make policy decisions, and if
left to politicians and policy makers it might never be. But as I argue in the conclusion of this paper, a set of technological
developments and interested actors could force the question in the near future.

But is it true?

It is worth pausing to note that most critics believe behavior genetics’ policy implications to be few because of flaws
in the execution and interpretation of the research. These critiques are many, varied, and deep, but the crucial ones
maintain that behavior genetics delivers no solid information about the mutability of traits and thus whether policies
will succeed or fail (e.g., Alper & Beckwith, 1994; Balaban, 2001; De Jong, 2000; Gottlieb, 1995; Joseph, 2003;
Lewontin, 1974; Moore, 2001; Rose, 1995). As Kaplan (2000) has shown, any behavior genetics claim about
mutability depends on detailed information about how different genotypes respond to different environments. Kaplan
argues that it is essentially impossible to design studies of humans adequate to evaluate their behavioral mutability
because it is unethical and unfeasible to randomly assign human subjects to different environments. Behavioral
geneticists’ workarounds for this problem, whether they are statistical analyses of the genetic and environmental
contributions to population variance or molecular genetic studies linking particular genes to behavioral differences,
ever deliver adequate information about how the range genotypes interact along the range of relevant environments,
nor information about the distributions of individuals into these ranges. Thus, one must make a large number of
unrealistic assumptions about unmeasured factors to claim knowledge of a trait’s mutability. Behavior geneticists know they are making a lot of assumptions, which is why they generally qualify any claims about a trait’s mutability, however Kaplan argues that even these qualifications imply far more certainty than is warranted. Kaplan’s takeaway lesson is that behavior geneticists should be more pessimistic about their efforts to measure mutability than should policy makers be about trying to change society.

I certainly find the arguments of Kaplan and other critics compelling, and I believe they severely limit any efforts to implement behavior genetics in a policy context—either for purposes of retrenchment or change. Any implementation efforts should come to terms with critiques like these. However, for the purposes of this paper I want to bracket the scientific critique of behavior genetics. One reason is that thinking and discussion often stops at this point, and other arguments, such as the one I offer below, are left unexplored. The other reason is that people are likely to try to bring behavior genetics to policy whether or not it is warranted from a scientific or technical point of view. And, after all, critics like Kaplan, even if they are right, may not win the debate about scientific warrant.

“Personalized medicine”

To make the case about the direction these ideas may be leading, we need to take a detour into the emerging field of “personalized medicine.” Personalized medicine has been called,

a paradigm shift from the mindset of ‘one-drug-fits-all’ to ‘the right drug for the right patient at the right dose and time.’ This does not mean that each patient will be treated differently from every other patient, an economically untenable proposition. Rather, patients are divided into groups by genetic and other markers that predict disease progression and treatment outcome.

(Sadée & Dai, 2005, p. R207)

The idea is that medicine currently divides patients into crude and inaccurate categories for treatment purposes, and that by using additional sources of information, especially genetic information, diagnoses and treatments, particularly pharmaceuticals, can be made more beneficial for the individual.

The driving impulse behind personalized medicine is the realization that individual patients often respond very differently to pharmaceutical drugs. For many drugs, only 30–70% have a favorable response, and numerous individuals experience adverse reactions (ibid, 2005). In the rapidly growing field of pharmacogenetics, researchers have identified dozens of genetic variations that can affect an individual’s drug responses (ibid). The hope is that doctors will be able to use genetic information to select the most appropriate drugs and also that pharmaceutical companies will be able to design drugs tailored to particular genotypes.

In principle, personalized medicine can go well beyond genetics and pharmaceuticals. Many non-genetic factors—age, weight, sex, nutrition, and medical conditions, for example—affect drug response, disease prognosis, and treatment strategies. And genetic information can be used for diagnosis and non-drug treatments. But as sociologist Adam Hedgecoe has noted, most public and scientific discussions treat pharmacogenetics and personalized medicine as equivalent, but use the latter term “because... it obscures the connection to possibly worrisome issues raised by the word genetics, and serves as a jargon-free way of enlisting the interest of those without a scientific or medical background” (2004, p.16).

As suggested in the quote above, “personalized” means sorting people into smaller, more accurate treatment groups, not true individualization. Hedgecoe has noted that in this context personalization “is more a case of buying a small, medium or large T-shirt from The Gap than being fitted for a Savile Row suit” (ibid, p.5). The term “personalized” is thus somewhat misleading, but serves an important ideological, or at least marketing, function in a society where companies constantly promote mass-produced objects as authentic expressions of consumers’ individuality and uniqueness.

As Hedgecoe has shown, though personalized medicine is currently limited as a practical reality, it has great power as a symbol of the future. It has become a rallying point for a diverse array of researchers and research organizations, pharmaceutical and diagnostic companies, patient advocates, and policy makers.¹ Prima facie the support of at least

¹ Hedgecoe (2004). See, for example, the membership roster of the Personalized Medicine Coalition (http://www.personalizedmedicinecoalition.org/about/pmc_members.php).
some of these actors is surprising since personalized medicine is premised on the limited effectiveness of drugs and the fragmenting of patient groups. The threat to pharmaceutical companies’ markets could greatly outweigh the potential upside in new drug development.

