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Choice architecture 2.0: Behavioral policy as an implicit social interaction

Job M. T. Krijnen, David Tannenbaum, & Craig R. Fox

abstract

We propose a new conceptual framework for behavioral policy design that we call *choice architecture 2.0.* We argue that in addition to considering how different choice environments affect decisions (as in conventional choice architecture), choice architects should also be aware of the implicit interaction taking place between the targets of the choice architecture and themselves. When confronting a decision, people often engage in a *social sensemaking* process that entails an assessment of (a) the beliefs and intentions of the choice architect and (b) how their decision will be construed by the choice architect and other observers. We present examples of how this choice architecture 2.0 framework can be used to anticipate factors that moderate the success or failure of behavioral policy interventions, and we provide examples of factors that may trigger social sensemaking. We also present a template for a *social sensemaking audit* that policymakers can perform before implementing any particular design of choice architecture.

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Core Findings

What is the issue?
Behavioral policy design that employs *choice architecture* may be underestimating the extent to which relevant decisionmakers engage in *social sensemaking*. When social sensemaking is triggered, decisionmakers consider both the beliefs and intentions of the choice architect and how their decision will be construed by others. Decisions can therefore run counter to intended outcomes.

How can you act?
Selected recommendations include:
1) Conducting a systematic social sensemaking audit before implementing any choice architecture design
2) Developing and testing new behavioral policy tools that take into account the implicit interaction between the choice architect and decisionmakers

Who should take the lead?
Policymakers acting as choice architects, behavioral science researchers

In fall 2016, the legislature of the Netherlands wished to increase the percentage of Dutch residents who consented to organ donation. The nation's House of Representatives narrowly passed a highly publicized bill intended to change the donation consent procedure, beginning in 2020, from one requiring explicit consent (an *opt-in* default) to one of presumed consent (an *opt-out* default). Under the policy change, residents would automatically be considered donors unless they returned a letter or went online to elect out of participation. The bill was motivated by recent successes that policymakers around the world have had in applying insights from experimental psychology and behavioral economics to promote better decisions. In particular, policymakers have made gains by modifying *choice architecture*—characteristics of the environment in which options are presented, such as how relevant information is described or how people are asked to indicate their preferences.[1,2]

There are many ways to present choice options to targeted individuals, and the particular presentation can have a large impact on what people decide. Notably, the strategic designation of a favored option as the default has proved to be among the most potent tools available to choice architects. To cite a few examples, employees are more likely to save for retirement when they are automatically enrolled in a 401(k) plan,[3] doctors are more likely to prescribe generic drugs when an electronic health record system automatically replaces branded prescriptions with generic alternatives,[4] and consumers are more likely to receive energy from renewable sources in their homes when they are automatically enrolled in a green rather than a gray energy plan.[5,6] Of particular relevance to the Dutch situation, organ donation consent rates are much higher in European countries where consent is presumed by default compared with countries in which residents must actively elect into donation.[7]

On the basis of these findings, the Dutch legislature made the reasonable assumption that shifting the default designation to one of presumed consent would increase the rate of participation in the donation program. Remarkably, however, the month after the bill passed the Dutch House of Representatives but before it was ratified into law, the number of residents who registered as nondonors spiked to roughly 40 times the number observed in previous months.[8] (See note A.) This dramatic (albeit temporary) jump in active rejections occurred not only among newly registering residents but also among those who had previously consented to donate and then went to the trouble of revoking their consent.

In fact, the backlash to the Dutch legislature's proposed policy change for organ donation is not without precedent. In the early 1990s, the rates of nonconsent for organ donation rose markedly in Virginia and Texas after these states switched their policies from explicit consent to mandated choice (in which residents are forced to indicate their donation preference when applying for or renewing a driver's license).[9,10] Why did changing defaults in the Netherlands and these U.S. states provoke such strong backlash?

One likely explanation is that some residents may have construed the change (or proposed change) in choice architecture as an attempt at coercion by their government. Residents may have recognized that lawmakers altered policies with the intention of increasing organ donation rates, which provoked many to rebuke that attempt by explicitly opting out. This interpretation suggests that policymakers and behavioral scientists alike need to update their understanding of how choice architecture affects behavior to account for the implicit social interaction taking place between policymakers and targets of behavioral policy.

From Choice Architecture 1.0 to 2.0

When Richard H. Thaler and Cass R. Sunstein coined the term *choice architecture* in their book *Nudge: Improving Decisions About Health, Wealth, and Happiness*, they recognized that individuals targeted by a policy intervention can draw inferences about the intentions of the architects of that policy.[1] For instance, Thaler and Sunstein noted that "in many contexts

defaults have some extra nudging power because consumers may feel, rightly or wrongly, that default options come with an implicit endorsement from the default setter, be it the employer, government, or TV scheduler" (p. 35). Since then, however, the insight that choice architecture can also serve a signaling function has not been a central concern of either researchers or policymakers. Thus, the conventional approach to choice architecture (which we might call *choice architecture 1.0*) treats the relationship between the choice architect and the decisionmaker as irrelevant and focuses exclusively on characteristics of the environment in which options are presented.

