

EDITED BY
PATRICK S. FORSCHER AND MARIO SCHMIDT

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NOTES ON DEVELOPMENTAL
META-RESEARCH

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PATRICK S. FORSCHER AND
MARIO SCHMIDT

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Behavioral public policy for global challenges

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Behavioral insights have been increasingly used to inform policy making over the last fifteen years (Oliver, 2018). Since the opening of the Behavioural Insights Team (the so-called ‘nudge unit’) within the UK Cabinet Office, a growing number of countries have set up over 250 behavioral units within governments, ministries and departments, national regulatory agencies, and other public bodies (OECD, 2023; Hunt & Adams, 2023). This trend has occurred all around the world, from western developed countries such as Canada, Ireland, and the US to middle eastern countries such as Lebanon, and from Latin American countries such as Peru to countries in the Global South such as South Africa and India (see Sanders et al., 2023). These behavioral units have then successfully informed public decision-making in several key behavioral public policy (BPP) areas, such as tax paying (Chadborn et al., 2023), public health (Ruggeri et al., 2024), labor programs, as well as pensions and savings (Thaler & Benartzi, 2004).

Despite this tremendous growth, it is fair to note that these national behavioral units have worked separately so far, employing a single-country perspective. This is natural as the various units report to national governments and authorities and reflects the inherent richness and diversity of national cultures and values, policy priorities and agendas, political programs and orientations, and electoral cycles. However, this also means that BPPs have been discussed and implemented within a single-country framework even for challenges requiring a much broader perspective. Increasingly, we face many global challenges, the damaging effects of which can unroll beyond national borders and last us a lifetime or beyond. These challenges pose manifold risks for humanity and the planet.

First and foremost, we face existential threats from climate change (IPCC, 2022). There are also other related, catastrophic risks, such as pandemic outbreaks, wars and conflicts; accelerating natural disasters, food, water, and energy shortages and insecurity, civil unrest; mass migrations caused or accelerated by all the previous reasons. All these can significantly impede human development too because stark geographical and income inequalities amplify them.

Tackling and hopefully solving these major global challenges requires modifying human behaviors collectively, systematically, and globally. Only with the foundation of behavioral units within major cross-country organizations has a broader, multi-country perspective been brought to design and implement BPPs. Multi-country behavioral insights units have been set up by leading non-profit organizations active in the Global South, such as Busara (Jang & Singh, 2023), but also, increasingly, within international organizations such as the OECD (OECD, 2021), the World Bank (Munoz Boudet et al., 2023), the European Union, the United Nations (MacLennan & Martin, 2023), the FAO, the World Health Organisation, as well as within the WHO Regional Office for Europe (Habersaat et al., 2023). This exciting and promising development in BPP marks the opportunity to further step up its potential to solve more complex challenges.

The future of human behavior in most policy domains, in fact, urgently requires a collective, coordinated, multi-disciplinary, and multi-sector effort (Box-Steffensmeier et al., 2022). Yet how we can do so in tractable, pragmatic, and feasible ways is still unclear. As we argue below, addressing these challenges in the future, first and foremost, requires a radical shift in our thinking – more attention is needed towards systemic changes and global structural issues. To realize this proposition, we suggest three ways to make BPPs better suited for tackling global challenges. Our first recommendation advances ongoing debates on expanding the toolkit of BPP and using its conceptual richness to embrace the methodological pluralism inherent in its makeup. More specifically, we suggest policymakers should use a broader BPP toolkit that goes beyond simple behavioral nudges and combines different tools for synergy. Following this, our second recommendation relates to the need to assess heterogeneity in the treatment effects of BPPs. This can enable the design of very specific and tailored BPPs that are more effective and legitimate. Finally, our third recommendation builds on the need for evidence-informed policymaking using systematic, reproducible, and transparent multi-country experimentations.

Adopt a broader toolkit of behavioral interventions

The first challenge shadowing contemporary BPP relates to the over-reliance on ‘nudges,’ which rely on systematically presenting choices to people to minimize unnecessary frictions that hinder the adoption of welfare-improving behaviors. To count as a nudge, an intervention must meet specific criteria, such as modifying the decision environment, or ‘choice architecture,’ without altering individual freedom, the number of available options, the relevant information, and the economic incentives (Thaler & Sunstein, 2009; Banerjee & John, 2023). Given the popularity of nudges, these original conceptual boundaries were often blurred or neglected, leading to fuzzy and broad definitions. More substantially, nudges are just one of the many possible policies in the broad BPP toolbox. This is well illustrated by the behavioral policy cube (Oliver, 2018; Banerjee, 2021), a collection of behaviorally informed public policies organized along three main dimensions, namely: i) regulatory vs. liberty-preserving policies; ii) appealing to rational vs. behavioral decision-making; and iii) tackling externalities vs. internalities (Oliver, 2018). Nudges are just one example of the

behaviorally informed public policies within the behavioral policy cube, other policies being bans ('shoves') or regulations of the supply side of markets ('budges') (ibid.).