This bandwagon effect should also be seen through the lens of public health. Many population health analysts have argued that while access to high-quality medical care is the focus of (US) health policy, it is a relatively limited determinant of a society’s overall health (Lantz, Lichtenstein, & Pollack, 2007). Far more important are economic and social factors like poverty, stable employment, and intact communities which suggests that an effective health policy might direct resources toward these ends. But these are problems that, unlike the health care system, lack powerful well-organized advocates.

The drive for personalized medicine points in precisely the opposite direction. It leverages every person’s desire to receive “the best care possible” and the idea that genes are uniquely powerful, to promote a vision of a solution to population health problems that is high-tech, expensive, and fundamentally individualizing. It directs more resources to styles of research, and eventually treatments, where the distribution of benefits is inherently targeted to subsets of the population. None of this is to say that personalized medicine is a bad idea. Indeed, it may deliver on the high expectations. But it must be contextualized in terms of the hopes and frustrations that animate it, the interests that drive it, the ambiguities that represent its current manifestation, and the different policy visions that it embodies and obscures.

From recent behavior genetics to “personalized social policy”

Now we are in a position to see how behavior genetics might usher in a future of “personalized social policy.” Just as personalized medicine is about using genetic information to evaluate and treat patients more effectively, personalized social policy would at heart involve social workers and other social services providers using genetic information to evaluate their clients’ needs more precisely for more effective and efficient service delivery. As in the medical example, personalized social policy would use behavior genetics studies to generate “treatment groups” and then use genetic diagnoses and personal histories to assign individuals into those groups for the purposes of provisioning or policy enactment. The thrust would be to shift social provisioning from the population toward the individual level, as more information is used to further divide treatment groups. But as with personalized medicine, many factors complicate the advent of truly individual customization.

For the moment we’re talking about “social policy” not in terms of policy making, but rather social provisioning or services delivery. In principle this could include a vast and heterogeneous array of practices and institutions, but some clear examples might be education, the rehabilitative portion of criminal justice, addiction treatment programs, job training and employment services, mental health counseling, foster care for abused or neglected children, vehicle licensing, and so forth. Genetic information might be used, for example, to discern which schoolchildren could use extra training in reading and which kids should be in different types of reading programs. It might help differentiate among convicts who have trouble with “impulse control” and those who are overly “aggressive” so that they might be sent to the appropriate program (which might be based wholly on different cognitive behavioral therapies) to diminish chances of recidivism upon release. It is imaginable that genetic information might even link people to jobs they would find more satisfying.2

Before considering a specific example in some depth, it is important to bracket a number of concerns. First, let us disregard the technical critiques of behavior genetics and the compelling doubts that such research could ever be robust

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2 The degree of individual genotypic and environmental information is a crucial difference between personalized social policy and earlier proposals to use genetics in policy design. For example, Jensen (1969) argued that genes determined whether children learn better through associative or conceptual teaching and that effective educational policy would implement radically different pedagogies for these two groups. But his claims were based on interpretations of population based measures of genetic variance and lacked any grounding in information about individuals’ genotypes. Jensen believed that learning styles were stratified by race and class, so these attributes would have been used to divide children into the two “treatment groups” in the implementation of his proposal (thanks to an anonymous reviewer for pointing this out). By avoiding race, class, sex, or other such “proxies” for purported genetic difference, personalized social policy avoids the obvious discriminatory problems here. However, the fact that various social groupings (e.g., ethno-racial groups, immigrants) may have different distributions of genes means that an ostensibly “group-blind,” individual based, genotype-using policy could unwittingly discriminate by group. The paper does not pursue this important issue further.
enough to deliver these tools (e.g., Kaplan, 2000). Suspend as well epistemological or ontological doubts that matters of social provisioning turn in some important way on individual bio-behavioral traits or that genetic information would be the best way to get at them. We should also put aside the problems of discrimination (for example, the temptation to test for aggression or impulse control problems before crimes occur) or privacy (that genetics yield information about families, not just the individual of concern). From this perspective, genetic information as simply a more powerful tool in the array of diagnostics that institutions routinely use to improve service delivery. To be clear, I see engaging such concerns (among others) as crucial to any effort to push genetics further into social policy, but others have discussed them at length and I want to explore a different path.