We propose updating this framework by incorporating an explicit analysis of the implicit social interactions inherent in choice architecture. Our approach, which we call *choice architecture 2.0*, conceives of targeted individuals as "social sensemakers." When confronted with options, individuals will often try to make sense of why the choice architect has presented the selection in one particular manner rather than in some other arrangement (for example, "Why did my employer set this option as the default?"). Decisionmakers also often care about what their choice reveals to others, including the choice architect. These two sets of issues—what individuals infer about the choice architect and what they think their behavior communicates to others—jointly influence the decisions they make and can determine whether a behavioral policy intervention succeeds or fails. Our approach builds on and complements previous research on topics such as sensemaking in organizations,[11–14] conversational norms that guide everyday language use,[15–17] and contextual inferences.[18–20]

In the remainder of this article, we delve more deeply into the two primary ways that social sensemaking affects responses to a choice architecture (for an overview, see Table 1). First, we present examples of how social

Table 1. Social sensemaking in response to a choice architecture

Stage	Examples of people engaged in social sensemaking	Reference(s)
Information leakage stage (People infer the choice architect's intentions)	*Defaults:* Employees who are more likely to stick with the default retirement plan because they see it as the recommended option.	Brown et al., 2012; McKenzie et al., 2006
	Anchors: Credit card customers who lower their monthly payments in response to the disclosure of minimum repayment information because they interpret the number as a suggested amount.	Keys & Wang, 2014; Navarro-Martinez et al., 2011; Stewart, 2009
	Menu partitions: Health care providers who favor prescribing medications that are listed separately (versus grouped together), potentially because ungrouped treatment options may be viewed as being more commonly prescribed than grouped options.	Tannenbaum et al., 2015; Tannenbaum et al., 2017
	Incentives: Shoppers who bring their own bags because a small surcharge on the use of plastic bags is inferred as communicating social norms about waste reduction.	Lieberman et al., 2017
Behavioral signaling stage (People consider what their choices could communicate to others)	*Defaults:* Residents who assign more social meaning to the act of organ donation if the consent policy in their country is opt in rather than opt out.	Davidai et al., 2012
	Incentives: Female blood donors who infer from the introduction of a monetary reward that their donation would signal self-interest rather than prosocial motives.	Mellström & Johannesson, 2008

inferences about a choice architect's intentions can increase or undermine the effectiveness of a behavioral policy intervention. Second, we expand on the ways that decisionmakers draw inferences about the social ramifications of their own actions and on how those inferences influence the effectiveness of the standard tools of choice architects. Third, we provide a checklist of common factors that can trigger social sensemaking by decisionmakers. Drawing on insights from these three sections, we outline a template for a *social sensemaking audit* that choice architects can perform before implementing any particular design of choice architecture.

We aim our discussion of choice architecture 2.0 at two overlapping audiences. For academic researchers, we highlight factors that can moderate the impact of familiar behavioral policy tools and provide a conceptual framework that may help in the development of new tools. For policymakers, we provide a set of guidelines for anticipating conditions under which the impact of a behavioral policy intervention might be affected by social sensemaking. For both audiences, the updated framework can be thought of as a lens that brings critical features of choice architecture interventions into sharper focus.

Inferences About the Beliefs & Intentions of the Choice Architect (*Information Leakage*)

When do individuals draw inferences about the beliefs and intentions of a choice architect, and why might this matter? A recent empirical finding helps illustrate how this process can play out. In the United States, 401(k) plans have become a popular investment vehicle to help employees save for retirement, partly because employers often contribute additional funds to their workers' accounts. Nevertheless, many eligible employees fail to take full advantage of these plans.[21,22] In 2014, Thaler and Shlomo Benartzi found that providing employees with the option to "save more tomorrow"—by committing in advance to increasing one's retirement contributions upon receiving a future salary raise—boosted both participation and saving rates.[23] Given the success of this program, it was surprising that in a recent field study by John Beshears and his colleagues, employees given the option to commit to future saving did not increase their participation.[24] In fact, the offer led to a decrease in overall savings contribution rates. Why would seemingly identical interventions increase plan participation in the original studies of Thaler and Benartzi but not in the follow-up study by Beshears and colleagues?

The answer seems to turn on a small but apparently critical difference in the presentation of the options between these studies. Thaler and Benartzi offered employees the "save more tomorrow" option only after employees had already passed up the chance to enroll in a regular 401(k) plan that would have taken effect immediately.[23] Beshears and his collaborators, in contrast, provided employees with a direct choice between initiating saving today versus initiating saving later.[24] Many individuals probably assume that their employer knows more than they do about the urgency of saving for retirement, and employees in the study conducted by Beshears and his colleagues may have inferred that their employer did not consider saving for retirement to be particularly urgent, because the employer offered the option to enroll now or later. Put differently, the choice architects in this latter implementation may have unwittingly leaked information about the (lack of) urgency of retirement saving by how they presented choice options to their employees.[25,26] Indeed, Beshears and his colleagues found support for this hypothesis in a follow-up laboratory experiment. (See note B.)

