Healthier Lives Through Behavioral and Social Sciences Research: A Strategic Plan for the National Institutes of Health’s Office of Behavioral and Social Sciences Research
Forward: BR for FC
Preface

Last year, the Office of Behavioral and Social Sciences Research (OBSSR) celebrated its 20th Anniversary. Much has changed since the Office opened in 1995 and its first strategic plan was released two years later. When the Office was created, it was not commonly accepted that social and behavioral factors were predominant influences of health. Today, this is widely accepted, but our ability to modify these social and behavioral factors, particularly to maintain these changes over time with limited resources to do so, remains a critical challenge for the behavioral and social sciences. Ten years ago when the second strategic plan was developed, few could have imagined the technological advances that have not only pervasively changed how we communicate and function, but also provided social and behavioral scientists with new tools to assess behavior and deliver scalable and adaptable interventions.

I cannot imagine a more exciting time to be a behavioral and social science researcher. Advances in technology, open data, and big data analytics are providing new and temporally dense information on large and varied samples. Transdisciplin ary efforts by diverse disciplines, including genetics, neuroscience, computer science, and engineering are reinvigorating the behavioral and social sciences with novel approaches and methodologies, and cross-pollinating our approaches in their disciplines as well. This integration across disciplines is becoming so pervasive that some may wonder one day why the NIH needed an Office of Behavioral and Social Sciences Research. Until the day comes, however, when health research truly spans and integrates the full continuum of influences from genetics to societal, the OBSSR will remain committed to its charge to coordinate the behavioral and social sciences at the NIH and to identify and help the NIH address important areas of social and behavioral research relevant to health.

This third Strategic Plan of OBSSR reflects the rapidly changing nature of the behavioral and social sciences, but also builds upon many of the major opportunities highlighted in prior plans such as the integration of social and behavioral sciences into the broader biomedical research effort and the role of complex dynamic modeling and other emerging methodologies to advance the social and behavioral sciences. Although OBSSR is responsible for coordinating the full range of social and behavioral sciences at the NIH, we must also focus our efforts. Therefore, this strategic plan focuses on a few key advances that we believe OBSSR is uniquely positioned to achieve within the next 5 years.

Many individuals, groups, and organizations contributed to the development of this third OBSSR Strategic Plan. Their feedback was instrumental to identifying areas of focus and generating the objectives described in this document. On behalf of the NIH and the OBSSR, my thanks to all who contributed to this 2017 OBSSR Strategic Plan.

– William T. Riley, Ph.D., Director, Office of Behavioral and Social Sciences Research, NIH Associate Director for Behavioral and Social Sciences
A scientific paradigm shift is occurring in the social and behavioral sciences. Fundamental behavioral and social sciences research, integrated with advances in neuroscience and genetics, are beginning to explicate the complex dynamic mechanisms that shape the brain, behavior, and the environment. Advances in measurement science and technologies are providing temporally dense, contextual data on human behavior and its influences at levels of granularity and precision previously unimaginable. Advances in technology are also rapidly changing the reach, scalability and adaptability of social and behavioral interventions. The expanding sources of population-level data and efforts to integrate these data are providing both the platform to better monitor health and its behavioral and social influences and the ability to more rigorously assess population-level interventions.

The health of the nation is primarily shaped by social and behavioral influences. It is therefore critically important that the preeminent health research agency institution in the United States, the National Institutes of Health (NIH), focus substantial efforts and resources on advancing our understanding of these social and behavioral influences and improving our ability to effectively modify these influences, both at the individual and population level, to improve health. As established by Congress over 20 years ago, the role of the Office of Behavioral and Social Sciences Research (OBSSR) at the NIH is to coordinate the health-relevant behavioral and social sciences and identify challenges and opportunities to advance these sciences in the service of the nation’s health. It is with this mandate in mind that the Office has developed this strategic plan.

The Strategic Plan includes three scientific priorities which reflect key challenges that OBSSR is uniquely positioned to address, along with four foundational processes to enhance and support these scientific priorities as well as the broader mission of the Office.