To exemplify what “personalized social policy” might look like, I will draw from a celebrated study by a research team led by Avshalom Caspi and Terrie Moffitt of how a genetic difference mediates whether a maltreated child is likely to engage in violent or anti-social behavior. The researchers genotyped a sample of boys from New Zealand for high and low-activity variants of the monoamine oxidase A (MAOA) gene that affects the metabolism of neurotransmitters. They found no significant effect of MAOA activity on their measure of the boys’ anti-social behavior by itself. In other words, they did not find a “gene for” anti-social behavior. However, when they included the subjects’ histories of maltreatment (i.e., child abuse or neglect), they found, “the association between maltreatment and anti-social behavior is conditional, depending on the child’s MAOA genotype” (Caspi et al., 2002, p. 853). For boys with the low-activity MAOA genotype, the effect of maltreatment was far more pronounced in two ways: First, regardless of genotype, severely maltreated boys scored higher for anti-social behavior than less maltreated boys, but the difference was greater in the low-activity MAOA genotype group than the high-activity group. Second, among severely maltreated boys, those with the low-activity MAOA genotype were more anti-social than those with the high-activity genotype. In other words, the low-activity MAOA genotype intensified the effects of maltreatment among maltreated boys and among low-activity boys experiencing different levels of maltreatment. Caspi and Moffett’s research offers an answer to an old puzzle in behavioral science: everyone knows that maltreated kids are liable to anti-social, violent, or criminal behavior; but why do some maltreated kids avoid going down this path? This research suggests that genes are one factor affecting how (that is, among whom) the “cycle of violence” gets perpetuated.

Bracketing the caveats and assuming these findings are ready for real-world application, how might this research inform “personalized social policy”? Caspi and Moffett believe “these findings could inform the development of future pharmacological treatments” (ibid, p. 853), but they might find much more immediate application in the delivery of social services.

Take foster care, for example. Foster care is the system of temporary, household-based guardianship that the state uses to care for children whose parents it has judged to be unfit (usually because they are considered abusive, neglectful, or accused of certain crimes). A foster care administrator might find the MAOA finding useful in a number of different ways. The initial decision to remove a child from her parents involves complex judgments about often murky information that is subject to bias. Child welfare workers in Los Angeles County use a computer program called structured decision making (SDM) to guide these decisions (Therolf, 2009). They input their observations, others’ allegations, and contextual information about suspected cases of abuse and neglect, and the program uses actuarial data to predict the chances of harm to children. A child’s genotype might not help predict the chances she will experience abuse or neglect, but it could help predict the outcome of such experiences—say, the chances of developing anti-social behaviors.\(^3\) The SDM algorithm could set the intervention threshold lower for children with the low-activity MAOA genotype putting them at risk for developing anti-social tendencies when exposed to maltreatment. The genotype data could lead to more accurate predictions of certain kinds of harm, and they have the advantage of being more objective than many other types of information in the model. This would be advantageous since users of the SDM program see it as limited by the quality of information social workers put into it (ibid).

Let me move beyond the Los Angeles example to speculate about the uses genetic information once a child was taken into the foster care system. Certainly, any administrator’s goal would be to immediately give every child a safe,\(^3\) Other outcomes could be included as well. Another Caspi and Moffett study (Caspi et al., 2003) with a similar logic shows how the 5-HTT serotonin transporter genotype mediates the chance that stressful life events (including abuse) will lead to depression. Behavior Geneticists have also studied the ways that genes may influence the environments to which individuals expose themselves (Scarr and McCartney, 1983). Thus it might be possible to use an individual’s genotypic information to predict their greater chances for experiencing abuse (not just the impacts of that abuse once experienced). This scenario is less likely in child abuse cases than, for example, in helping understand why some women return to domestic abusers.
supportive foster home with high-quality oversight and to transition them quickly to stable, high-quality guardianship (back with the natural parents, relatives, or an adopting family). However, foster care systems perennially face conditions of scarcity, such as insufficient numbers of high-quality foster families and inadequate staffing for family oversight. To confront this problem, our beleaguered administrator might again use the MAOA genotype data. Along the lines of “personalized medicine,” this information could be used to divide kids into “treatment groups.” One use of these treatment groups might be triage. Kids with the high-risk genotype might be put into “higher quality” (i.e., safer and more supportive) foster homes, or be placed higher on a priority list for transfer from a group home (where they might face abuse from other residents) to a foster home. Overstretched case-workers typically strain to make the required number of oversight visits to children and foster homes. Agencies might decide that those in the low-risk group need less frequent visits than their high-risk peers. The genetic information might also be used to set different standards for when kids are removed from or restored to their families. Or when kids are restored to their parents after foster care, resources might be allocated differentially—for example, parents of kids with high genetic risk might receive extra parenting training and counseling support.