The manner in which choice architecture communicates or leaks information can take many forms, can be unintentional or by design, and can facilitate or hinder the goals of the choice architect. Next, we provide examples of ways that four common behavioral policy tools can prompt decisionmakers to draw inferences about the choice architect.

Defaults

As discussed in the introduction, choice architects often designate an option as the default

consequence if no action is taken by the decisionmaker. One reason defaults are a powerful policy tool is that they can be interpreted by the targeted individual to be the preferred option of the choice architect.[27–29] For instance, it is well-known that participation in retirement saving plans increases when employees are automatically enrolled.[3,30] In one field study, approximately one-third of employees who stayed with the default retirement plan indicated that they did so because they believed it to be the recommended option.[31] Both laboratory and field studies have found that the more a default option is viewed as an implicit recommendation, the more likely people are to stick with that option.[3,28,29]

If decisionmakers distrust the benevolence and competence of a choice architect, however, they will tend to be skeptical of the options the architect appears to endorse. For example, if consumers feel that a choice architect is endorsing an expensive upgrade package merely because the architect wants them to spend more money, consumers will likely reject any upgrade package into which they are automatically enrolled. Indeed, researchers have documented several instances in which defaults selected by distrusted choice architects have failed or backfired, in both laboratory and field settings.[29,32–34]

Anchors

When people make decisions involving numbers, their judgments are often unduly influenced by anchor values provided by the choice architect. For instance, in two experiments, assessments by real estate agents of a home's fair market value were strongly influenced by the putative listing price.[35] Another example involves the minimum-repayment information provided by credit card companies. These disclosures, which indicate the government-mandated minimum amount that consumers would have to repay to avoid a financial charge, were intended to help people avoid amassing unsustainable debt. However, such minimum-repayment values may have served as anchors that were lower than the amount most consumers would have otherwise repaid, inadvertently leading consumers to make lower monthly repayments than would have been the case had such minimum repayment amounts never been introduced.[36–38]

"information communicated through an anchor can sometimes undermine its intended effect"

One reason why anchors may influence what people choose is that, like defaults, they are sometimes viewed as implicit suggestions being made by the choice architect. That anchors can serve as endorsements might explain why anchoring effects are often stronger when the choice architect is perceived to be more benevolent or more competent. Precise opening offers tend to anchor counteroffers more strongly than imprecise opening offers do, and laboratory studies find that this effect occurs partly because people assume that those making more precise opening offers are more competent. For instance, an opening listing price of $799,812 by a home seller signals that he or she has given greater consideration to the price than a seller who starts with the less precise figure of $800,000. However, this effect can backfire among buyers with greater expertise, who may recognize that a value is unreasonably precise.[39]

As the credit card example suggests, the information communicated through an anchor can sometimes undermine its intended effect. In another illustration, research on charitable giving has found that setting a low amount as the reference (default) donation can lead donors to give less money, on average, than when no reference donation or a high reference donation is set.[40] In online follow-up studies, the downward pull of a low reference donation was stronger when it was presented as a suggested amount than when it was explained that the reference donation was selected at random. A similar dynamic may be relevant to retirement saving. Field research on retirement plan design suggests that although automatic enrollment may increase overall participation, employees

may end up saving less money than they otherwise would have (under a nonenrollment default) if their employer's automatic default invests their money in an overly conservative savings plan.[41]

Menu Partitions

Choice architects often partition the list of available options into subsets or groups. For instance, retirement plan sponsors may group available investments by geography (domestic versus international funds), size (small cap versus large cap funds), or risk profile (conservative versus aggressive funds). Studies have found that how the menu space is partitioned can have a pronounced impact on choice, even when the set of available options remains constant, because people are biased toward spreading out their allocations or selections over all identified groups.[42] In fact, the partitioning of options even affects how people decide when choosing a single option. For instance, in one study, medical providers were presented with descriptions of patient symptoms along with a list of possible medications to prescribe.[43] For some providers, the less aggressive medications (for instance, nonprescription medications) were listed separately and all of the more aggressive medications (for instance, prescription medications) were lumped into a single category (labeled *prescription drugs*), whereas other providers saw the opposite menu partition, in which less aggressive medications were grouped into a single category (labeled *over-the-counter drugs*) and the more aggressive medications were listed separately. Medical providers prescribed less aggressive medications more often when those options were listed separately compared with when they were clustered together.

Recent studies suggest that inferences about the popularity of options can sometimes play a role in driving partition dependence.[44] In the absence of explicit information about the rationale for a grouping scheme, decisionmakers may infer that the choice architect grouped options according to how representative or popular those options are. When companies present menus for their products, for example, they often highlight their most popular products individually and relegate less popular goods to a residual "other products" category. Individuals tend to gravitate toward what is commonly chosen by others,[45] especially when they are uncertain about what to choose, and for this reason may be more apt to select menu items listed separately.