Another notable example is strategies aimed at enhancing human agency and rationality (Banerjee et al., 2024), such as 'nudge+', that is, nudging interventions accompanied by elements of reflective deliberation (Banerjee & John, 2023; 2024) and 'boosts,' that is, educational interventions aiming at enhancing informed decision-making (Hertwig & Grüne-Yanoff, 2017). Essentially, both nudge+ and boosting interventions work by creating empowered citizens. Additionally, behaviorally informed regulatory policies like shoves and sin taxes also exist, serving as disincentives intended to moderate the utilization of specific behavioral tactics or the consumption of welfare-reducing products or services.

However, despite this richness in the behavioral policy cube, BPP has often relied primarily on nudging, thereby failing to leverage the potential of alternative behavioral interventions (BIs). This is a barrier to tackling many of the global challenges listed above. For example, engaging in climate action requires lasting behavior change with autonomous decision-making. Nudges alone are unlikely to fully deliver on this challenge, as they are simple choice architectural modifications and thus light-touch interventions. While they can help close intention-behavior gaps for some individuals, in most cases they will fail to lead to sustained behavior change as people do not internalize psychological cues. In the long term, educational, agency-enhancing strategies may be better. Similarly, if we must decarbonize, more stringent measures, like carbon taxes, will be necessary too.

Recent tests have suggested that agency-enhancing toolkits like nudge+ are more effective than classic nudges (Banerjee et al., 2023a; Thamer et al., 2024). The lack of scaling-up or persistence in effect sizes of nudges indicates the need to harness synergies between different interventions. There is growing evidence that policy sequencing – which refers to a staggered implementation of policies in order of their stringency – can effectively achieve policy outcomes. For example, Gravert and Shreedhar (2022) argue that green nudging can help overcome behavioral biases, which otherwise hinder the acceptance of carbon taxes, thereby posting such a combination to be more effective – a point which is now garnering empirical support (see Faccioli et al., 2022; Alt et al., 2024). Multiple combinations of nudges have also been posited to be necessary for sustaining behavioral change, and they are usually more effective than single standalone nudges (Barbosa & Bermundez-Rey, 2024). Our first suggestion thus hinges on the need to openly adopt the broadest toolkit of BIs and BPPs, not limited to nudges but also including information policies, boosts, nudge+, incentives, taxes, subsidies, regulation, and bans, and its policy combinations and sequencing therein. To overcome major global challenges, pluralism in the toolkit of the behavioral policy-maker and synergies between different BPPs should be leveraged better. We acknowledge that most real-life policies are not shaped in silos and that different policies often interact with each other in practice. However, this is yet to be common in academic scholarship (Beshears & Kosowsky, 2020). Therefore, we call for researchers to embrace

this reality when developing and testing policies in more controlled environments.

Assess heterogeneity, sustained effects, and behavioral spillovers

Most contemporary BPP studies over-rely on nudges and typically focus exclusively on assessing whether, on average, such nudges can change the outcome of interest (that is, on estimating the ‘average treatment effect’ on the dependent variable). To effectively tackle global challenges, the next wave of BPP studies must innovate on the current evidence in at least three respects.

First, they will need to track the sustained impact of the BIs over time to assess their carryover longer-term effects (Dolan & Galizzi, 2015; Thamer et al., 2024). Adding this longitudinal perspective to BPP studies is becoming increasingly feasible using a ‘behavioral data linking’ approach, that is, linking data from behavioral experiments to sources of longitudinal and ‘smart’ data such as biomarkers banks, administrative registers, electronic records, panel surveys, mobile and wearable devices, apps, smart cards, scan data, and geo-coded data (Thomas et al., 2024).

Second, BPP studies need to systematically map not only the effects of the interventions on the primarily targeted outcomes of interest but also their ‘behavioral spillover’ and anticipatory effects, that is, whether and how BIs affect other, non-targeted behaviors (Dolan & Galizzi, 2015; Galizzi & Whitmarsh, 2019; Picard & Banerjee, 2023). Understanding carryover and spillover effects of BIs is crucially important when it comes to complex, systemic patterns of behaviors, mainly because these ‘ripple’ effects are amplified by increasingly complex interconnections between our ‘online’ and in-person ‘selves’: to have a durable impact on human wellbeing, the planet, and global societal welfare, the change in behaviors needs to endure over time and across multiple contexts and decisions, not being just a one-off change.