**Priority 1 - Improve the synergy of basic and applied behavioral and social sciences research:** New and innovative approaches to change behavior and social systems to improve health rely on fundamental research that characterizes novel mechanisms and targets. The OBSSR is committed to identifying and encouraging basic behavioral and social science research (bBSSR) with a viable pathway to individual and population health. To do so, the OBSSR will work with the NIH Institutes and Centers (ICs) to identify promising and emerging lines of bBSSR relevant to the health research mission of the NIH, stimulate new areas of bBSSR that address important research questions, and facilitate the translation of bBSSR findings to applied research.

**Priority 2 - Enhance the methods, measures, and data infrastructure approaches that encourage a more cumulative and integrated approach to behavioral and social science research:** Technological and scientific advances offer exciting opportunities, as well as novel challenges, for behavioral and social sciences research. Varied and voluminous data from multiple data sources place increasing importance on data sharing, harmonization, and integration. To take full advantage of
the data being produced, a robust and open research infrastructure, including common data elements, ontologies, and consensus measurement metrics, needs to be developed and refined, and the OBSSR is uniquely positioned to address this need. Advances in science are often preceded by advances in measurement, and the OBSSR will continue to encourage new measurement approaches that improve the precision, accuracy and efficiency of measures of social and behavioral phenomena and their context. New data types and new measurement approaches necessitate new methodologies and analytics. The OBSSR is committed to encouraging a broad repertoire of methods and analytics to answer increasingly complex and relevant research questions.

**Priority 3 - Facilitate the adoption of behavioral and social sciences research findings in health research and in practice:** A substantial gap continues to exist between the research findings in the behavioral and social sciences and the implementation of this research in practice. The OBSSR can play an important role in narrowing this gap by encouraging behavioral intervention research in the context in which these interventions are intended to be delivered. To foster adoption of effective social and behavioral interventions, the OBSSR can disseminate research findings, encourage dissemination and implementation research, and partner with other agencies and entities to reduce the barriers to adoption of effective interventions.

To address these scientific priorities and the broader NIH efforts in the behavioral and social sciences, the OBSSR will rely on four foundational processes.

1. **Communicating behavioral and social science research findings**
2. **Coordinating behavioral and social science research programs across the NIH and integrating behavioral and social sciences research within the larger NIH research enterprise**
3. **Training the next generation of behavioral and social science researchers**
4. **Evaluating the impact of behavioral and social sciences research and addressing scientific policies that support this research**

These foundational processes are central functions consistent with the OBSSR mission that can be marshalled to meet the objectives of the scientific priorities outlined in this strategic plan.
Mission

Health over the life course is the result of a complex and dynamic interplay of multidimensional influences that range from genetic determinants to social and environmental determinants. This confluence of multilevel influences on health and behavior over the life course is illustrated by Glass and McAtee (2006) [cite] (see Figure 1) who described these multi-level influences as nested hierarchies of influences that occur within and outside the individual (below and above the waterline). Social and behavioral determinants account for over half of the premature deaths in the United States. [cite] Understanding these social and behavioral determinants, how they interact with biology, and how they can be modified to improve wellness requires a robust and rigorous behavioral and social sciences research agenda. The National Institutes of Health’s Office of Behavioral and Social Sciences Research (OBSSR) is uniquely positioned to advance the behavioral and social sciences research (BSSR) that ultimately improves the health of the nation. The mission of OBSSR reflects the important role of behavioral and social sciences research within the NIH mission to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.

Figure 1: From Glass & McAtee (2006)
The mission of OBSSR is:

- To enhance the impact of health-related behavioral and social sciences research
- To coordinate behavioral and social sciences research conducted or supported by the NIH and integrate these sciences within the larger NIH research enterprise
- To communicate health-related behavioral and social sciences research findings to various stakeholders within and outside the federal government

The OBSSR Strategic Plan in Context

Over the past decades, behavioral and social sciences research (BSSR) has contributed substantially to the understanding of health and disease and to improvements in public health. Behavioral and social sciences research has been instrumental in the reduction of tobacco use and smoking-related illnesses [cite], improved control of infectious diseases [cite], increased screening behaviors [cite], and reduced environmental exposures [cite].