It is worth noting that many past experimental studies investigating partition dependence took pains to rule out information leakage as a necessary driver of the phenomenon,[42,46,47] because these researchers viewed information leakage as an experimental artifact. However, the choice architecture 2.0 framework embraces information leakage as an important factor that contributes to partition dependence and that may generate novel research questions that are especially important to practitioners—for instance, is the size of partitioning effects influenced by whether the decisionmaker trusts the choice architect?

Incentives

Policymakers often introduce financial incentives—rewards or penalties—as a way to promote desired behavior or discourage undesired behavior. The way a financial incentive is presented or structured can exert an influence beyond its monetary value by communicating information about the intentions of the choice architect. For instance, punishments may signal a stronger moral condemnation of unwanted behavior than rewards for good behavior would.[48] In one study, participants learned about a company that introduced either a health insurance premium surcharge for its overweight employees or a premium discount for its healthy-weight employees.[49] Although the financial consequences of the two policies were equivalent, participants inferred that the company held negative attitudes about its overweight employees only when the company introduced a surcharge (that is, a financial penalty). In a follow-up study, participants with higher body mass indices reported they would feel more stigmatized at work and would be more apt to consider looking for employment elsewhere if their employer implemented an overweight penalty than they would

40x

Initial spike in organ nondonor registrants over previous months, once the Dutch parliament passed a mandatory opt-out bill

1/3

Approximate proportion of employees in a field study who indicated that they stayed with the default retirement plan because they believed it to be the recommended option

46%

Decrease in inappropriate antibiotic prescriptions among physicians in an intervention control group who knew their behavior was being observed by researchers

if their employer implemented a healthy-weight reward.

Social sensemaking may also explain why imposing a small surcharge on the use of plastic bags in stores is more effective in reducing their usage than offering an equal discount for customers who bring their own bags.[50] This effect appears to stem in part from different inferences made by shoppers about the values held by the choice architect (in this case, the grocery store or the local government).[51] Compared with a discount, a surcharge more strongly communicates to decisionmakers both that the choice architect thinks that customers ought to use their own bags and that most customers do bring their own bags (that is, it suggests that the use of reusable bags conforms with both injunctive and descriptive social norms).

Beyond the framing of an incentive, the mere introduction of a reward or punishment may be interpreted by decisionmakers as a sign of the choice architect's view about the attractiveness or unattractiveness of a behavior.[52,53] For instance, one study found that residents of two Swiss communities were less likely to accept the building of a nuclear waste facility near their homes when they were offered financial compensation.[54] Presumably, residents inferred from the offer of compensation that having a nuclear waste facility nearby was especially hazardous or unappealing.

Inferences About the Social Meaning of the Decisionmaker's Own Behavior (*Behavioral Signaling*)

Gleaning the intent of the choice architect can be thought of as the first stage of social sensemaking by decisionmakers. This is sometimes followed by a second stage where decisionmakers infer what their own behavior signals to the choice architect and other potential observers.

A clear example of this second form of sensemaking comes from a study that tested an approach to reducing the profligate prescribing of antibiotics by U.S. clinicians; such overprescribing contributes to the evolution of antibiotic-resistant superbugs.[55,56] In 2016, Daniella Meeker and her colleagues found that two interventions led to dramatic decreases in inappropriate prescribing for nonbacterial upper respiratory infections: (a) prompting physicians via the electronic health record system to write a justification for each dubious prescription, which reduced inappropriate prescribing from 23% of the time to 5% of the time, and (b) providing physicians with monthly e-mails comparing their inappropriate prescription rates with those of top performers—doctors with the lowest rates—in their region, which reduced inappropriate prescribing from 20% of the time to 4% of the time.[57] There is, however, a remarkable sidenote to this success story. It turns out that clinicians in the control condition—who received no intervention beyond a bland education module that taught nothing they did not already know—also reduced their inappropriate antibiotic prescribing substantially over the course of the study, from 24% of the time to 13% of the time (a 46% decrease). It seems unlikely that the education module was responsible for this reduction, as it presented little that was new and previous educational interventions have not been particularly effective in reducing antibiotics prescription rates.[58] So why would enrollment in a control condition have such a strong impact on prescribing behavior?

Choice architecture 2.0 refocuses attention on what might otherwise be seen as an experimental artifact. It seems plausible that many clinicians, knowing that their prescribing behavior would be monitored by researchers from several prestigious institutions, adjusted their behavior so they would be seen in the best possible light by these choice architects. Indeed, consistent with this notion, the most precipitous reduction in inappropriate antibiotic prescribing among physicians in the control group occurred at the very beginning of the intervention, and the effect persisted throughout the intervention period. (See note C.)