Philosopher James Tabery (2009) has argued that the Caspi and Moffett reports an “interactive predisposition” that undermines its utility as a policy instrument. That is, the study actually shows that low-activity MAOA boys in an abusive environment are more likely to develop anti-social tendencies, while in a non-abusive environment, high-activity MAOA boys are slightly more likely to develop these problems. This produces what Tabery calls the “interventionist’s dilemma”: if we use a genetic test to identify low-activity MAOA boys and give them all an MAOA supplement (for example) hoping to head off anti-social disorder should they experience abuse, then we will actually raise rates of disorder in the group since most boys do not, in fact, experience abuse. If, however, we wait until after abuse has occurred to give them the treatment, then it might be too late to prevent the damage. Tabery argues that the interventionist’s dilemma hinders the two parties most likely to try to use studies reporting interactive predispositions like Caspi and Moffett’s: parents hoping to select embryos or fetuses and states hoping to screen populations for prediction and intervention. The interventionist’s dilemma arises in part because Tabery’s would-be “policy makers” (parents or states) are deploying the genetic information uniformly in the population (or potential population in the case of the unborn) without crucial environmental information. But the personalized social policy interventions I have been discussing skirt the interventionist’s dilemma because they deploy genetic information only in contexts and at moments where there’s greater traction on the relevant environmental information.

Even if it avoids the self-defeating unintended consequences that Tabery points out, the example I have been building has a perverse quality that we should find troubling—the implication is that it might be “okay” to let some kids experience maltreatment, or that some cases of maltreatment are more important to confront than others. Indeed, Stone (2003) has outlined criteria for the inclusion of genetic data like the Caspi and Moffett study into child protection services with the explicit aim of avoiding such perverse and unjust outcomes. But the problem with such normative arguments is they tend to ignore the far-from-ideal conditions under which service provisioning actually occurs. We should hope that nobody would ever design a foster care system intending to implement the short-cuts and tradeoffs discussed above as legitimate tools or goals of policy. However, the fact is that systems devoted to the protection of children are chronically under-resourced, and such perverse calculations are made every day. From the point of view of child welfare, it would be far preferable to provide sufficient resources to stop preventable violence, but, lacking these, child welfare workers must do the best they can. Genetic information might help rationalize the short-cuts and make them slightly more just—for example, genotype-based triage might be less capricious than a first-come-first-served priority list. But such improvements vis-à-vis the status quo come at a cost. One of the consequences of using this information is a subtle shift in the meaning of the goal of a social policy like foster care from a tool to meet a minimum standard for kids’ lives to a tool for achieving other ends like lessening the impact of maltreatment on negative outcomes (i.e., a victim becoming an abuser). I return to this issue below.

But it is worth noting that “personalized social policy” need not always have this perverse quality. Genetic information need not be limited to allocating scarce, universally desirable resources. It might enable providers to match a variety of high-quality services to those who would most benefit from them. For example, maybe maltreated kids with certain genotypes would respond better to intensive cognitive behavioral therapy and others would respond

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4 Caspi et al. (2003) downplay the higher anti-social scores for high-activity MAOA boys in the non-abusive environment because the difference was not statistically significant.
better to intensive psychotherapeutic counseling. Here the matter would not be cost-cutting or triage, but optimal matching. In other words, service providers might be able to use genetics to reach Pareto optima when certain kinds of information gaps are a barrier. These examples are but a sliver of what’s imaginable, especially with a consideration of the details of a broader range of social policies and a broader range of behavior genetic studies. But the broader point is that “personalized social policy”—using genetic information to assign individuals to effective treatment groups—is different than the “genetic fatalism” or “policy retrenchment” that critics have accused behavior genetics of in the policy realm. This is not to say personalized social policy is free of problems, to which I now turn.

Medicalization and geneticization of social policy

Analysts of contemporary genetics have described the process of “geneticization” which occurs when “differences between individuals are reduced to their DNA codes, with most disorders, behaviours, and physiological variations defined, at least in part, as genetic in origin” (Lippman, 1991, p. 19). The issue is how genetics alters the way society understands and confronts social problems. Many geneticization analysts worry that behaviors that are situationally embedded and culturally variable (like sexuality and criminality) will become reified and naturalized. They fear that “genetic” connotes immutability and will lead to fatalism about confronting social problems. And they are concerned that blame for problems and responsibility for addressing them will be shifted from social institutions to individuals. These are largely the terms in which critics have criticized the social implications of behavior genetics as I explained earlier—the concept of geneticization has developed in intimate relationship with the critique of behavior genetics. As I will argue here, the focus on cultural meanings—blame and responsibility, identity and stigma—misses the deeper stakes of geneticization of policy-relevant behaviors which concern the institutional transformation and restructuring of interests and authority in social services settings.

From one perspective personalized social policy would clearly count as geneticization since it involves the input of genetic information into new policy realms in ways that cannot help but redefine behaviors and problems in genetic terms. But from another perspective, the notion of geneticization misses the point of personalized social policy as I’m developing it. In the examples above, the issue is a pragmatic addition of information to benefit decision making and improve service delivery. Definitions of the situation are decidedly secondary. Here the genetic etiology of children’s resistance to maltreatment is only relevant insofar as service providers can reliably act on it in a limited context. The deep essence or ontology of the trait, and the tendencies toward reification, determinism, blame shifting, and especially fatalism are tangential to the matter at hand.