Multi-component interventions using an array of behavior change strategies to train, incentivize, and sustain behavior change have been evaluated. For example, efforts to change eating and physical activity behaviors have proven more effective than drug therapy in preventing the onset of type 2 diabetes among high-risk individuals [cite]. BSSR has provided essential insights on adherence to anti-retroviral treatments for HIV/AIDS, where failure to follow these complex regimens correctly can lead to resistance [cite].

While BSSR has improved our understanding of health and disease and contributed to many of our public health successes, significant challenges persist. The relative contribution of complex and dynamic social and behavioral mechanisms on health are difficult to assess. Sustaining behavior change as treatment intensity wanes remains an important challenge to overcome. Overcoming these and other challenges requires forward-leaning stewardship in the health-relevant behavioral and social sciences, challenges that OBSSR was created to address.

The US Congress established the Office of Behavioral and Social Sciences Research (OBSSR) at the NIH in 1993, recognizing the importance of health-related behavioral and social sciences and their contributions to the NIH mission (Appendix A). Since opening as an NIH Office in 1995, two previous strategic plans have been developed [Cite both here]. Partnering with the 27 institutes and centers (ICs) of the NIH, and the other offices of the Office of the Director over the past two decades, the OBSSR has worked to achieve the goals and objectives of these prior strategic plans. The current strategic plan builds upon the efforts of the Office and its partners to achieve these prior priorities while recognizing the accelerating pace of change in the social and behavioral sciences specifically and health research generally. (See Appendix B for a description of the processes leading to the current strategic plan).
The behavioral and social sciences at the NIH include a multi-disciplinary set of research disciplines that have in common the study of behavior and social processes and the interactions among individuals, social groups, institutions, and the social and physical environments that are relevant to health. To further the behavioral and social sciences, researchers study the interplay between behavioral and environmental mechanisms, focusing on causal and explanatory factors that occur not only within the organism (e.g., genetics, neurobiology) but also outside the organism (e.g., physical, familial, community, and societal influences). The complex, bidirectional impacts of these external influences – the environment on behavior and behavior on the environment – are essential to understanding how behavior and the environment interact with the organism to affect health and well-being. This broad perspective on the underpinnings of behavior, from genetic through societal influences, provides the behavioral and social sciences with a unique perspective on these dynamic interactions that can influence health outcomes across an individual’s lifespan and across generations.

Recognizing the BSSR mission and its opportunity to contribute to improving health, the OBSSR Strategic Plan for Fiscal Years 2017-2022 represents a major effort to integrate BSSR fully into the nation’s health research agenda. OBSSR has the responsibility of coordinating an extensive range of research in the social and behavioral sciences, but it also must focus its resources on challenges and opportunities that OBSSR is uniquely positioned to address. Consequently, the strategic planning process was undertaken to assess and identify the areas of behavioral and social sciences research that:

a) represent significant obstacles to scientific progress;

b) have the potential to produce the greatest impact for the largest proportion of health-related BSSR; and

c) are challenges and opportunities that OBSSR is uniquely positioned to address.
The OBSSR Strategic Plan, 2017-2022

The scientific objectives targeted by this plan are organized within the three scientific priorities that emerged from the systematic, wide-ranging inquiry and planning process. An overarching theme of these three scientific priorities is to **encourage a more cumulative and integrated behavioral and social science research enterprise that extends from fundamental science through the adoption of approaches to improve the nation’s health.** Our scientific vision encompasses a science that builds and improves upon the research that has preceded it, and then integrates these advances into the broader biomedical and behavioral research effort. The three OBSSR scientific priorities are:

- **Improve the synergy of basic and applied behavioral and social sciences research.**
- **Enhance the methods, measures, and data infrastructure approaches that encourage a more cumulative and integrated approach to behavioral and social science research.**
- **Facilitate the adoption of behavioral and social sciences research findings in health research and in practice.**

The order of these three priorities follows the translational process from fundamental discovery research through implementation and adoption, and all three are equally important in the Strategic Plan.