In fact, pronounced improvement in the behavior of participants in the control condition of field interventions is not an uncommon

"people may actively resist persuasion attempts or react against threats to their freedom to choose"

observation. When conducting field studies, researchers frequently find that participants behave in a more socially desirable manner when they are aware that their actions are being monitored, a pattern often called a *Hawthorne effect*.[59] (See note D.) For instance, a recent study showed that airline captains made more effective decisions about the amount of fuel to carry onboard after simply learning that they were being observed by investigators—the intended control condition of a larger study on the impact of incentives.[60] Other research found that households reduced the amount of electricity they used after being notified that they had been selected to participate in a study on electricity usage.[61] Researchers typically view the Hawthorne effect as an empirical nuisance that challenges their ability to assess the independent influences of experimental interventions that are of greater theoretical interest.[59,62] From a choice architecture 2.0 perspective, however, the Hawthorne effect can serve as a potent and cost-effective tool for changing behavior.

The Hawthorne effect belongs to a broader family of behavioral responses to being observed. An abundance of research has found that decisionmakers tend to be concerned with the social meaning of their actions and often shift toward more socially desirable behavior when they are made to feel accountable to observers. For instance, one study found that promising to publish neighborhood voting records (indicating who voted and who did not) increased turnout in Michigan's 2006 primary election.[63] In addition, a vast literature suggests that feeling accountable or worrying about one's reputation becomes more salient when decisionmakers expect that the choice architect will ask them to provide justification for their choices.[64]

In some contexts, a decisionmaker's desire to be viewed in a positive light may be trumped by a reaction against the perceived intrusion of a choice architect. A long line of research has established that, to maintain and protect control over their own lives, people may actively resist persuasion attempts[65] or react against threats to their freedom to choose.[66–68] If decisionmakers perceive a choice architecture to be coercive or a threat to their autonomy, they may be moved to demonstrate their independence by behaving contrary to what they surmise to be the choice architect's goal—as was observed in the previously mentioned case of organ consent defaults in the Netherlands, Virginia, and Texas. We suspect that such reactance is particularly likely to occur in situations that are personally consequential (such as when deciding whether to be an organ donor),[67] among individuals who are especially concerned about their sense of freedom,[69] and when the choice architect is distrusted.[29,70]

The preceding analysis shows that inferences about how one's actions may be evaluated by a choice architect and other potential observers can alter behavior, a phenomenon that could be harnessed intentionally as its own independent tool of behavioral policy. Additionally, such inferences may increase or decrease the effectiveness of familiar behavioral policy tools, as we illustrate next.

Defaults

A choice architect's decision to designate participation or nonparticipation in an organ donation program as the default may not only communicate information from the choice architect to the decisionmaker but may also affect the meaning that decisionmakers attach to their own choices. For instance, Germany has much lower consent rates for organ donation (12%) than does neighboring Austria (virtually 100%), a difference that is commonly attributed to Germany having an explicit consent (opt-in) default, whereas Austria has a presumed consent (opt-out) default.[7] Research finds that Germans assign greater meaning to the act of organ donation than do Austrians, despite strong cultural similarities between the two countries.[71]

A follow-up experiment provides more direct evidence that the default regime affects the meaning attached to different choices. American participants read about a country with either an opt-in or an opt-out organ donation policy and then rated the extent to which they would view organ donation under the given policy as an act of self-sacrifice relative to other prosocial behaviors. Participants who read about the country with an opt-in policy rated the act of organ donation as being comparable to self-sacrificing acts such as bequeathing one's wealth to charity. In contrast, participants who read about the country with an opt-out policy rated the act of organ donation as less significant, comparable to polite behaviors such as letting another person go ahead in line.

Concerns about how decisionmakers will be viewed by others are especially influential when the choices made would signal sensitive or stigmatizing information. For instance, in one study, participants were given the opportunity to test for a fictitious disease that they had read about during a previous study session.[72] Some participants learned that the disease was contracted via unprotected sex (a socially stigmatized behavior), whereas others learned that the disease was spread by coughing or sneezing. The option to test for the disease was presented to participants as either opt in (in which testing is voluntary) or opt out (in which testing is routine but the individual can choose to forgo it). The default intervention had greater impact when testing involved a disease with potentially stigmatizing implications. Apparently, participants were more reluctant to opt into voluntary testing for the stigmatized disease because of what their choice might reveal ("Getting tested may tell others that I've engaged in risky behaviors and have something to worry about"). For similar reasons, participants were also more reluctant to opt out of routine testing for the stigmatized disease ("Not getting tested may make it look like I have something to hide").

Incentives

Whether an incentive is framed as a reward or a punishment can affect decisionmakers' expectations of how others will judge them.[73] As a result, well-meaning incentives can sometimes backfire.[53,74,75] Consider a well-known study conducted at an Israeli day care center. In an attempt to get parents to pick up their children on time, the school introduced a small fine for tardiness. In fact, the penalty had the opposite of the intended effect—it led to an increase in lateness.[76] The researchers speculated that introducing a fine might have changed how parents thought their behavior would be perceived by the employees of the day care center. Before the introduction of the fine, showing up late may have been perceived as a moral violation (or perhaps as evidence of bad parenting). After the introduction of the fine, showing up late may have been perceived as merely a financial transaction. That is, many parents may have construed the small fine as a price rather than a penalty so that, ironically, this financial disincentive now allowed them to feel unembarrassed about taking advantage of additional child care.