Geneticization is a special case of medicalization, “the processes by which aspects of life previously outside the jurisdiction of medicine come to be construed as medical problems” (Clarke, Shim, Mamo, Fosket, & Fishman, 2003, p. 161). Like geneticization, for most analysts “the key to medicalization is definition” (Conrad, 2008, p. 5). But an important part of medicalization that many accounts of geneticization miss is attention to the expansion of medical jurisdiction and reorganization of institutions devoted to solving such problems.

One dimension of this concerns the proliferation of a medical style of thought and practice. Medicalization involves training people’s attention on a set of variations that may or may not have been conceived as a thing unto itself. Identifying a condition as such and conceptualizing it in terms of normalcy and pathology engenders a set of practices: diagnosing, testing, and treating. This style of thought extends beyond medical professionals, and a wide array of actors begin to think and act in its terms. The existence of a medicalized category encourages people to use it—teachers can now interpret the fidgety, difficult-to-focus kids as potential ADHD cases, encourage parents to have the kids tested, and exert pressure for the kids to be treated. While conditions are occasionally “demedicalized” (homosexuality is an example), the historical trend has been for more and more things to become medicalized and for non-medical actors to drive the process—often bureaucrats seeking efficient means of social control or disease advocacy movements who want the positive impact of medical attention (Conrad, 2008).

Let us think about personalized social policy in these terms. For one, personalized social policy, once introduced, would probably have an expanding and self-justifying quality. There are a huge number of policy-relevant services, situations, and practices that could be improved (or where people believe they could be improved) by more information about individual participants. Schools and mental health provisioning are obvious. I developed the less-intuitive foster care example above. But think also about licensing for dangerous jobs or even for driving cars. Here again, I am not talking about the dismantling of institutions (e.g., if intelligence is genetically determined we do not need money for schools) or wholesale discrimination (e.g., barring those with certain genotypes from piloting
airplanes), but using genetic information for the pragmatic optimization of policy (e.g., enrolling kids in curricula they had most benefit from or making the license renewal of a pilot with a previously unexpressed genetic propensity for seizures contingent on regular medical checkups). As genetic information proliferates, becomes perceived as more banal, and if it proves incrementally useful in certain settings, then it seems likely people will hurry to apply it in analogous ways elsewhere.

Even if its manifestations were modest in terms of the redefinition of social problems, personalized social policy could entail potentially dramatic shifts in the mix of professionals and institutions involved in confronting social problems. Because genetic technology is rapidly making various diagnoses cheaper, easier, faster, and more reliable, it is possible to imagine these becoming “black boxed” to the degree that service providers could acquire the information without changing much else about their practice—it might be possible for child welfare agencies to have a desktop device that could generate the relevant genetic information from a hair follicle or buccal swab as a social worker filled out the paperwork on a child’s new case file.

More likely is the prospect that genetic information would enter the service provision realm borne by new kinds of experts and professionals—biologically oriented psychologists, psychiatrists, or medical geneticists, for example. Scientific organizations or medical institutions, personnel, and practices (e.g., testing, drug-treatments) might become more important in an array of policy contexts where they have only played a tangential role such as welfare agencies, schools, and correctional institutions. It would not be fruitful to speculate about more specific changes, but it is clear that any such changes would reorganize power and authority in service settings. For example, doctors, with their professional monopoly on medical decision-making, might be much more difficult for the state to oversee and regulate than social workers, but they might also bring a set of standards and peer-oversight practices that could improve aspects of service delivery.

Any manifestation of personalized social policy would involve the development of technologies and services. These would presumably be provided by biotech, pharmaceutical companies, and perhaps other business sectors. In itself this is not a problem; most public goods involve private suppliers and contractors. But as psychiatrist David Healy (2004) has shown, pharmaceutical companies have not only created drugs, but created markets of consumers, and by seriously influencing process of scientific research have essentially created the criteria for viewing their products as effective (while concealing their dangers). For the first time these firms would have a financial interest in social services delivery, and there is every reason to believe that they could find ways to generate and distribute knowledge relevant to profit making in this realm.

The point of the discussion here is that the real stakes in bringing behavior genetics to public policy are not in geneticization when that term is understood largely in terms of the definition of human conditions and how this affects policy choices. Rather the high stakes of geneticization in personalized social policy concern changes in the incentives and actors in policy and service contexts and thus the potential transformation of power dynamics, structures of authority, democratic accountability, and so forth.

**Solidarity and functionalism in social policy**

Why do we have social policy—what justifies it and what is its purpose? While it is risky to ask such a broad question of such a complicated and multivalent phenomenon, I would like to consider the implications of personalized social policy for a deep tension in the basic collective justification for social policy in modern welfare states.