Four foundational processes outline the core functions of OBSSR that support these scientific priorities as well as the broader mission of OBSSR. The four foundational processes are:

- **Communicating behavioral and social science research findings**
- **Coordinating behavioral and social science research programs across the NIH and integrating behavioral and social sciences research within the larger NIH research enterprise**
- **Training the next generation of behavioral and social science researchers**
- **Evaluating the impact of behavioral and social sciences research and addresses scientific policies that support this research.**
Scientific Priority 1: Improve the Synergy of Basic and Applied Behavioral and Social Science Research

Fundamental science is a pillar of NIH research and discovery. NIH has a strong history of supporting basic or fundamental biomedical research across a wide range of discipline, including behavioral and social sciences. Scientists must understand the range of complex and dynamic processes that contribute to human health, from the molecular to the societal level, to develop interventions that effectively prevent and/or treat disease.

Fundamental or basic BSSR (bBSSR) seeks further understanding of the processes that govern individual behavior and the behavior of social systems and groups, including both animal and human studies. The NIH has been committed to basic discovery research since its inception. That commitment has been reinforced recently with the NIH’s 2016-2020 strategic plan highlighting fundamental research as a key scientific priority [cite], as well as in a recent letter in Science reaffirming the NIH’s commitment to basic research. [cite]

Discovery research into the fundamental processes that influence behavior and social systems and their influences on health contributes to the NIH mission. Basic social and behavioral science research that has a plausible pathway to, or implication for health is a priority for the NIH. OBSSR assists the NIH by focusing our foundational social and behavioral research support on basic research potentially relevant to health. A range of fundamental bBSSR areas have clear relevance to health including stress and resilience, social learning, self-regulation, decision-making, and social influences on health and disease. Improved understanding of these
and other influential basic behavioral and social science mechanisms is critical to informing clinical and translational studies that can lead to improvements in health and wellbeing.

In a study designed to determine factors leading to the adoption and maintenance of healthy behaviors (or the reduction of unhealthy behaviors), researchers examined the involvement of dopamine, a neurotransmitter that mediates pleasure in the brain, in the formation and extinction of habits. They found that habitual behavior strongly correlated with increased dopamine signaling in the striatum, while suppressing habitual behavior correlated with decreased dopamine signaling, and stimulating dopamine signaling promoted habit formation. The role of dopamine signaling in the transition between goal-directed to habitual behaviors could provide critical insights in gaining greater control over habitual behavior and in maintaining goal-directed behaviors long-term. [cite Yin]

The OBSSR and the NIH have engaged in a number of initiatives that seek to accelerate basic behavioral and social science research poised for translation to applied health research.

- In 2009, the NIH initiated the Basic Behavioral and Social Science Opportunity Network (OppNet) to expand the NIH basic science portfolio to better understand how social and behavioral processes influence the biology and behavior of individuals and groups. During its five-year funding period, OppNet enhanced the coordination of bBSSR research and supported over 100 projects.
- ORBIT: Translating Basic Behavioral and Social Science Discoveries into Interventions to Reduce Obesity is a trans-NIH initiative led by the National Heart, Lung, and Blood Institute (NHLBI), in partnership with the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the National Cancer Institute (NCI), the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), and the Office of Behavioral and Social Sciences Research (OBSSR). The initiative funded seven projects to use findings from basic research on human behavior to develop more effective obesity-reducing interventions.
- Science of Behavior Change (SOBC): The SOBC program is an ongoing NIH Common Fund [cite - https://commonfund.nih.gov/] effort that seeks to promote basic and translational research on the initiation, personalization and maintenance of behavior change via an improved understanding of the underlying principles of behavior change. The SOBC program uses a mechanisms-focused, experimental medicine approach to behavior change research and seeks to develop the tools required to implement such an approach.

