COMMENT

Applying Principles from Behavioral Economics To Promote Long-Acting Reversible Contraceptive (LARC) Methods

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Roughly half of all U.S. pregnancies are unintended,[1] and the proportion is even higher among teenagers.[2] Considering the high efficacy, safety, limited contraindications and minimal requirements for ongoing use of long-acting reversible contraceptive (LARC) methods—hormonal implants and IUDs—these methods appear extremely important for addressing this public health crisis.[3] However, little is known regarding how providers and health systems* can increase effective contraceptive use in general,[4] let alone promote LARC selection in particular.

Contraceptive use is influenced by a multitude of system-level factors, including financial barriers and limited access to care. In the Contraceptive CHOICE project, high rates of LARC adoption were reported when many system-level barriers were removed: Approximately two-thirds of women who were at risk for unintended pregnancy and were willing to switch to or initiate a new contraceptive selected a LARC when they were provided with the method of their choice at no cost and timely access to trained providers.[5] Furthermore, the women who selected a LARC had lower rates of unintended pregnancy than women who selected other methods.[6] This study suggests that while system-level factors are important, individual-level factors, such as contraceptive decision making, can also play substantial roles in unintended pregnancy.

As an interdisciplinary field that combines theories and techniques from economics and psychology, behavioral economics offers novel, but largely untested, approaches for improving contraceptive decision making. This field, which has gained considerable exposure through popular books by leading academics, such as Dan Ariely's *Predictably Irrational*[7] and Richard Thaler and Cass Sunstein's *Nudge*,[8] illuminates why consumers often make suboptimal decisions. Behavioral economics has informed interventions on health topics ranging from organ donation to proper nutrition.[9,10] However, its potential relevance for contraceptive decision making remains largely unexplored.

In this comment, we highlight how various behavioral economic principles may prove useful in addressing three pivotal questions regarding the promotion of LARC methods. First, what is the optimal number of contraceptive options providers might present to clients to increase LARC selection? Second, how might providers best present specific information on LARC methods to maximize their selection rates by clients? Third, how might providers encourage LARC use at a later date for clients who currently decline LARC methods? These questions are based upon three steps from the conflict theory of decision making that Chambers and Rew hypothesized are relevant for contraception: initially examining numerous options, obtaining new information on those options and reconsidering those options over time.[11] Most of the behavioral economic principles highlighted below were selected because they were featured prominently in a leading academic textbook on behavioral economics, *The Behavioral Foundations of Public Policy*.[12]

OPTIMAL NUMBER OF OPTIONS

Defaults

In behavioral economics, a default is a particular condition that an external entity, like a company or a government agency, has assigned to consumers in an attempt to maximize the welfare of consumers or some other group. However, consumers are not forced to accept this default; they have freedom to reject this original assignment. Johnson and Goldstein noted that defaults have had dramatic effects on behavior in two domains: organ donation and retirement savings.[9] Regarding the former, "opt-out" countries, whose default is that citizens presumably consent to donate their organs upon death unless they indicate otherwise, have much higher organ donation rates than "opt-in" countries, whose citizens must give explicit consent to donate. Regarding the latter, companies that require employees to opt out of automatic contributions to retirement savings plans have much higher savings plan enrollment rates than companies whose employees must opt in to plans and change their contribution level from zero to a higher percentage.

These findings suggest that providers might be well advised to present LARC methods as the default—the first or preferred option—for some clients, as opposed to presenting a diverse menu of birth control options and not recommending a particular one. These clients would be ones who are deemed medically eligible and appropriate for LARC methods. Similarly, educational materials that present contraceptive options by tiers of efficacy, showing LARC methods first, may be more likely to encourage LARC selection than materials that present contraceptive options in an alternative arrangement, such as alphabetically.

For those concerned that providers or educational materials may exert undue influence on women's contraceptive decision making by suggesting a default, two points should be considered. First, while women often want to make the

*For the purposes of brevity, hereafter we use the term "providers" to refer to providers and health systems.

final decisions about their contraceptive choices, they also want their providers to play active roles in the decision making process.[13] Second, before presenting any contraceptive options, providers can create customized defaults by asking clients what method features are most important to them. If efficacy or minimal ongoing user requirements are identified as critical features, providers can offer LARC methods as being most consistent with those priorities. Garbers and colleagues found that clients who were asked questions via a computer regarding preferences, sexual activity and medical history were more likely to select the most efficacious forms of contraception than were clients who were asked only demographic questions.[14]

Having too many options, as well as too few options, may impede selection of LARC methods.