At the highest level of abstraction, there are basically two justifications for social policy. The first is that modern states are not simply administrative bodies, they constitute nations and peoplehood. Nation states are predicated on some notion of mutual responsibility and solidarity among citizens. Citizenship gives an individual the right to make claims on that collective responsibility for needs that cannot be met by oneself. Social policies are the tools for identifying and meeting those needs because the neglect of other citizens’ needs harms everyone’s dignity (and ultimately the state’s legitimacy). The other justification begins with the idea that the state’s aim is to ensure the productivity of its citizens. If every time there was an economic downturn all the unemployed workers starved to death, then recoveries would be slowed as the population would be unable to quickly provide necessary labor. By serving to meet minimal needs, social policy keeps the population ready to work. Social policy, on this view, has little to do with

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5 See Somers (2008) for a history of the interdependent development of competing conceptions of social policy as connected to citizenship.
solidarity but is a form of collective insurance justified on the functionalist grounds that it secures the conditions that keep the economy running smoothly.\footnote{The argument is the same whether we talk about the actual “social insurance” forms of social policy-like unemployment insurance and minimum income guarantees—or the “secondary” social policy, assistance and provisioning programs I have been discussing—such as, education, health, family services, and corrections. These policies support economic activity by helping build a productive workforce and by securing the social order (illness, ignorance, crime, and revolutionary activity being potential drains on the economy).}

The solidarity and functionalist justifications of social policy are not contradictory, indeed every welfare state incorporates a mix of both.\footnote{These two views of social policy are related to, but distinct from, the specific form of society and economy. Intuitively, one associates the solidarity justification with socialism and the functionalist view with capitalism. But one can imagine a society featuring common ownership of property that conceives of social policy largely in terms of maximizing the population’s productive capacities, or a capitalist society where achieving social integration is the point of social policy. Actual welfare states feature a complex mix of these abstract justifications, with solidarity figuring more prominently in the more socialistic and functionalism among the more laissez-faire.} However they do exist in some level of tension, especially over the questions of which needs to recognize and at what level to provide them. The functionalist logic suggests that only the minimum should be provided both from the point of view of economic efficiency and also to avoid moral hazard—making the refusal to work a viable choice. On the solidaristic view, the number and level of needs met are limited only by the collective sense of fraternity. The logical extreme is perhaps to view a fellow citizen as a member of your family, and thus to sacrifice for her to the same degree that you would sacrifice for your sister (maybe more given the dysfunctionality of many families!). In theory, the perfectly solidaristic society, i.e., socialism, would work on a logic of universal provision, and productive activity would be motivated by solidarity and grateful responsibility, not greed and the fear of starvation as in the functionalist, capitalist society.

A cynical functionalist might look at the socialist maxim, “From each according to his ability, to each according to his need” and ask, “How do you know what an individual’s true needs are?” The functionalist could argue that the reason that we invoke solidarity and set a universal standard for social provisioning is that we do not really know what individual needs are. We target our social policy to provide some arbitrary set of goods at some arbitrary level and justify it in terms of solidarity. But because we fear that it may not be enough—and there are always examples to suggest needs are not being met—there is strong pressure to raise the universal standard incrementally and hope it meets needs, secures dignity, and reinforces solidarity.

The functionalist might continue: in addition to the obvious, dysfunctional costs, it does not serve anyone’s dignity to give them things they do not need. Indeed it does not even express genuine solidarity because it implies that the giver does not really know or understand the receiver, which is a model more akin to patronizing charity than egalitarian fraternity. What is more, it does not change matters if the recipient is also unaware of his own needs. He may not be put off initially, but as his situation fails to improve, he is liable to grow shameful or resentful, neither of which serves the ends of dignity and solidarity.

Here is where genetic information and personalized social policy enter. We can see the problem as a lack of information and behavior genetics as a potential solution. Taking studies of how particular genotypes will respond behaviorally (or emotionally, intellectually, developmentally) to possible environmental conditions could help fill this information deficit. Different versions of this are possible. One might be using behavior genetics to shed light on whether a particular intervention is liable to be beneficial for a particular individual given their genetic and environmental “endowments.” Another might be to allocate scarce resources most efficiently. A third might be to establish a set “minimum standards” for service provision that vary according to genotypic “treatment groups” in a particular policy area. A fourth might be to use genetic and environmental information to optimally match clients to services, especially in circumstances where individual clients might not know their needs so mechanisms emphasizing choice might not be efficient. Any number of other versions might be imaginable.

Thus behavior genetics might help solve the information problem that underlies both functionalist and solidaristic conceptions of social policy. The first thing to note is that the kind of information I am talking about involves modest, targeted studies of particular problems and options within specific policy or service delivery contexts. A universalistic (and hubristic) science of human needs and how those needs vary, is not called for or necessary, nor is it likely that even if thousands of particularistic studies were produced they would add up into a picture of “human nature.”