It is through these and other initiatives that the NIH and OBSSR can encourage and support bBSSR that lays the foundation necessary to develop new approaches to change behavior and social systems to improve health.
Using a factorial design of various sociodemographic and socioeconomic determinants, nine-year mortality rates of middle-aged urban adults were predicted from an interaction of sex, race, and individual poverty status with African American men living below the poverty level having the highest mortality rates. Neighborhood economic status contributed to predictions of mortality above these individual characteristics, and neighborhood income inequality interacted with individual poverty status to predict mortality. These findings indicate that the socioeconomic characteristics of neighborhoods contribute to mortality over and above individual economic factors, and more in depth characterization of neighborhood influences on health are in need of greater exploration. [cite Mode PLOS One, 2016]

**Objective 1.1: Identify and encourage promising basic behavioral and social sciences research (bBSSR) relevant to health.**

1.1.1 Identify bBSSR scientific needs or gaps with potential for translation and develop initiatives to address these needs in coordination with relevant NIH Institutes, Centers, and Offices (ICOs)

1.1.2 Develop trans-NIH initiatives to support bBSSR research in promising areas with shared interests across ICOs

1.1.3 Coordinate with other federal sponsors of bBSSR (e.g., National Science Foundation) to identify complementary bBSSR research efforts relevant to the NIH.

**Objective 1.2: Facilitate greater bidirectional interaction of basic and applied BSSR researchers to facilitate furthering the translation of basic to applied BSSR research.**

1.2.1 Assist in the translation, communication and dissemination of fundamental bBSSR findings, both animal and human, that could be incorporated into applied BSSR relevant to health.

1.2.2 Facilitate the dissemination of basic research questions that emanate from the results of applied behavioral and social health research projects.

1.2.3 Stimulate greater collaboration and transdisciplinary research between basic and applied behavioral and social science researchers.
Scientific Priority 2: Enhance and Promote the Research Infrastructure, Methods and Measures Needed to Support a More Cumulative and Integrated Approach to Behavioral and Social Sciences Research.

“Our ability to improve health increasingly hinges on our ability to manage and make sense of the enormous amounts of data being produced by scientific research”

~~Francis Collins, Director, NIH, 2015 [cite]

Due to recent scientific and technical advances, the biomedical, behavioral, and social sciences are generating massive amounts of information from the molecular and genetic level to clinical and community outcomes. These advances present new challenges. For instance, working with data across research disciplines increases the likelihood that the constructs of interest will be defined and measured differently, and therefore limit the ability to harmonize data across disparate data sets. Computing power and interoperability, as well as data storage, archiving, retrieval, and visualization, must also be addressed. In addition, creating and managing big data will entail developing standards for transparency and, particularly in the behavioral and social sciences, will raise important ethical and privacy concerns.

One effort to address these challenges is the trans-NIH Big Data to Knowledge (BD2K) initiative, designed “to support the research and development of innovative and transforming approaches and tools to maximize and accelerate the integration of big data and data science into biomedical research.”[cite] BD2K centers will improve the ability of the research community to use increasingly large and complex datasets by developing and distributing innovative approaches, methods, software, and tools. BD2K training efforts will prepare researchers, including behavioral and social science researchers, to extract meaningful information from these large and complex data sets.

Another NIH big data effort promises a future that will allow scientists to personalize treatments based on individual characteristics. In 2015, the President of the United States announced the Precision Medicine Initiative (PMI) to expand understanding of the ways in which people and their health are unique, and to deliver more individualized diagnoses and care. [cite Collins, Varmus] The PMI Cohort Program is enrolling over one million volunteers to provide the scale and scope needed to address research on a wide range of diseases and health issues and the influences of health from genes to large-scale social factors. Integrating BSSR in these and other large initiatives stimulates big data approaches and ensures a fully multi-level perspective on the research generated from these initiatives.
The behavioral and social sciences share similar big data promises and challenges. Many BSSR projects, across a variety of disciplines, are creating, large-scale discovery datasets that provide access to multiple combinations of variables, from granular-individual level data to systems-wide information. Data streams from smartphones and wearable sensors result in datasets that are temporally dense, voluminous, and complex, even for a single individual. Increasingly, behavioral and social science researchers are characterizing behavior, its influences, and its relation to health status by utilizing the digital traces of individuals interacting with technologies and social media throughout the day. The resulting large data streams require big data approaches and analytics to extract the wealth of information available.

