Questions and Answers (Q&As)

Mind the Gap — The Need for Experimental Evaluations of Community Interventions

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Q: You suggested that interrupted time series designs could be used to test strategies for getting policies adopted? What would be the time-series in that case?

A: I think referring to these as time-series designs is a misnomer on my part. The key issue is to pinpoint independent variables that influence the DV. ABA and multiple baseline designs in behavior analysis were critical to showing that all kinds of human behavior was functionally related to its consequences. From this work, nomothetic principles emerged that could then be shown to be valid via RCTs.

Skinner argued that RCTs are a poor way to pinpoint functional relationships because there is too much variability from case to case. He worked up from individual cases and through experimental manipulations of consequences arrived at nomothetic principles about the impact of reinforcing consequences.

In the case of policy adoption, the dependent variable is the adoption of the policy by a policy making body (city council, school board, legislature, etc.). The independent variable is a strategy for getting that policy adopted. The strategy might be quite complex (organizing support of the policy by numerous organizations, media advocacy, getting the policy on a ballot measure). In this case, we do not have a behavior (policy adoption) that is repeated across time. We have either failure or success. But each success is a point in favor of the implemented strategy. With a series of successes, a nomothetic principle emerges: This specific set of actions result in policy adoption.

Thus, I would treat each policy making body (city council, county council, state legislature) as a targeted entity, implement the chosen strategy for advocacy, based on the best evidence available and track the success of failure of the advocacy. In the face of failure, I would develop hypotheses about why it failed, revise the strategy accordingly and try it with a second entity. If the first one was successful, I would attempt to replicate it with the second entity.

Check out the work of the Research to Policy group at Penn State. (See below.) They have gotten to the point of doing RCTs, but they got there through careful monitoring of the impact of what they did with individual legislators.

Q: Could you elaborate on the difference between nomothetic and idiographic analyses?

A: A nomothetic principle is one that applies to all cases in a particular category.
The term is often used in contrast to idiographic principles, which apply to individual cases.
The success of RCTs in family and school research resulted from the elucidation of nomothetic principles that emerged from numerous interrupted time series designs which consistently showed the impact of reinforcement on behavior.

Q: There would seem to be a tension between a federal effort to affect health and an emphasis on local control. How do you see that working?

A: I think the COMPASS strategy is (or should be) to fund community efforts to target a particular outcome, where the community gets to choose what they want to work on, within broad parameters. The institutes will probably want to only fund research on the disease they are working on. But still, the interventions they fund will be more likely to contribute to population changes in health if they are comprehensive efforts to affect the disease outcome. In this case comprehensive would be mobilizing ***all*** *of the independent variables that are known to affect the outcome. For example, in the case of alcohol, increased taxes, restrictions on time of sale, density of outlets, rewards to clerks for not selling to youth, enforcement of laws regarding drinking and driving and supplying alcohol to minors, and media campaigns. However, the tendency, when the focus is on a single disease, will be to ignore omnifactors, such as poverty and discrimination. And, in my view the impact on the population will be smaller than it could be.*

Unfortunately, we shy way from trying to do complex multi-component interventions because of it is hard to tease out the impact of each component. That would, in my view be less of problem if we were proceeding with multiple baseline and other single case designs that are testing the impact of each component on a specific outcome.

Q: How can communities in states that have policies that limit support for family wellbeing take the steps that you are calling for?

A: This is a key question. I would advise an Action Circle in a community to explore how it could increase support for families at the community level. The action circle would begin by identifying the range of policies that could be implemented at the community level and identify other communities that have made progress in such a situation. I would also create a network of such communities so that they could advise one and other about what is and is not working.

This would certainly require building community support for families. It needs to be a value. Our visioning procedure that results in a word cloud (see question 18) is a good way to begin to promote prosocial values. So long as the dominant value in the community is the free market theory that if everyone pursues their own economic wellbeing, it will, like an invisible hand, benefit everyone, then policy will favor minimal restrictions on business, low taxes, and minimal government.

We need research evaluating whether a campaign to promote prosocial, nurturing values in communities advantages efforts to increase supports for families and schools.

Q: Could you elaborate on how an action circle would work in a community?

A: I think I did this in slides 42 and 43. Email me at tony@ori.org if you have in mind trying an action circle in your community

Q: Improving public health and reducing disparities often involve targeting multiple levels. How do you see multilevel interventions or studies factoring into this research agenda?

A: As I argued in the Commit example, we will need work on how to affect individual targets. Suppose the goal it to increase the supports for families such that coercion, abuse, and neglect are reduced in families and families increasingly are nurturing their children's verbal, academic, social and psychological development. Between the Chapin Hall analysis of economic policies that will help families and all of the evidence on family interventions we can say with some precision what is needed. But to get policies that increase economic and concrete supports for families, there will need to be components of the intervention that affect local policy. See question 5 above for more on that. And we will need to develop a strategy for getting family services improved—more funding for these services, adoption of evidence based interventions, a system for ensuring that every family that has a need gets connected with an organization that can meet that need.