Social sensemaking can also modify the effectiveness of rewards designed to promote prosocial behavior. For instance, one study found that women (although not men) were less likely to donate blood when a monetary reward was introduced.[77] This pattern of results suggests that the women cared about the social meaning of their actions: presumably, they inferred from the introduction of the monetary reward that their blood donation could be perceived as being motivated by self-interest. Consistent with this interpretation, the rate of blood donations among women did not decline when participants were given the option to donate the money to a charity, probably because donation of the reward eliminated the potential appearance of self-interest.

Triggers of Social Sensemaking

Although all decisions are made in settings characterized by a particular choice architecture,[78] we do not suggest that decisionmakers always engage in social sensemaking. Some forms of social sensemaking are more deliberate, whereas others are more intuitive; further, some conditions provide more mental bandwidth for social sensemaking than others (such as when people are less rushed or distracted), and some

individuals may have a greater tendency to engage in such thinking than others.

For now, we assert that several situational factors are likely to trigger social sensemaking by decisionmakers and that choice architects can design more effective interventions if they keep these triggers in mind. In Figure 1, we provide a checklist with questions that, when answered affirmatively, could be used to determine whether choice architecture 2.0 thinking is especially called for in the design, implementation, or calibration of behavioral policy interventions. These five questions can be remembered using the acronym PreDICT.

Preference Uncertainty: Are Decisionmakers Uncertain About Their Preferences?

Decisionmakers who are unsure about how to decide may actively search for guiding cues from the way the options are presented. This tendency may partly explain why defaults in retirement saving have a greater impact on people with little financial knowledge[33] or why ballot order has a greater effect on voters who have little information available.[79] Similarly, people may be more receptive to perceived guidance from choice architects when they subjectively feel that they lack relevant knowledge (regardless of whether they objectively lack such knowledge).[80] Indeed, a recent series of laboratory studies involving investment decisions found that people who were made to feel less knowledgeable were more receptive to adopting the default retirement saving option.[81]

Distrust: Are Decisionmakers Suspicious of the Choice Architect?

As alluded to earlier, distrust of the choice architect may lead a decisionmaker to actively consider the choice architect's beliefs and intentions. Such questioning may, in turn, reduce the effectiveness of many policy interventions. Studies find that decisionmakers are more disapproving of behavioral interventions when they are implemented by choice architects whom they oppose politically[82] or perceive as dishonest.[83] This propensity may explain why one field experiment found that households in more politically conservative counties were more resistant to a "green nudge" intended to promote energy conservation—a monthly energy report with personalized information about electricity usage over time and a comparison to the electricity usage of neighbors.[84] We also suspect that regional differences in trust in government could be one factor explaining geographic variation in the level of public acceptance of behavioral policy interventions.[85]

Past experiences with a particular choice architect may affect decisionmakers' subsequent level of trust in the architect, which may, in turn, influence the impact of the associated choice architecture. Thus, responses to choice architecture may sometimes be construed as a repeated social interaction in which both parties learn over time and may even (strategically) adjust their actions.[86] For instance, an insurance company implementing default insurance plans tailored to the characteristics and preferences of each customer (which have been called *smart defaults*)[87] may improve the satisfaction of their customers. This satisfaction may lead those same customers to place greater trust in the company and make them more willing to rely on defaults selected by the same choice architect in the future.

Importance: Is the Decision Especially Meaningful to Decisionmakers?

People are prone to process information more carefully when the issue at hand is more

Figure 1. PreDICT checklist

A yes answer to any of the questions below signifies that the choice architecture is especially likely to trigger social sensemaking by decisionmakers.

☑ **Pre**ference uncertainty	Are decisionmakers uncertain about their preferences?
☑ **D**istrust	Are decisionmakers suspicious of the choice architect?
☑ **I**mportance	Is the decision especially meaningful to decisionmakers?
☑ **C**hange	Is the choice architecture noticeably different or abnormal?
☑ **T**ransparency	Is the strategic modification of choice architecture explicitly communicated to decisionmakers?

important to them.[88–90] We suspect, therefore, that decisionmakers are more likely to consider the beliefs and intentions of a choice architect when the decision is more personally relevant or important. For instance, employees are probably more apt to evaluate their employer's rationale for selecting a particular option as the default when the issue at hand is investments offered in a company retirement saving program versus something relatively trivial, such as the font used in company e-mails.

Change: Is the Choice Architecture Noticeably Different or Abnormal?

People are more likely to draw causal inferences when they find a situation unusual or unexpected.[88,91–94] We therefore presume that decisionmakers are more likely to engage in social sensemaking when they recognize that a presentation of options has changed or is about to change. For instance, most Dutch residents probably engaged in more social sensemaking about organ donation defaults after the Dutch legislature proposed a highly publicized change to the default than they did before the proposal. When sensemaking is triggered by a change in choice architecture, people may gradually come to regard the new policy as normal and subsequently be less likely to engage in sensemaking as time goes on.