In addition to big data approaches and analytics, behavioral and social sciences have other unique challenges that currently limit the potential cumulative power of these sciences from open and shared datasets. The harmonization of precise and accurate measures in the behavioral and social sciences is one such challenge. The behavioral and social sciences suffer from a cacophony of measures for the same or similar construct. Studies purportedly measuring the same construct via different measures may produce confusing or contradictory findings. A more cumulative and integrated science that builds on prior research requires a strong null position that no new construct or measure is needed without substantive proof that it adds significant scientific value over and above all of its progenitors. Currently, researchers can use the same construct name but mean different things or use different construct names but mean the same thing.

“The grandest discoveries of science have been but the rewards of accurate measurement . . .” [cite Presidential inaugural address, to the General Meeting of the British Association, Edinburgh (2 Aug 1871). In Report of the Forty-First Meeting of the British Association for the Advancement of Science (1872), xci.]

~~Lord Kelvin, 1871
In response to these types of measurement concerns, the *Patient-Reported Outcome Measurement System (PROMIS)* developed a common scale or metric on which all measures of a given construct are expressed. To achieve this, PROMIS developed and tested item banks using modern psychometric theory that, in addition to producing more precise and efficient measures [cite], also allows different measures of the same construct to be co-calibrated. As a result, different instruments measuring the same construct can be expressed on a single metric, facilitating data harmonization and integration. [Seung Choi cocalibration study example box about here]

Another approach to addressing this data harmonization and integration challenge is to develop consensus measures for specific constructs. PhenX, for example, has developed a curated set of measurement protocols for specific phenotypic constructs. [cite] The NCI Grid-Enabled Measures (GEM) utilizes a crowdsourcing wiki approach to cataloging the various measures of a given social or behavioral construct. [cite] The National Library of Medicine has generated a directory of common data elements that also can serve as a repository for commonly accepted measures and data structures that, if adopted by researchers, would facilitate data integration across studies. [cite]

Recent technological advances are rapidly changing the ability to passively sense behavior and its influences. The emergence of smartphones, now used by over two-thirds of U.S. adults, provides both a platform for experience sampling or ecological momentary assessment (EMA) and an array of sensors that can be used to passively sense activity, sample the environment via audio or video, or assess sensory, motor, or cognitive performance in real time. The data from these technologies generate “digital phenotypes” that incorporate variability and patterns over time. [cite – Jain, SH, Nat Biotech, 33, 462] The proliferation of these new sensor technologies offers new approaches to measuring behavior and its influences but also present the challenge of validation and data harmonization across devices. The data from these technologies also present new challenges to data privacy and research ethics that need to be addressed. [cite – Shilton, K, Commun ACM, 2009, 52, 48-53] OBSSR will continue to support research to develop, test and validate new and increasingly sophisticated approaches to the measurement of behavioral and social factors.
As behavioral and social sciences continue moving forward in the collective and cumulative enterprise of harmonizing precise and accurate measures, sustained efforts in formulating behavioral ontologies and taxonomies are critical. One international group of researchers has developed a taxonomy of behavioral intervention strategies. [cite Michie] Within the NIH, efforts such as behavioral phenotyping for obesity research and the Research Diagnostic Outcomes Criteria (RDoc) being developed by the National Institute of Mental Health represent efforts to catalogue the constellation of behavioral, developmental, or social characteristics that, as a group, can be correlated with specific clinical outcomes or disorders [cite].

