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An Account of Collective Actions in Public Health

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Aggregated health decisions by individuals are of paramount importance to public health professionals and policymakers, especially in situations where collective participation is a prerequisite for achieving an important public health goal such as herd immunity. In such circumstances, concerted action often falls short of the common good through lack of sufficient participation.

Collective action problems are traditionally attributed to rational egoists seeking to promote their interests and enjoy a “free ride.” We call attention, however, to the behavioral features of collective action and their implications for solving public health policy problems. (*Am J Public Health*. 2009; 99:1583–1587. doi:10.2105/AJPH.2008.152629)

SOLUTIONS TO MANY OF THE problems confronted by public health policymakers depend on getting people to behave in a way

that promotes the common interest even though the desired conduct may not serve the self-interest of each individual. If individuals make choices that undermine a public good, society faces the choice of either giving up the desired public good or finding a way to influence individual decision-making to guarantee a sufficient level of cooperation. Economists characterize these challenges as collective action problems (alternative terms in use include “social dilemmas,” “shirking,” the “free-rider problem,” “moral hazard,” and the “N-person prisoner’s dilemma”). We argue that framing common challenges in public health as collective action problems would help policy planners by allowing them to draw on a large body of literature and insights in behavioral and social sciences that have not yet been incorporated into the mainstream of the field.

The traditional economic account of collective action problems stems from the premise that

suboptimal participation in collective efforts to create and preserve public goods, such as a clean environment, is a direct result of rational decisions made by individuals to advance their own interests over those of the group, often while consuming the benefits of investments made by others. Emerging scholarship in the behavioral and social sciences, however, sheds new light on the choices that people make,^{1–3} and especially on what is ostensibly free-riding behavior, leading to the general conclusion that failures to create and sustain public goods are often attributable to cognitive and behavioral tendencies that can be modified. These insights should be harnessed within the field of public health policy to help us understand how to reduce the number of people who shirk responsibilities to larger groups.⁴ Importantly, these studies lead to the conclusion that collective action problems are often imperfectly conceptualized as simple free-rider problems. This developing body of knowledge also

highlights the more complex composition of collective action problems.

We analyze several public health issues using an enriched framework of collective action problems to illustrate its advantages in prescribing public policies. In planning for solving collective action problems in public health, we advocate a more prominent incorporation of behavioral components. Interestingly, the literatures in medicine and public health have thus far given little attention to collective action problems in many situations that would fit well with the body of knowledge gained in the fields of behavioral law and economics. We also believe that lessons learned in resolving collective action problems in biomedicine could foster a more general discussion of the obligations of citizenship and of individual as well as communal responsibilities, but space limitations preclude a more detailed exposition of this thesis here.^{5,6}

We use 2 case studies: one regarding vaccination, an archetypal



example of collective action in public health, and the other organ donation. In the case of immunization, collective action is necessary to achieve herd immunity; once such immunity is achieved, the benefits of decreased mortality and morbidity are available to all. Given the reality of herd immunity, however, those who refrain from vaccination are nevertheless protected by the actions of their vaccinated peers. Nonvaccinated people hence enjoy a free ride—they are provided protection (herd immunity) at no cost (the injection and possible adverse sequelae). They do expose themselves to possible outbreaks of the pertinent disease, but such eventualities are considered rare.

If a large enough number of people avoid vaccination, however, there will be insufficient herd immunity. Indeed, in recent decades decreased vaccination rates have led to outbreaks.⁷ Policy remedies have concentrated on the use of mandatory vaccination laws (mostly preschool vaccination requirements), coupled with legislation (the Vaccine Injury Compensation Program in the United States and similar laws in other countries) that provides no-fault, administrative compensation for adverse effects that have been scientifically linked to covered vaccines.⁸ Still, a tendency to relax mandatory vaccination laws by introducing exemption clauses has decreased the number of vaccinated children. This is a constant source of worry for those interested in maintaining herd immunity.⁹

In the case of organ donation, we have the technology to save

lives, but the waiting list for organs is growing (currently more than 100 000 people), waiting periods are frustratingly long, and more than 7000 people die each year while awaiting an organ.¹⁰ Noticeably, the number of people who die in circumstances that make them potential organ donors is sufficiently large, therefore deaths resulting from unavailability of organs could be eliminated and the length of organ waiting lists significantly reduced.¹¹ Yet in many countries, including the United States, the actual retrieval rate based on donor cards or family consent is only 50% of the potential, although the public's expressed support for organ donation reaches 90% or more.¹² Policy solutions developed in the United States include, among others, improved identification systems, best-practice guidelines by organ procurement organizations, and massive public education campaigns. The results are encouraging, but these measures alone will nevertheless remain insufficient.