Third, future BPP studies will have to look at the heterogeneity of the effects of BIs systematically (Ruggeri et al., 2024). There is growing acknowledgment in behavioral science that we fully account for human heterogeneity along several dimensions. People have heterogeneous attitudes, beliefs, perceptions, and preferences. There is growing evidence on how heterogeneous individual beliefs and perceptions drive, mediate, and moderate behavioral change as a response to different interventions and BPPs (Galizzi et al., 2022; Banerjee et al., 2023a, 2023b). For instance, an extensive body of behavioral economics evidence has documented high heterogeneity of individual preferences (for risk preferences, for example, see Camerer, 1989; Hey & Orme, 1994; Ballinger & Wilcox, 1997). The role of heterogeneous preferences is even more critical given the growing literature exploring the ability of economic preferences to predict real-world outcomes (Barsky et al., 1997; Chabris et al., 2008; Tanaka et al., 2010; Sutter et al., 2013, Galizzi & Navarro-Martinez, 2019; Campos-Mercade et al., 2021, Epper et al., 2022). Similarly, people are inherently heterogeneous in that they have heterogeneous beliefs and perceptions.

This opens up the intriguing and promising possibility of linking broad ranges of BPPs and BIs to a preceding ‘measurement’ stage measuring a host of relevant preferences, attitudes, and perceptions at an individual level, such as time preferences, time perception, risk aversion, probability weighting, loss aversion, regret aversion, information avoidance preferences, altruism, fairness, trust, cooperation, positive and negative reciprocity, other social preferences, personality traits, psychological reactance, as well as other key attitudes, psychological traits, and beliefs (Steinert et al., 2022; Banerjee et al., 2023b; Thomas et al., 2024).

Linking the measurement and the intervention stages will potentially allow BPP researchers to look at the heterogeneity of the treatment effects across different ‘behavioral phenotypes,’ such as underlying preferences. It will also enable BPP studies to better understand latent variables’ etiology and to uncover the complex mechanisms that can mediate or moderate the effectiveness of different BIs. By doing so, it will also be possible to isolate the ultimate behavioral motive of an observed spillover or carryover effect from alternative or concurrent explanations. BPP researchers will, in addition, be able to better inform the design of customized and personalized nudges and other BIs and to map and measure their asymmetric, distributional, and welfare effects (Mills, 2022; Sunstein, 2022).

Furthermore, people not only have heterogeneous preferences, attitudes, and beliefs but also make heterogeneous decisions even when facing similar situations and constraints. As a result, we should not only employ a complete and diverse spectrum of BPPs and BIs, but we should also expect that individual responses to such BIs will be heterogeneous (Steinert et al., 2022; Campos-Mercade et al., 2021; Milkman et al., 2022). As it is unclear upfront what BPPs will work for whom, we should thus engage more in more systematic and transparent experimentation to inform BPPs to tackle global challenges. This naturally leads us to the final suggestion.

Experiment more and include systematic, transparent, and reproducible comparisons and cross-country studies

A related challenge is the lack of systematic and transparently comparable findings across BPP studies. Typically, BPP studies are conducted in one-off settings, which makes it challenging to generalize findings across other samples and contexts (OECD, 2021). Studies also often limit themselves to policy evaluation of singular BPPs, such as nudges, which further limits any comparative analysis of evidence across the broader behavioral toolkit. One natural response to this challenge has been to undertake large-scale replications or extend tests of BPPs to other settings. Such an exercise is potentially helpful and promises to improve the overall replicability, external validity, and generalisability of BPP studies (Munafò et al., 2017).

However, replicating existing BPP studies in different settings may still suffer from three main drawbacks that can limit their suitability in tackling global challenges effectively. First,

pure replication does not necessarily ensure the transparency and reproducibility of BPP studies. The next wave of BPP studies needs to fully embrace the whole set of best practices to ensure transparency and reproducibility, such as Registered Reports, pre-registrations, and pre-analysis plans for hypotheses, experimental designs, data coding, and analyses; ex-ante pre-registered sample size calculations, and sufficiently powered sample sizes; pre-registered rigorous statistical analysis of experimental data; transparent, pre-registered, and adequately powered sub-group analysis and analysis of heterogeneous treatment effects; statistical corrections for multiple hypotheses testing; statistical equivalence tests, including two one-sided tests (TOST) procedure; data and code sharing, also via open science and publicly available reproducibility packages; engagement, collation, and sharing of data for systematic reviews and meta-analyses (Mertens et al., 2022).