A more cumulative science also will require new approaches and methods for evaluating social and behavioral interventions. Social and behavioral interventions are greatly influenced by the characteristics that the individual or system brings to the intervention and the context in which the intervention is delivered. Different sample characteristics and different contexts likely have contributed to the failures to replicate observed in psychological studies (cite Nosek). In addition, because these interventions are multi-component and each study tends to modify the admixture of these intervention components, meta-analyses of randomized controlled trials for a given social or behavioral problem seldom provide guidance on how to improve the intervention. Optimization designs utilizing factorial and sequential randomization provide an alternative approach to better understand the combination and sequence of intervention components that will produce the desired effect. [cite –Collins optimization designs] Series of

Using a computational modeling approach based on community survey and market data, researchers evaluated of a simple environmental manipulation or “nudge” on the selection of non-sugar sweetened beverages (non-SSB) by adolescents in low-income area corner stores in Baltimore. Modeling simulations revealed that placing non-SSB products in the optimal location (front cooler, 2nd or 3rd shelf down) produces a 2.8 times higher rate of non-SSB purchases compared to placement in bottom shelf of the cooler farthest from the entrance. The study estimates that a shift in product placement alone would result in 5.2 million more non-SSBs purchased by Baltimore adolescents annually. This computational modeling simulation demonstrates the potential impact of simple environmental manipulation to change behaviors that increase susceptibility to obesity among adolescents [cite Wong et al, 2015 BMC Public Health]
single case studies as well as methodologies borrowed from engineering and computer science, e.g., computational dynamic models, provide the opportunity to iterate and improve interventions as the evaluation of the intervention proceeds, accelerating both intervention optimization and the time required to produce empirical findings. These precision methodologies and measures provide the opportunity for more tailored approaches to behavioral and social interventions that take individual and contextual differences into account. Tailored intervention approaches have been shown effective in a number of studies (cite) and tech-enabled interventions have provided the opportunity not only to tailor interventions using baseline characteristics but also to dynamically adapt to the individual and context over the course of the intervention [cite].

Another potentially confounding aspect of these interventions, especially higher level interventions at the organizational or community levels, is that they are sometime more difficult to control or manipulate. Quasi-experimental designs such as interrupted time series and regression discontinuity designs have been used in a number of such studies and provide an important alternative methodology to evaluate some interventions. Policy changes that potentially affect behavior and health are often difficult to assess unless researchers can rapidly generate a stable baseline of data prior to the change and follow the effects for some period following the change. The NIH has the capacity to accelerate the grant application and funding process and has done so previously for rapid research on HIV/AIDS policy and mass media efforts[cite -(https://grants.nih.gov/grants/guide/pa-files/PA-99-132.html)] and with research on obesity policy changes [cite] OBSSR, has, and will continue to support the expansion of these rapid funding efforts for time-sensitive natural experiments and to enhance the scientific rigor of these natural experiments.

The transition to more iterative intervention development methodologies and more common constructs and measures will be challenging, but an open, transparent, rigorous, and cumulative science requires such a transition.

**Objective 2.1.: Encourage data integration and replication in the behavioral and social sciences**

2.1.1 Coordinate the development of behavioral and social science research taxonomies and phenotypes including construct mapping, common data elements, and ontology development.

2.1.2 Encourage and assist in the development of measurement harmonization, not only of multiple measures for a given construct, but also across disease or sociodemographic groups and across the lifespan.

2.1.3 Assist in the development and coordination of research collaborations that facilitate data sharing, linking, and integration across existing datasets, including the application of behavioral and social science principles to promote data sharing and integration.
**Objective 2.2: Facilitate the development and testing of new measurement approaches**

2.2.1 Facilitate advances in the precise measurement of social and behavioral phenomena, particularly above the level of the individual (e.g., families, social groups, workplaces, communities, policies, and cultures)

2.2.2 Leverage technologies to advance new measurement approaches

2.2.3 Provide a central resource for social and behavioral measures, and coordinate measurement efforts across the NIH

**Objective 2.3: Expand the repertoire of methods available to social and behavioral researchers**

2.3.1 Encourage novel designs to iteratively optimize intervention development

2.3.2 Leverage innovative technologies, methods, and analytics to deliver and evaluate personalized and intensively adaptive interventions (precision social and behavioral interventions)