Transparency: Is the Strategic Modification of Choice Architecture Explicitly Communicated to Decisionmakers?

It may seem obvious that people are more likely to engage in social sensemaking when the design of a choice architecture is explicitly pointed out to them. A choice architecture 2.0 lens not only suggests that transparency will tend to trigger social sensemaking but also helps identify how transparency is likely to affect the success of a policy intervention. On the one hand, studies on resistance to persuasion suggest that when transparency highlights the choice architect's intention to nudge behavior, decisionmakers may shift their attitudes (and therefore choices) in the opposite direction.[95,96] On the other hand, many have argued that being transparent about the goals and motives underlying the selection of a particular choice architecture is more ethical and makes the approach more acceptable to the public;[97–99] such honesty has also been found to reduce skepticism, increase perceived fairness, and engender trust.[83,100] A third possibility is that transparency can sometimes have a minimal impact on the effectiveness of choice architecture interventions: Recent studies have found that default effects did not diminish even when choice architects were transparent about the typical impact that defaults have on people's decisions.[100–103] Although further research is needed, it appears that in at least some contexts, policymakers can promote transparency without sacrificing the effectiveness of choice architecture interventions. (See note E.)

"People are more likely to draw causal inferences when they find a situation unusual or unexpected"

Conclusion: Introducing the Social Sensemaking Audit

The impact of choice architecture on decisions is not always easy to anticipate. In this article, we have proposed an updated conception of choice architecture—from 1.0 to 2.0—that enhances the traditional framework by treating the implicit interaction between decisionmakers and the choice architect as a crucial factor to be considered in the crafting of effective behavioral policy. Decisionmakers often seek information about the beliefs and intentions of the choice architect; they also infer what their own behavior may communicate to the choice architect and other observers. This updated perspective can help policymakers and behavioral researchers in the design and implementation of more effective choice architecture interventions by highlighting the importance of seemingly irrelevant implementation details that may influence the success of an intervention. A choice architecture 2.0 perspective also points to the development of new tools of behavioral policy, such as explicitly informing decisionmakers that their behavior is being monitored

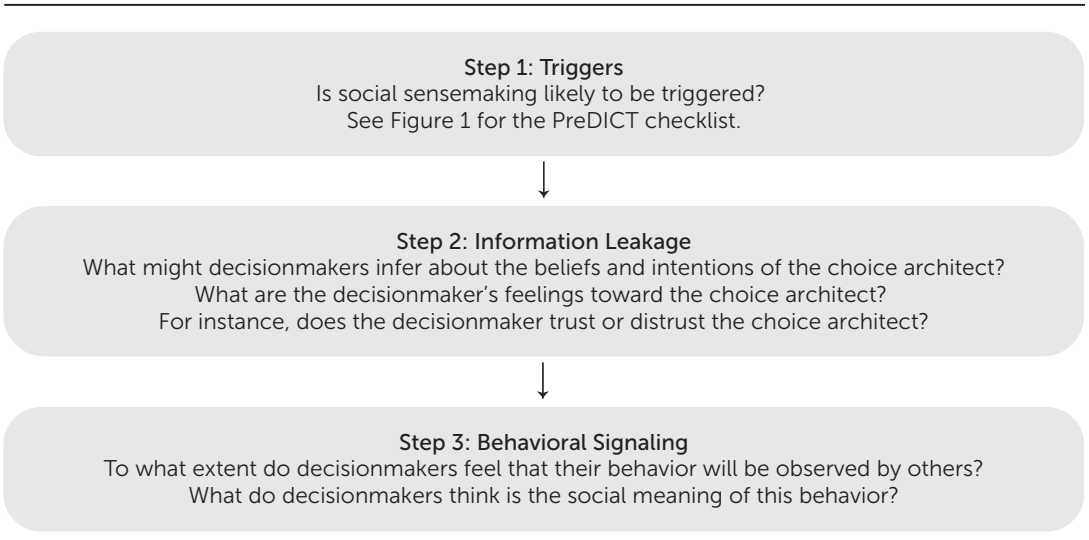
(that is, leveraging the Hawthorne effect deliberately to prompt more mindful behavior).

As previewed in the introduction of this article, a choice architecture 2.0 framework suggests that policymakers should routinely engage in a social sensemaking audit before finalizing the design of a particular choice architecture (see Figure 2). The major elements of such an audit can be summarized as follows. First, choice architects ought to ask to what extent social sensemaking is likely to be triggered. Second, if social sensemaking seems likely, then ask what decisionmakers might infer about the intentions and beliefs of the choice architect and to what extent decisionmakers would find the choice architect competent and benevolent. For instance, a nudge that appears to be an endorsement may be more influential if decisionmakers feel the choice architect has their best interests in mind and is capable of identifying the best option for them. Third, if social sensemaking is likely, choice architects ought to consider what decisionmakers could assume their choices would signal to observers. Again, decisionmakers' relationship with the choice architect will be key to anticipating how this reverse information leakage is likely to affect decisionmakers' choices. For instance, decisionmakers are likely to behave in socially desirable ways to the extent that the choice architect's or other observers' evaluations are valued and the decisionmakers know that their choices are personally identifiable. This social sensemaking audit may lead choice architects to consider making triggers more or less salient, communicating their beliefs and intentions explicitly to forestall faulty inferences by decisionmakers, cultivating a greater degree of trust with targeted decisionmakers, or taking an entirely different approach to the design of choice architecture than the one originally considered.