We briefly summarize salient concepts as they relate to the decision-making of individuals and groups bearing on the resolution of collective action problems. Our goal is to identify and incorporate additional tools that may aid public health policymakers to deal with less-than-ideal collective action outcomes. We start with a succinct description of public goods, collective actions, and resulting collective action problems as they relate to choice making. We then turn our attention to behavioral economics and end by highlighting a few key conclusions.

PUBLIC GOODS

Public goods are created or maintained as the result of successful concerted action. They are by definition nonexcludable and are typically nonrivalrous. This means that everyone can enjoy the benefits of a public good (e.g., herd immunity, clean parks, clean air, a standing army for national defense) even if some individuals do not contribute or serve their personal interests at the expense of the common interest (e.g., littering or polluting). Yet if enough people fail to contribute to the public good or engage in counterproductive acts, the public good is threatened. Therefore, absent adequate monitoring or intervention, the very existence and quality of these public goods are in jeopardy, a problem eloquently described by Hardin as the tragedy of the commons.¹³ In public good scenarios, the policy challenge is to motivate people to contribute by acting or by exercising self-restraint.¹⁴

Identification of some needed outcomes as public goods seems obvious, whereas getting people to recognize others is more challenging. The well-recognized example of the importance of mass vaccination as a way of establishing herd immunity as a public good can be replicated in other areas. For example, the effectiveness of antibiotics in the population can be viewed as a public good that can be eroded by emergence of drug-resistant strains of bacteria through a pattern of unnecessary prescribing and use of antibiotics. What seems trivial and rational in the individual case ("Even though this child's condition is probably viral,

why not prescribe antibiotics just in case?") can have tragic consequences in the aggregate.

Similarly, the health care system (e.g., public agencies and health care organizations) needs to foster a climate or culture of patient safety, a genuine public good, through systematic reporting and review of medical errors, but such an effort can be impeded by the self-defensive actions of individual providers and institutions who prefer not to report such errors.

Better recognition of public goods would allow us to appreciate more broadly why there is an inadequate supply or maintenance of certain public goods and why reframing many public health problems from a collective point of view potentially provides policymakers with new insights and tools for shaping individual preferences and behaviors in ways that will promote and preserve these public goods. The need to reframe the problem is probably linked to prevailing social norms—if the concepts of solidarity, citizenry, and community are dominant in a particular society, the creation and maintenance of public goods may have favorable prognoses. The reverse might be true in societies with a deep commitment to individualism. It follows, then, that in more individualistic communities, more intervention (rather than the hands-off policies that might suffice in other, more collectivist societies) might be called for.

UNDERSTANDING COLLECTIVE ACTIONS

Public goods are created or maintained as a result of successful



collective action, which refers to what a group does (through established coordinating mechanisms, social norms, and organizations) to lead people to act in concert or in anticipation of common actions to protect a public good. Throughout this essay, we presuppose that the health issues at stake are important enough to be singled out as worthy of collective actions. Therefore, the “how” question will occupy most of our attention—how structural variables (e.g., statutes, regulations, social institutions, incentives) facilitate or impede effective collective actions. One key question is when legal coercion should be used to thwart free riding or to impose costs on decisions to opt out of a presumptive collective obligation.

Notably, reaching a collective goal in the health sphere represents a special challenge. It involves a host of exigent issues that bear on the public’s interests, individual rights, societal resources, and scientific information—and, moreover, that bear on these in a way that relates not to abstract legal rights but rather to one’s own body and the health and well-being of the social group. Naturally, such an object of policy-making evokes strong emotions and requires sensible legal design that will respect sentiments such as autonomy and individualism while fostering the common interest.

COLLECTIVE ACTION LIFE CYCLE

Policymakers face 2 distinct problems regarding the design of a collective action. The first is to identify the necessity for a

particular collective action and then initiate that action; the second is that of preserving or sustaining a successful collective action. These problems may require the use of different tools. An example of the need to initiate a collective action is the current shortage of organs for transplantation, a problem that has not yet been framed to highlight the common interest in an adequate organ supply.¹¹ In this context, the policymaker must use strategies of changing attitudes, preferences, and behavior to create the public good.

By contrast, the challenge for sustaining successful collective actions is to prevent unraveling. The sustainability problem may be intrinsic to successful collective action because people come to take the public good for granted and become tempted to free ride, since the costs of not having the public good are no longer apparent, and the effects of defecting seem trivial for any given individual. As a result, individuals become less reluctant to stop participating since they undervalue the benefits they receive from the collective action and overprice their own costs in contributing to it.