Providers undoubtedly will interact with some clients for whom specific LARC methods or these methods as a general category are not a clear fit. They will likely deem it necessary to present more than one contraceptive option. The next two behavioral economic concepts offer some direction to maximize LARC selection when a provider determines that a single default is inappropriate to offer.

Choice Overload

This concept refers to consumers' failing to select a particular product or being dissatisfied with their selection when a large number, rather than a small number, of options is presented. Choice overload presumably occurs because consumers get overwhelmed by too many possibilities. For example, Iyengar and Lepper found that consumers were less likely to purchase a particular type of jam when presented with 24 choices rather than six, even though all those in the smaller group were included in the larger display.[15] This idea runs counter to many people's intuition that the more options people have, the more likely they will be to make a purchase, because they will have more opportunities to find a suitable selection.

Scheibehenne, Greifeneder and Todd conducted a meta-analytic review on choice overload.[16] While they found an overall effect size of zero for choice overload, they found considerable variation across studies and tentatively concluded that choice overload might have two important moderators. Specifically, they found an increased likelihood of choice overload when consumers had challenging trade-offs featuring disparate alternatives and when consumers experienced time pressure to make a decision. For instance, clients comparing IUDs with other contraceptive options may struggle with weighing increased risk of irregular bleeding versus decreased risk of pregnancy; they also may feel rushed in their interactions with providers in busy outpatient offices or postpartum units. Therefore, one might suspect that choice overload may apply to contraceptive decision making.

The concept of choice overload suggests that contraceptive providers may encourage LARC selection if they present only a few options, considering particular clients' priorities regarding efficacy, side effects, insertion procedures and maintenance requirements, as opposed to presenting all possible LARC and non-LARC options. Providers who feel uncomfortable curtailing the number of options offered could present a small number of alternatives and ask clients if they wish to learn about others.

Compromise Effect

This principle is demonstrated when consumers are given three options and select the one that is in the middle on some attribute, such as price or quality.[17] For example, restaurants might place high-priced items on their menu not because they expect many consumers to purchase them, but because the presence of these items increases purchases of moderately priced items instead of low-priced ones. When customers contrast the moderately priced items to the high-priced ones, the less-expensive ones look affordable.

According to this principle, clients may be more likely to select a five-year IUD if they are given the options of IUDs that last for three, five and 10 years than if the 10-year option is excluded. Similarly, clients may be more likely to select a three-year implant if given the options of a three-year implant, a five-year IUD and a 90-day injectable than if just the two shorter term options are available. Even providers who do not offer LARC methods may increase their selection by educating clients about them and then referring clients who wish to use them to other providers.

Taken together, the concepts of choice overload and the compromise effect imply that having too many options, as well as too few options, may impede selection of LARC methods. A moderate number of options—somewhere around three—theoretically may maximize LARC selection.

OPTIMAL PRESENTATION OF INFORMATION

Framing

This principle refers to the impact that different presentations of identical information can have on consumer attitudes. Weber summarized some dramatic effects of framing, noting that consumers find meat tastier if it is described as 75% lean rather than as 25% fat, and that fees are more acceptable to Republicans if they are described as offsets rather than as taxes.[18] In the medical field, it is well established that both clients and physicians are more likely to accept a treatment option if it is positively framed (e.g., as being associated with an 85% five-year survival rate) than if the identical information is negatively framed (e.g., as a 15% five-year death rate).[19]

Despite a vast literature on framing health messages across diverse domains, from diet to physical activity to breast cancer screening, Gallagher and Updegraff found that virtually no published literature addresses framing in regard to contraception.[20] In fact, the one article they identified, by O'Connor, Ferguson and O'Connor,[21] focused on a hypothetical hormonal male contraceptive. Nevertheless, according to behavioral economic theory, clients may be more enthusiastic about LARC methods when presented with continuation and satisfaction rates (which were both approximately 75% in the Contraceptive CHOICE Project[22]) than when informed about discontinuation and dissatisfaction rates (25%).

Medical providers' presentation of low-probability events deserves special attention. Clients can often be overly sensitive to rare risks and rely more on anecdotal horror stories than on large-scale studies.[23] When media (e.g., Web sites such as 1800baddrug.com[24]) highlight the side effects or complications associated with use of LARC methods without accurate and clear statistics, clients may not realize that these events are actually rare—for instance, fewer than one women in 100 experience complications during IUD insertion.[25,26] How to assist people in accurately understanding medical statistics is not fully known. Fagerlin, Wang and Ubel found that cardiac patients understood statistics better when presented with pictorial representations than with prose.[27] Lopez and colleagues tentatively concluded that audiovisual presentation of pregnancy risk may be more effective than a verbal-based presentation.[28] Perhaps visual aids will prove useful in dispelling concerns about rare adverse events associated with LARC methods.