We are a long way from having reliable strategies for influencing policy and practices of this sort. And I don't think RCTs will get us there until the functional relationships between intervention strategies and outcomes are pinpointed through functional analysis with individual organizations.

Q: What are some threats to internal validity common to multiple baseline designs and how might they be addressed?

A: We reviewed these in a paper on multiple baseline designs in communities.
Using the major threats to internal validity identified by Cook and Campbell….

- ***History**. An observed change in a time series in a multiple baseline design could be due to an historical event other than the implemented independent variable. In the case of an event that reached all the communities in the study, that historical event would be ruled out as a cause of change, if change only occurred in the communities that got the IV. But if changed occurred in all communities, it would undermine the conclusion that the IV was the cause of the change.*
- ***Testing**. Repeated measurement could affect the DV. However, if change were observed only when the community got the IV, it would make this explanation less plausible.*
- ***Instrumentation**. A measure may change not because of the IV, but because the measurement changed. For example, promotion of the need for more youth activities might lead organization to characterize what they are doing as providing youth activities, when what they were doing at not changed.*
- ***Variability in the dependent variable**. The more variable the DV, the harder it will be to detect effects of an IV.*
- ***Selection**. If we selected three communities, one of which was already involved in improving family wellbeing and the other two were not, a significant increase in family wellbeing in that first community might be due to our selection of that community. But if subsequent communities had similar improvement only when the IV was introduced that explanation is less plausible.*

Q: Multiple baseline designs seem to have some similarity with stepped wedge designs. In what ways are the two methods different? In what ways are they the same?

A: As I understand it, stepped wedge designs were developed primarily to ensure that all participants got the intervention—that is, there would be no untreated cases. In some circumstances, there is no difference between a stepped wedge design and a MBD. For example, in our study of the

percent of stores willing to sell tobacco, as a function of our reward and reminder program, we have groups (i.e., all the stores in the community) getting the intervention at different times.

But I think what is overlooked in these comparisons is that in the MBD we were testing a functional relationship between the IV and DV and we replicated the two-community MBD in all eight communities, when we got effects in the first two communities. It is the tight control of the DV via the IV that we are looking for.

Q: In what ways can NIH/ODP help with this effort?

A: I think that COMPASS has the potential to address many of the concerns I raise. I have not looked at what they are actually funding, but I suspect that from a prevention perspective, they will be investing more in improving treatment than in preventing problems. And, while they may diminish the narrow focus on a single disease outcome, I suspect that there will not be as much attention to the omnifactors I mentioned as there needs to be.

In what I read of the COMPASS plan, there seems to be a lot attention to building data systems for monitoring disease outcomes at the community level—which I think is fundamental to our evolving better outcomes. However, I did not see articulation of the experimental methods that can be used. So NIH/ODP can help to articulate experimental designs for assessing the impact of community interventions—with an initial emphasis on evaluating the components of the intervention. And it can push for a prevention focus—particularly s it relates to omnifactors. For example, we need to develop and test strategies for getting communities to develop a comprehensive set of policies, programs, and practices that increase the proportion of families that are nurturing and reduces the proportion of families that are dysfunctional.

I did not have time to get into it, but all of our problems can be understood and addressed by a cultural evolution framework. It is a matter of selection by consequences.

A behavior or the practices of a group or community are selected by their consequences. I reviewed some of the evidence as it relates to children's behavior in family and school settings. The Nurture Effect provides a review of the value of this framework for understanding human behavior. And Rebooting Capitalism, extends the analysis to the recent evolution of American Society and what is needed to reform society so that the dominant selecting consequence for our practices becomes the wellbeing of the population. Over the past fifty years, advocacy for free market capitalism made the dominant selecting criterion for our culture the economic success of a practice.

We can see this in our healthcare system, which is organized around maximizing economic consequences for key players in the system-the pharmaceutical industry, the health insurance industry, and a treatment system that provides expensive treatments for diseases, but does little to prevent these diseases.

Compare this with countries that have better outcomes. They invest more in supporting families, minimizing poverty, providing much greater support to families in the way of childcare, maternity leave, etc. The wellbeing of the population gets more weight than the maximizing of economic gain by corporations.

*We need to make the wellbeing of the population the criterion for the regulation of business, the organization of health care services, etc. Reform of our society requires a social movement which is constantly demanding that **all** of our organizations make wellbeing the selecting criterion, rather than self-aggrandizement.*

Q: Can you see ARPA-H playing a role in the social movement?

*A: ARPA-H had a competition--ARPA DASH and their website describes the four finalists in the Accelerate Health Outcomes tournament. The first one is a project to use patient's own cells to treat a large variety of diseases. The second is a "mental health moonshot" that would look at the genetic and epigenetic factors that account for mental health disorders. Each is a distinct disease. They say they are looking at the epigenetics affecting these disorders. (The description of this project was quite unclear as to how they will find a cure for each of these MH condition.) The third project would accelerate treatment of many diseases through interventions to affect cellular functioning. The fourth project would attempt to develop a drug that will cure **all** cancers.*

So, as I suspected, all of the projects are focused on treating problems that could have been prevented. I have been an NIH funded researcher since 1980. Behavioral science and Prevention science in particular, has always been a minor part of the NIH budget—as the ODP analysis has documented. It is hard to see how this can be changed.