Second, pure replication does not necessarily allow a direct comparison of different BPPs targeting the same behavior. Studies have recently been suggested to undertake systematic tests of different BPPs in the same experimental setup. This is important, especially because different evaluation frames can influence behavioral outcomes underlying different policies, as demonstrated by Davidai and Shafir (2019). Bradt (2022) compared two different BIs, a nudge and a boost, in improving flood insurance demand. Galizzi et al. (2022) systematically compared the effects of different social norms and messages about the proportions of vaccinated people in a community on the intention to get a seasonal flu vaccine, finding both band-wagoning and free-riding effects. Banerjee et al. (2023a) substantially extended this recent line of research by systematically testing ten interventions across four broad behavioral toolkits, namely nudges, boosts, thinks, and nudge+ interventions, in the context of sustainable diets.

Designing and running comprehensive experiments generalizable to different contexts, samples, and toolkits enables behavioral policymakers to compare and contrast evidence about what works and what does not. Doing so is critical to solving many of the global challenges which will have heterogeneous impacts on communities across the globe.

Third, pure replication does not necessarily add greater comprehensibility since the different studies – even on the same topic or BPP – might be temporally separated and, in many cases, contextually different (Feest, 2019). Given the greater need to assess numerous BIs simultaneously under the same conditions, a large-scale version of systematic testing called ‘mega-study’ has been recently proposed. Mega studies are ‘massive field experiment(s) in which many different treatments are tested synchronously in one large sample using a common, objectively measured outcome’ (Duckworth & Milkman, 2022, p. 214). Mega-studies in behavioral sciences are fast-growing (Milkman et al., 2021a), with examples spanning different fields of application such as, among others, personal and public health (Milkman et al., 2022; Koenig et al., 2024), misinformation (Arechar et al., 2023),

environment and climate change (Vlasceanu et al., 2024).

Mega studies are thus more systematic, comprehensive, and transparent than standard one-off experiments. Importantly, they also foster ex-ante collaboration of large teams around cooperative and comparative research, potentially steering the norms and incentives of the behavioral community towards large-scale collaborative efforts rather than competing, often duplicating, small-scale projects (OECD, 2021). However, they also have limitations, including focusing on selective samples, thereby generating only partial evidence. There are at least two potential solutions to this limitation. One is to conduct systematic and coordinated mega-studies across different countries and settings. Steinert et al. (2022), for example, systematically compare the effects of BIs revolving around social norms, health literacy, and messages about societal and individual benefits (for example, vaccine passports) on the intention to get vaccinated against COVID-19 in Bulgaria, Italy, France, Germany, Poland, Spain, Sweden, and the UK. In a similar spirit, Banerjee et al. (2024) compares a hypothetical default nudge and nudge+ policy using 24,303 people across the G-7. Another solution is to run integrative experiments, as proposed by Almaatouq et al. (2022). Integrative experiments apply the science of experimentation to experiments themselves, first by mapping all the possible experiments that could underlie any given problem and then subsampling and testing a subset of them to infer evidence more generally about the whole population of experiments. Mega studies are integrative experiments that take a convenience sampling approach to this large-scale testing. Ghai and Banerjee (2024) propose extending this integrative experimental approach by explicitly accounting for sample diversity in the design of these multiple experiments to increase the generalizability of the evidence.

Designing and running comprehensive experiments generalizable to different contexts, samples, and toolkits enables behavioral policymakers to compare and contrast evidence about what works and what does not. Doing so is critical to solving many of the global challenges which will have heterogeneous impacts on communities across the globe. Not doing so and limiting tests to one-off settings runs the risks of overgeneralizing and extrapolating evidence to design policy where it might not be applicable – such a misfit can worsen behavioral outcomes and create bottlenecks that can be avoided. We thus recommend more experimentation and more systematic and transparent cross-country evaluations of behavioral toolkits spanning different samples and settings globally.

Conclusion

BPP should next address global challenges such as climate change, pandemics, conflicts, food security, and mass migration. In order to succeed in such a major step-up in its mission, BPP should fully embrace a global and systemic approach. Greater attention to systemic changes and global structural issues is needed. The rigorous analysis and systematic comparison of multiple BPP interventions is imperative to shed light on their relative effectiveness. Identifying heterogeneity in behavioral changes is a fundamental endeavor

that can unlock the isolation of the ultimate drivers and mechanisms behind responses to different BPP interventions. These mechanisms and underlying motives can, in turn, trigger reinforcing or compensatory feedback effects that can outlast the initial response to BPP actions and reverberate across individuals, over time, and across different behaviors. Finally, systematic, transparent, and reproducible cross-country studies spanning different samples and settings in the global world and comparing multiple BPP interventions are essential to scale up evidence from single-country small-scale insights to a proper global perspective. If BPP scholars and practitioners want to stand a chance to genuinely change the world, a global and systemic point of view is long due.

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