The possibility of social sensemaking—typically neglected by practitioners applying a conventional approach to choice architecture—is another reason why practitioners ought to, whenever possible, test interventions in the field before scaling them up.[104] Choice architects should be especially wary of proceeding without testing if the common sensemaking triggers outlined in Figure 1 are present. When pilot testing any potential choice architecture implementation, policymakers could explicitly probe for sensemaking inferences and concerns and incorporate this feedback into the design before finalizing and scaling up the policy.

Figure 2. A template for a social sensemaking audit

Choice architects should ask themselves the questions in this figure before implementing any particular choice architecture design.



We conclude by highlighting a final use of the social sensemaking audit: to properly diagnose why a particular implementation of choice architecture did not work as intended so that these insights can be incorporated into future launches. To illustrate, we return to the Dutch case of sharply increased withdrawal of organ donation consent after a proposed change in the default regime. (See note F.) What can one learn in hindsight by performing a three-step social sensemaking audit? First, it seems that Dutch residents were triggered to engage in social sensemaking by the abundant publicity given to the bill and by the fact that many viewed decisions about organ donation as personally important. Second, these factors likely prompted Dutch residents to assess the intention behind the policy—namely, that policymakers were attempting to increase consent rates for organ donation. Although some Dutch residents may have been positively influenced by this implicit endorsement, others probably reacted against a perceived attempt to manipulate them, especially if they distrusted their legislators. Third, many of these indignant residents may have considered opting out to be an act of protest carrying social meaning that would be observed (at least in aggregate) by legislators and the public, enabling them to signal their displeasure. Consistent with this interpretation, many Dutch residents publicly shared their decisions to opt out through social media.[105–107]

Had the legislators anticipated this response, they might have taken steps to preempt the backlash, such as by more carefully managing communication about the proposed policy change and pilot testing its implementation. For instance, rather than speaking about the ways that changing to an opt-out default would nudge more residents to become organ donors, legislators might have emphasized other benefits for the public. They could have noted, for example, that a large proportion of Dutch residents wished to become potential organ donors and that the bill was designed to reduce obstacles to achieving that desired aim. Such an approach might have been more successful for two reasons. First, it signals a descriptive social norm (many Dutch residents prefer to be potential donors) toward which people may gravitate. Second, it potentially reduces negative reactions by framing the policy change as one designed to help residents express their preferences rather than one that coerces them to do something that the legislature deems desirable.

Of course, the foregoing analysis is speculative and would need to be confirmed empirically. More generally, we hope that the choice architecture 2.0 perspective advanced in this article will inspire a fruitful stream of research that more fully fleshes out the relationship between social sensemaking by decisionmakers and the effectiveness of behavioral policy interventions. In addition, we hope that this framework will help practitioners who are designing and evaluating choice architecture in the field to focus on the implementation details that are most critical to the success of behavioral policy interventions.

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endnotes

A. This number was corroborated by a personal communication from the Dutch agency registering organ donation consent (*Agentschap CIBG—Donorregister*), received June 1, 2017.

B. It is worth noting that Beshears et al. (in the study provided in reference 24) tested their explanation in a laboratory setting, which may have exacerbated the social concerns of participants relative to the field experiment.

C. This is not apparent from the published version of the article cited in reference 57, which provides smoothed data, but it can be seen from the raw data, which are available from the authors of that article upon request.

D. This pattern is called a *Hawthorne effect* because it was first noted in studies from the 1920s and 1930s at the Hawthorne Works (a Western Electric factory) outside Chicago. The studies reported that experimentally manipulated changes in working conditions (for example, the brightness of lighting) led to increases in worker productivity, regardless of the nature of those changes, but these improvements diminished after the study ended and workers were no longer reminded that they were being observed. The original data from the interventions at the Hawthorne plant were analyzed in a 2011 article (see reference 59), and the authors concluded that "ironically, there is little evidence of the type of Hawthorne effect widely attributed to these data when one subjects them to careful analysis."

E. For a related discussion on the effects that different forms of transparency may have, see "Putting the Public Back in Behavioral Public Policy," by P. De Jonge, M. Zeelenberg, and P. W. J. Verlegh, *Behavioural Public Policy,* in press.

F. We hasten to point out that the backlash in the Netherlands was temporary. In the months after the bill was passed, the rate of new nondonors slowly returned to the rate at which it had been before. Although it is quite likely that in the long run the introduction of an opt-out system will have a positive effect on the number of people who consent to organ donation, it still would have been better if the Dutch legislature had been able to prevent the backlash altogether.

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