But so long as a significant proportion of the population is harmed by poverty, economic inequality, discrimination, and harmful marketing, we will continue to have most of the expenditures on both health research and treatment continue to be spent on treating diseases that could have been prevented.

But just in case the leadership of ARPA-H decides that it wants a project to advance comprehensive prevention of all of the most common and costly causes of death, they could fund a project to develop and test a comprehensive community intervention in a series of three mid-sized cities that focuses on:

- *Increasing Prosocial Values and psychological flexibility in the community*
- *Implementing policies and programs that enhance families economic, concrete, and social supports.*
- *Implements in schools SEL practices such as the PaX Good Behavior Game and Cooperative Learning. [Disclosure: Values to Action receives funding from the PaXis Institute.]*
- *Implements policies to reduce the marketing of alcohol, tobacco, cannabis, guns, and unhealthful food.*

There would be the multiple baseline design to evaluate strategies for getting each of these changes achieved in the first community.
Work would proceed to a second community, only after progress was shown in the first community.

Q: How can we translate the success of tobacco control policies where only one outcome was targeted (i.e., smoking cessation) and a specific population (i.e., smokers) to a multifaceted issue of health disparities?

A: Let's take family wellbeing as an example. The evidence is overwhelming that dysfunctional families are a risk factor for the entire range of psychological, behavioral, and health problems. So let's use the work that has been done on smoking as a model and apply it to family wellbeing. We need epidemiological research on both the risk factors for family dysfunction and the impact of family dysfunction on multiple outcomes needs to be translated into a steady drumbeat of media. In the analysis we are just completing for End Child Abuse and Neglect, we call for more Surgeon General Reports, NASEM reports etc. and for the cultivation of media outlets.

We need research on reaching more families with evidence-based family interventions. Like the tobacco control movement that evolved increasingly effective ways to reach smokers with assistance in quitting. Family researchers are getting better at providing more effective ways to reach families with brief, effective advice—as well as program that are tailored to the needs of different populations.
And we need more research on promoting the prosocial values that would favor spending money on family wellbeing. See question 5 above.

The initial dependent variables would be the contextual conditions that improve family wellbeing—for example, availability of programs for families, increase in economic and concrete supports.
The ultimate dependent variables in such research would include the prevalence of well-functioning families and the rates of child and adolescent problem behaviors.

Q: Have there been any cancer health disparities longitudinal studies or data on youth access to tobacco and lung cancer in Oregon? Would this be feasible to do in other states or communities?

A: California has done the best in reducing tobacco use. And there is empirical evidence that it has reduced cancer. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7389269/

Q: Could Dr. Biglan share the name of the Pennsylvania group who are using RCTs for policy implementation?

A: Research to Policy group. Max Crowley <maxcrowley@gmail.com>; Taylor Scott taylor.scott@research2policy.org lead this effort.

Q: It does seem that there is a disconnect between policy makers and the science of public health change. In the early genesis of program evaluation in the 1960's, this relationship was viewed as clear pathway for development of these nomothetic principles that Tony discusses. Is it possible to more clearly establish these relationships on these broad social problems? It seems this relationship itself would be experimental in nature. Perhaps this is a critical first step here? In this way, we can help nurture healthy social movements?

A: Here too, I think that the tobacco control movement is a model. As I note above, we need the epidemiological evidence on social determinants to be translated into Surgeon General reports, NIH Institute Monographs, and NASEM reports. And we need to cultivate new media and social media to communicate the importance of addressing social determinants.

And yes, experiments on how to increase public support for advancing the wellbeing of families would be valuable. Would progress on that issue make it easier to get states and communities to adopt the needed policies?

Q: I'd like to hear ideas for making data collection quick, easy and accessible for action circles

A: My first question would be, "What is the goal of the Action Circle?" We have found that just about any problem of human behavior you could name has a fair amount of evidence out there about what can be done about it. ChatGPT could help, although it will not give you citations.

And for community organizing efforts, we have found that we can put out a question to the community that you can get many community members to respond to. We have often asked community members to say what they would see, hear, feel, and do if their community were the most wonderful, they could imagine. Here is a word cloud of the answers we got in a small Oregon City.

Q: Would love to spend a moment speaking to the culture of peer / lived experience / advocate exclusion from defining health policy goals. The research community, for example, had major campaigns trying to "cure autism" as late as 2016, very similar to "curing homosexuality" in decades prior, etc. Peer communities are often disallowed from co-defining health goals. Thoughts?

A: In my view, efforts to improve wellbeing in communities need to be driven by a participatory process for both pragmatic and ethical reasons. Ethical, because as you suggest, imposing "solutions" is a form of coercion. Pragmatic, because people don't like to be told what to do. Evolving nurturing communities requires that the people in those communities come together in a shared notion of what their goals should be and what should be done to achieve their goals. The case for what you advocate is likely to be strengthened by empirical studies testing the added benefit of ensuring the involvement of people with lived experience.