We might wonder if behavior genetics is scientifically up to the task of delivering even these focused studies. One cause for skepticism is the long history of problematic results and epistemological critiques behavior genetics has
received. Perhaps reliable, replicated studies will not emerge.\(^8\) Another reason for doubt is what some behavior geneticists have called the field’s “gloomy prospect” which is that “the causes of mental illness [or other complex behaviors] are broken up into so many tiny nonlinear pieces that scientists can never get a handle on them” (Turkheimer, 2006, p. 105). But, again, a general “handle” on behavior might not be necessary in specific instances: Caspi et al. (2002, p. 853) report that maltreated boys with the low-activity form of MAOA were 9.8 times more likely than their non-maltreated peers to commit violent crime while, maltreated boys with the high-activity form were only 1.6 times more likely than their non-maltreated peers to do so (and the latter difference was not statistically significant). This finding might say little about criminality or the “cycle of violence” in general, despite the authors’ claims, but it still might give enough information to be actionable in a particular context.

Assuming some version of behavior genetics based personalized social policy is practically realistic, what are the implications for the solidaristic and functionalist justifications of social policy? As I see matters, personalized social policy serves to undermine the solidaristic view and strengthen the functionalist one in a number of different ways. First, I should say it does not do this because it encourages a fatalistic view of policy and strengthens arguments for retrenchment as other scholars have argued (e.g., Alper & Beckwith, 1994; Harwood, 1979; Nelkin, 1999). Fatalism actually weakens the functionalist argument which rests on claims of effectiveness; it does not impact the solidarity justification which is based on claims of rights, dignity, and fraternity (notwithstanding the earlier argument about this justification containing a hidden effectiveness problem).

Rather, personalized social policy has its effects precisely because it is not fatalistic but works by furthering a logic of differentiation. It suggests that human needs are importantly differentiated, perhaps not at the level of what is necessary to survive, but in terms of successfully navigating particular obstacles and seizing opportunities to thrive. There is nothing unique about this idea, but the difference of personalized social policy is that it further encourages the state and its agents to enter the business of trying to figure out and act on these differences. Enacting personalized social policy would demand policy makers to make judgments about which differences matter and when to intervene.

Say a child welfare agency wanted to make use of the Caspi and Moffett study. They would have to decide how many replications were necessary before the finding was strong enough to support action. More crucially, they would have to decide how much of an effect was worth acting on: The study suggests that ensuring no maltreatment for the low-activity MAOA boys would reduce their chances of conviction for a violent offence by about 90%, while doing the same for the high-activity boys would reduce it about 40% (if at all, given the non-significance of the odds ratio). Is that a big enough difference to justify prioritizing low MAOA kids for the best foster care homes? Is it big enough to justify setting a much lower threshold for state intervention in households with these kids? Finally, to walk down this path presumes a functionalist framing of the problem—this policy exploits behavior genetics information to ensure victims of violence do not become perpetrators rather than helping maltreated children because it is the right thing to do no matter what the outcome.

Thus, personalized social policy undermines the solidaristic justification of social policy and bolsters the functionalist one in at least three key ways. First, it encourages approaching social policy in terms of the effective and efficient achievement of goals rather than as a matter of rights and responsibilities. Second, it seeks effectiveness through differential treatment and thus undermines universalism. Historically, advocates of solidaristic views of social policy have always resisted means testing for access to social security or health care seeing such differential treatment as a wedge to undermine the collective commitment to treat such issues in universal terms (Somers, 2008). Third, it opens up questions that are inherently divisive and dangerous to social solidarity, that is, which differences matter enough to act and how should they be differently treated.

A medical analogy might be apt here. Even in societies where health care is a universal right, that does not mean that an individual has a right to any and all treatments; rather she has a right to a certain standard of care consistent with the goals and priorities of the health care system. Personalized social policy—in what might be thought of as an additional aspect of medicalization—bolsters this logic in other provisioning realms. Using the child welfare example again, the analogous logic is, “All kids with unfit parents have the right to a state provided violence free home” becomes “All kids have the right to have a state home that meets their needs—some need a violence free home, some don’t.” Perhaps the universal access/differential treatment framing could salvage the solidaristic justification of social policy as

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\(^8\) According to a recent meta-analysis (Risch et al., 2009), the celebrated Caspi et al. (2003) claim about the 5-HTT gene moderating the influence of life stress on depression has not been substantiated.
personalized social policy or other differentiating pressures increased. However, as recent conflicts over which costly, experimental treatments should be supported in the UKs medical system have shown, functionalist criteria tend to erode solidarity through their implicit judgments about which and whose problems are important (Harris, 2008).

Conclusion

What is the specificity of genes or genetics in this argument? After all, personalized social policy could be based purely on “environmental” research. Further, arguments about the functionalist and market-based degradation of social solidarity and welfare provisioning and debates about the implications of universal vs. differential social provisioning (for example, schools “tracking” pupils into different curricula, or means-testing in old age pensions) are long-standing net of any consideration of genetics.