Present-Biased Preferences

This behavioral economics principle reflects that consumers want to enjoy benefits as soon as possible, minimize costs in the near future and defer costs to the long run. This concept helps explain the success of the Save More Tomorrow program, in which employees elect to increase savings over time, presumably because the sacrifice of having less take-home pay is deferred until years later.[29] LARC methods run counter to the notion of present-biased preferences because the benefit (reduced pregnancy risk) is experienced over years, while the costs (physical discomfort in obtaining the device, paying for the method if insurance is not available) are experienced in the short run. Therefore, providers may wish to reduce the actual and perceived costs of obtaining LARC methods because minimizing the immediate downside of a behavior with longer term benefits may make that alternative seem more attractive.[30]

When it is medically acceptable, providers may reduce actual costs of obtaining LARC methods by minimizing the number of visits clients need to make to obtain all necessary care—for instance, by conducting STD testing, contraceptive counseling and LARC insertion at the same visit, or by placing a LARC method immediately postpartum or postabortion.[31] Moreover, providers may reduce perceived costs from clients' viewpoint by showing them the small size of LARC devices, thereby addressing fears women may have about them; mentioning that over-the-counter analgesics and topical anesthetics may be used during insertion, as opposed to more powerful painkillers and general anesthetics, to underscore the limited pain often associated with the procedure; and emphasizing the brevity of the LARC insertion procedures.

Social Norms

Not surprisingly, social norms can have a powerful impact on consumer choices. Salganik and colleagues created an artificial music market through the Internet and found that consumers were more likely to select music when they obtained information about about its popularity, as reflected by the number of times it had been downloaded, than when no such information was offered.[32] Given the high continuation and satisfaction rates associated with LARC use, accurate information about others' experiences with this contraceptive option could be presented to potential recipients. Clients would presumably be more likely to select a LARC method if providers told them about the large number of satisfied users than if such information were not offered.

Furthermore, upbeat portrayals of LARC methods in the mass media may also create positive social norms that could lead to increased use. Despite the ubiquity of sexual content, contraception is rarely presented in the media.[33] Nevertheless, a few positive depictions of LARC methods have emerged. In a *Teen Moms 2* episode that aired in December 2011 on MTV, a leading female character had a positive experience discussing and obtaining a five-year IUD.[34] In addition, the September 2013 issue of *Cosmopolitan*, a magazine whose sexuality-related articles typically focus on sexual fulfillment, as opposed to pregnancy prevention, presented LARC methods in a favorable light.[35] Finally, certain Web sites[36] present pregnancy prevention and sexual fulfillment as compatible goals.

COUNSELING INITIAL DECLINERS

Feedback

Thaler, Sunstein and Balz proposed that consumers can make the best decisions if they are presented with periodic feedback about their selections.[37] For example, these authors envisioned that cell phone companies could be required to send consumers annual summaries of their use that compares the price they paid for the current plan with the prices they would have paid for alternative plans. Equipped with this summary, some consumers might change their selected plan if necessary to obtain the best price, given their patterns of use. As with defaults, consumers could elect to keep their current plan even if it is not the most cost-effective.

Providers might consider arranging a similar feedback system based upon clients' sexual circumstances over a certain time period. More specifically, they could ask clients to record instances of vaginal intercourse and contraceptive use through various electronic means (e.g., smart phone applications, secure Web sites, monitoring devices on prescription bottles). Previous research has indicated that clients are willing to provide sexual health and other types of health information using these modalities.[38–41] At the end of the specific time period, clients could receive reports with an estimate of pregnancy risk for their selected contraceptive method versus alternatives, such as LARC methods. The report would likely highlight differences between ideal (i.e., correct and consistent) use of the selected method and typical (i.e., incorrect or inconsistent) use. Disparities in efficacy between ideal and typical use are generally greater for non-LARC than for LARC methods because the former have more intensive maintenance requirements. Clients

provided with this report may be inclined to revisit their previous decision to decline a LARC method.