Immunization is the classic illustration of the paradox of successful collective action. Most people today have no recollection of a child dying from suffocation due to acute diphtheria, nor any appreciation of the severe neurological sequelae of measles, but many have discussed the remote risks associated with immunization. In such circumstances, they tend to underestimate the true value of immunization and are more inclined to take a chance on being unprotected.

Hence, a successful collective action carries the potential for self-erosion. As a consequence, fluctuating participation is to be expected. The need to intervene arises, however, when defections become too numerous, lowering the immunization rate below the level of herd immunity.

As this example suggests, preventing the unraveling of the collective behavior needed to sustain public goods requires monitoring the level of participation on an ongoing basis, evaluating the potential detrimental impact of non-participation, designing strategies for countering unwanted trends, boosting the level of participation, and preventing defections from reaching a tipping point. This is why, from a policy standpoint, it is necessary to envision collective action as an ongoing challenge rather than taking an episodic, snapshot approach.

THE NATURE OF COLLECTIVE ACTION PROBLEMS

To understand why collective actions face challenges, we need to appreciate what factors influence people’s decisions.

Traditional Economics Theory

Economists have advanced the rational actor theory, in which each individual (satirically termed *Homo Economicus*) is expected to act as a rational agent, using available information to maximize his or her own interests—pursuing wealth and well-being, avoiding suffering or unnecessary labor—all in accordance with his or her own predetermined and stable goals and utilities. Accordingly, the

entire spectrum of human behaviors and human institutions are predictable, and measures can be taken to avoid suboptimal performances.

The rational agent theory has been criticized, however, as being too hypothetical and oversimplified to serve either as a reliable predictor or as a foundation for designing solutions for complex social problems. Among its other weaknesses, it fails to appreciate deeply rooted patterns of behavior reflecting motivations, such as altruism and fairness, that protect others’ interests¹⁵; it does not take account of unexplained or irrational preferences; and it fails to explain observed social realities, such as the many human practices and institutions that arise and are maintained even though hypothetically they should have collapsed in the face of expected free-riding, egoist behavior.¹⁶

Behavioral Economics Theory

The field of behavioral economics is devoted to deciphering individual and social cognitive and emotional biases to promote a more accurate understanding of human decisions and their aggregate effects. The goal is to acknowledge and take account of the boundaries within which human rationality operates. Documented decision-making tendencies include: heuristics (decisions are often made on the basis of approximate rules of thumb and not strictly rational analyses), framing effects (decisions are irrationally influenced by modes of presentation and context—e.g., discussing a 10% chance of failure in a medical procedure is



perceived differently from discussing a 90% chance of success in the same procedure),¹⁷ probability neglect (e.g., overvaluing the risk of a low-probability event), loss and risk aversion (a preference for avoiding losses rather than seeking gains), endowment effects (giving undue weight to avoiding losing something one already has), and a tendency to prefer the status quo.¹⁸

Behavioral economics accepts that human beings lack needed information, or have limited ability to access, receive, process, and retrieve it. Moreover, behavioral economics acknowledges the role and importance of social norms. Importantly, finding that individuals' rationality is bounded does not imply that their choices will be erratic, hectic, or unpredictable. On the contrary, as acknowledged by both its proponents and critics, behavioral economics seeks to describe, predict, and sometimes direct people's choices in a predetermined direction on the basis of such powerful and consistent influences.

Aggregated decision-making by a group of individuals also may run counter to its own collective interests because of biases and bounded rationality. For example, groups are prone to herding (individuals will pursue the consensus and refrain from making deviant choices),¹⁹ group-think (groups strive for unanimity even at the expense of quality decision-making),^{20(pp31–32)} or social loafing (in groups, people tend to feel unmotivated because they consider their contributions unnoticeable or not evaluated).²¹ In other words, the protection offered against an individual's bounded

capabilities by resorting to group decision mechanisms is not a guarantee against fallacies in decision-making and practices. Factors that influence group boundedness include, among others, the dynamics of groups with strong social cohesion, powerful leadership, or strong widely shared sentiments such as anxiety, fear, or moral vexation.