The difference, I think, is in the special credibility of genetics and the rapid development and proliferation of genetic technologies which can combine to marshal powerful forms of scientific authority into debates and settings where they have not previously been. Geneticists and doctors have a great deal of social power and cultural authority—especially in comparison to educators, social workers, and political theorists. Their forays into these issues are liable to draw wider attention and have greater credibility than those of many other parties.

Geneticists’ authority is reflected in the level of money and interest that society has invested in their research. Growing pressures to make these investments “pay off,” since the medical revolutions geneticists promised have not materialized, are liable to drive them further into these policy realms. Because the amount of money for genetics research dwarfs spending on educational or social welfare research, researchers in those fields will probably seek to partner with geneticists. Such collaborations might help new behavior genetics research respect the complexity of policy-relevant settings, which would be good. But as some scholars have shown, geneticists often dominate such collaborations and their perspectives can foreclose some of the potential breadth of options that environmentalist approaches consider (Shostak, 2003; Duster, 1990).

Rapid technological and scientific developments are generating much of the “infrastructure” necessary to make personalized social policy a reality. Behavior genetic studies of gene/environment interactions are proliferating (Rutter, 2006). Genetic technologies for routine, mass screening are becoming cheap and available. And huge datasets are being collected by medical institutions, criminal justice agencies, patient advocacy groups, states, and the federal government among others, and these will provide the raw materials for scientists to generate policy-relevant claims (Duster, 2004).

As genetic technologies become more accessible, ordinary people are learning to wield the authority of genetics. Scholars have tracked the emergence of “biological” and “genetic citizenship” which involves people organizing themselves around bio-genetic conditions, especially disease conditions, and making claims about their rights and responsibilities on this basis (Rose, 2007; Heath, Rapp, & Taussig, 2004). Many features of welfare states are the product of past mobilizations of labor movements. In the future, “genetic citizenship” projects might provide models for new forms of social mobilization and democratic participation around welfare issues.

All of this is meant to suggest that while personalized social policy may be science fiction today, policy makers should be thinking about it because it, or something like it, is likely to become a reality, and probably not on conditions of their choosing. Let us return to the foster care example. Direct-to-consumer genetic testing is getting cheaper and more robust all the time—Google spin-off 23andMe.com offers a comprehensive test for US$399. One day an enterprising child advocate, frustrated by the fact that her client is stuck in a miserable group home, is going to march into the Department of Child Welfare with a stack of scientific articles and the results of her client’s genetic tests (ordered off the internet). She will make the argument that the conditions of the group home, in concert with her client’s genotype, are putting the child at dire risk of developing anti-social disorder and depression, and she will sue the Department for negligence if her client is not immediately put in a good foster home.

How should the Department react? Social service providers are going to need principles and guidelines—something between statutes and how-to manuals—to deal with genetic information as it emerges into their arena. The key task for policy analysis is not going to concern ethical deliberation about genetics or technical critiques of genetics findings, but specific, detailed, social scientific studies of how service provisioning is practically organized and how decisions are being made. Only with this information will it be possible to understand the impacts that particular behavior genetics findings could have and to build a framework for making decisions about their use.
The specificity of personalized social policy, thus, lies less in the special intellectual, ethical or political character of genetic information than in the authority and rapid change of genetics. The transformative potential of personalized social policy comes from the social and professional power of geneticists and doctors; the huge investments of money, effort, and attention into genetics research; and the variety of actors (scientists, policy makers, businesses, advocacy movements, and individuals) that may have interests in driving genetics into the social policy realm. Future commentators on the policy implications of behavior genetics should attend to such issues of scientific and cultural authority—and not just to epistemological and ethical questions.

The point of the old argument about behavior genetics and social policy was that it offers an ideological justification for policy retrenchment based on (incorrect) claims about ineffectiveness of intervention—the notion of genetic fatalism. Personalized social policy reverses the position of behavior genetics by giving an ideological justification for policy transformation based on an argument about increased, though moderate and targeted, effectiveness. Should behavior genetics enable personalized social policy, its enactment and expansion is likely to be justified on pragmatic grounds. “Better” social provisioning could be a result, but I have argued that this is likely to be accompanied by a broader set of shifts including: (1) rescaling social policy from the population and toward the individual level, (2) institutional and professional transformations of the service delivery apparatus, and (3) theoretical and political transformations of the justification for welfare and thus the meaning of citizenship and responsibilities of the state.

These possibilities suggest that pragmatic arguments for policy implementations of behavior genetics should not be taken as self-justifying, nor should the technological development of genetic tools in this area be considered fait accompli. Rather, democratic deliberation must accompany the expansion of genetic research and technologies into new social policy realms. However, this task will be complicated, partly because the key issues here are broader than those that critics and advocates of behavior genetics, as well as bioethicists, typically consider, but also because the changes potentially at stake include shifts to the forms of solidarity and citizenship that ground democratic participation.

References