Hot-Cold Empathy Gap

George Loewenstein[42,43] has conducted among the most important research on how one's current emotional or visceral circumstances can override optimal decision making. According to this concept, known as the hot-cold empathy gap, when people are in a "hot" state (e.g., hungry, sexually aroused), rather than a "cold" state (e.g., satiated, nonaroused), they will make suboptimal decisions and fail to appreciate the large extent to which their behavior is influenced by their current affective state. For example, stores and restaurants use pleasant smells, sounds and sights in attempts to move customers from cold to hot states, with the hope they will make purchases that they would not make in a less aroused state. Ariely and Loewenstein found that individuals were more willing to engage in unsafe sexual behavior, such as forgoing contraceptive use, when in a hot state than when in a cold state.[44]

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Nearly two decades ago, Gold and Rosenthal tested an intervention aimed at homosexual men who were having unprotected anal intercourse, to help reconcile the gap between these two affective states.[45] Intervention group participants were asked to recall the last time they had unprotected sex and the justifications for doing so (e.g., the partner did not seem to be at high risk of having HIV). They were then asked to critically evaluate those justifications in a nonaroused state. Subsequently, these men had fewer future instances of unprotected sex than control group participants, possibly because they had become more cognizant of the sometimes deleterious effects being aroused can have on sexual decision making.

Such an approach might have relevance for LARC promotion. As time permits during busy clinical encounters, asking clients, in their cold state, to recall vividly their justification or their partner's justification for nonuse or improper use of contraceptives may aid providers in identifying weaknesses in current contraceptive plans. As a result, clients may be more willing to consider alternative options, such as LARC methods.

WHAT'S NEXT?

There are multiple reasons to believe that behavioral economic principles may help address the dearth of strong scientific data regarding how provider counseling can prevent unintended pregnancy. To begin with, the possible interventions deriving from behavioral economic principles can be empirically evaluated and compared with alternative approaches. Because none of these principles has definitive empirical support for increasing LARC use, these principles should be subjected to randomized controlled trials comparing behavioral economically inspired interventions with alternative strategies on such critical outcomes as prevention of unintended pregnancy, clients' satisfaction with contraceptive methods and overall quality of life. Such investigations would be consistent with the Institute of Medicine's identification of the prevention of unintended pregnancies as one of the 25 top priorities for comparative effectiveness research.[46] Furthermore, technological aids, from smart phone applications to Web-based videos, could incorporate many behavioral economic concepts and hence facilitate dissemination on a wide-scale basis. Finally, the success of behavioral economics in promoting changes in a wide variety of arenas—both health-related and others—offers a compelling track record for those interested in testing its efficacy in a novel domain, such as LARC adoption.

Given the large number of behavioral economics applications we have highlighted, one might wonder how to identify the most promising applications for development and testing. The Contraceptive CHOICE Project, which focused on reducing system-level barriers, incorporated some of the techniques (e.g., defaults, visual representations) we have highlighted and might provide insight into ways to increase LARC selection. Similarly, researchers could identify community providers whose clients have high rates of LARC use and examine the contraceptive counseling given to these clients. This process—known as positive deviance[47]—may provide some clues as to the most promising behavioral economic applications.

Despite the potential appeal of these principles to LARC promotion, we acknowledge that attempting to influence contraceptive decisions will often be viewed as a controversial matter. Providers, researchers and policymakers must strike a sensitive balance in which they neither resign themselves to the high frequency and serious consequences of unintended pregnancies nor overstep their boundaries in regard to clients' ultimate decisions. Moos, Bartholomew and Lohr's cautionary words about possible harms in trying to influence contraceptive decisions merit attention: "[Contraceptive] counseling [1] could be so directive that it infringes on personal choice; [2] it could be so dense or complex that it is misunderstood by the patient and results in faulty utilization of the method; [3] it could be so time-consuming or inclusive that patients lose interest; or [4] it could be construed as demeaning."[48(p. 129)]

We suggest that behavioral economic concepts have the potential to minimize all four of these potential risks. Because these concepts recognize that consumers have the ultimate choice, their application should leave patients with the knowledge that they are free to choose the method that they feel best meets their needs. Because some principles (e.g., feedback, choice overload) feature summaries and reduction of information, they should be able to simplify clients' decisions. Because the presentation of information according to these principles will be brief and carefully worded, it can be made attention grabbing. And because these concepts can be applied to contraceptive counseling for women with differing medical and personal circumstances, their use should convey a sense of inclusiveness and not of disrespect. Clearly, future research is needed to determine if behavioral economic principles can produce demonstrable benefits while minimizing potential risks.

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