In summary, the knowledge yielded by behavioral economics allows policymakers to appreciate better why, although rational individuals would choose to work together to create and maintain public goods, they often fail to do so and collective action problems persist. In the case of organ donation, for example, most countries require that individuals make an explicit decision to become a donor (i.e., an opt-in rule). This rule needlessly exposes people to inertia, status quo, and risk aversion biases, leaving them in the non-participating default,²² even though they are not opposed to being a donor. In the case of vaccination, probability neglect causes overestimation of the risks and undervalues the benefits. Accurately accounting for such biases holds the promise of exposing some of the root causes of current collective action failures. Policies could be chosen that would enable people to effectuate better what is in their own best interest, and policymakers would be provided with essential and productive tools.

FROM THEORY TO PRACTICE

Thus far we have reviewed the concepts of public goods and collective action problems from a

behavioral perspective to allow a reframing of public health challenges and the emergence of several new tools. We now provide some illustrations of how these tools may be put to work, together with traditional policy measures, to promote public health endeavors. For the sake of brevity, our 2 leading examples, immunization and organ donation, are intertwined. As evident from these and other examples, no single recipe for all collective action problems is suggested. On the contrary, a nuanced reflection is needed for every collective action to elucidate its possible behavioral components.

First, social norms are powerful, and most people like to make choices that are in alignment with the choices made by others within their reference group. Apparently, such information on peers' choices is an essential tool in reinforcing cooperation and signaling the level of reciprocity.^{23(p164)} How can we inform potential participants about the behavior of their peers? In coordinated initiatives, possibilities for informing the populace about the level of participation range from publicizing participation rates (e.g., percentage of organ donor card holders or immunization rates) in the general population (or in smaller localities or demographic groups) to posting names of participants on honor lists.

Second, people's choices tend to be influenced by the availability heuristics, whereby a risk is perceived as greater than it actually is because of recent exposure. This phenomenon suggests that providing visible and effective information on recent outbreaks and

dire sequelae of preventable infectious diseases could affect the perception of risks of nonimmunization, or the risks of dying on the waiting list, making people more likely to be immunized or to donate organs.²⁴

Third, selecting the right default can have a powerful influence on the level of participation.^{5,22} By setting the default as "all decedents will be donors unless they explicitly opt out," several benefits would arise: through the opt-out mechanism, everyone would retain the right to choose (autonomy); the default would convey a strong societal norm favoring donation; the burden of moving away from the status quo position of participation would be passed on to those who elected a less favorable option (omission is preferable to commission); and the overall result would be more donated organs.²⁵ Several countries (e.g., Spain, Austria, Belgium, France, and Singapore) have enacted opt-out legislation.²⁶ Clearly, ensuring the opportunity to choose by providing ample information on the options is an ethical prerequisite of such an opt-out approach.

Fourth, most people have a significant risk aversion, evident in the widespread use of different types of insurance for most aspects of modern life. This should be put to work. Thus, it is possible to reframe public understanding of the organ pool as a reciprocal form of social insurance—everyone is promised coverage in return for consent to donate (a premium). This way of framing the issue allows individuals to better appreciate their potential risk (need for an organ), their cost



(willingness to donate), and their benefit (a sufficient pool of organs to eliminate death on the waiting list). This approach admittedly departs from the “gift-of-life” terminology (which is clearly insufficient) and adopts a more self-regarding terminology that emphasizes the connection between collective willingness of healthy individuals to become donors and the self-interest of everyone as a potential recipient.^{11,25}

Finally, various legal tools are available to provide incentives for participation and disincentives for nonparticipation, but the behavioral effects of such rules must be carefully assessed to avoid unintended consequences. For example, in the case of vaccination, exemption should not be easy to obtain, and evidence shows that more procedural barriers are associated with fewer exemptions to vaccination. In 19 states with highly complex exemption processes (e.g., the need for notary authentication, the need for extra visits to health departments or a school nurse, or signatures from religious officials), the rate of exemption was low compared with rates in states with low levels of complexity (e.g., simply signing a form at school).²⁷ Publicized efforts to depress the number of exemptions, however, might arouse distrust and stimulate grassroots resistance. For instance, in the context of organ donation, proposals to require people to indicate a choice one way or the other (mandated choice) might induce people to opt out of the system, not because they are opposed to being donors but because they distrust the official pressure to choose.^{11,25}

CONCLUSION

Successfully mobilizing collective actions continues to be a formidable task for policymakers and legislators. Collective action problems in public health represent a failure to reap the benefits of public goods because of a persistent lack of concerted action by individuals. We have sought to demonstrate that collective action problems incorporate an important behavioral component. The behavioral and social sciences can shed light on decision-making processes by individuals as well as their respective groups. This developing body of knowledge should be purposefully harnessed and systematically applied by public health policymakers. ■

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