2.3.3 Facilitate the use of rigorous and replicable methods applicable for interventions targeted at levels above the individual (e.g., population health interventions, natural experiments)

**Scientific Priority 3: Facilitate the Adoption of Behavioral and Social Science Research Findings in Health Research and in Practice**

A significant gap exists between what research shows will improve health and what is provided to individuals, families, communities, and organizations to improve health. Behavioral and social science interventions at the individual and population level have resulted in significant improvements in the nation’s health, but much more could be achieved if the chasm between research and practice was reduced, and the time from research findings to widespread application was shortened.

Some of the challenges to adoption of effective behavioral and social science interventions are common to the broader biomedical research enterprise, but some are unique to behavioral and social science interventions. The settings in which social and behavioral interventions are implemented are much broader and more varied and have less formal regulatory structures to ensure that effective approaches are adopted than medical interventions. The settings in which these interventions are delivered (e.g., communities, public health services, workplaces, governments) are also often resource-constrained. The for-profit system that drives dissemination and adoption of pharmaceutical and medical device interventions is essentially
non-existent for social and behavioral interventions. While certain behaviorally and socially oriented preventive health and disease management services have begun to be reimbursed by health insurers, most of the well-researched and effective behavioral and social interventions remain outside of the health insurance reimbursement system.[cite]. Further economic cost-effectiveness research is needed to evaluate the cost to benefit ratio of these social and behavioral interventions.

Adoption of effective behavioral and social science interventions has also been hindered by the complexity and resource-intense requirements of these interventions. Those implementing these interventions often must be specially trained, and treatment fidelity, along with effectiveness, often dissipates as the intervention moves from the research to practice setting. In addition to the development of treatment manuals and training materials to promote treatment fidelity, behavioral and social science interventions have been modified to make them shorter, simpler and easier to implement. For instance, the Diabetes Prevention Program (DPP) initially consisted of six months of weekly group sessions followed by six months of less frequent follow-up maintenance trainings.[cite] DPP has now been successfully implemented in practice, but primarily because researchers evaluated a shortened and simplified version of the intervention. While DPP was successfully shortened and simplified without a significant loss of efficacy, the tension between developing a behavioral and social science intervention that is robust and powerful while also short, simple, and easily implemented is a significant challenge for the field.

Leveraging technologies for delivering social and behavioral interventions has effectively addressed some of these dissemination and implementation challenges. Computerized intervention algorithms maximize fidelity to the intended intervention. Tech-based behavioral and social interventions are also scalable. Although more resources may be needed for initial development than with low-tech interventions, subsequent costs to deliver automated, tech-based behavioral interventions to remote areas with limited access to in-person treatment facilities will be lower. An additional advantage of tech-based interventions for dissemination is

The effectiveness and cost benefits of prescribed diet and exercise, in contrast to the drug metformin, in delaying the onset/prevention of type 2 diabetes in people with impaired glucose tolerance was evaluated in the Diabetes Prevention Program (DPP). The study’s findings showed a substantial reduction in the conversion from IGT to diabetes with the behavioral intervention, a strategy that proved both cost effective and to have lasting positive effects in a 10-year follow-up. In response to this success, the Y (formerly known as the YMCA), in collaboration with the NIH, CDC, and Robert Wood Johnson Foundation, tested and later adopted an abbreviated and validated DPP intervention model. The widespread success demonstrated by the Y trial—average weight loss of about 5% and Medicare savings of $2,650 for each person enrolled—prompted the coverage of this intervention by Medicare. [cite]
that they hold promise for being more effective as they become more intensively adaptive over the treatment course [cite, JITAI].

Facilitating adoption of BSSR findings to improve health also depends on building research collaborations between such wide-ranging areas as demography, anthropology, education, housing, transportation, economics, and justice. Population health studies often merge data on biological factors with those concerning population-related mechanisms and processes to understand better the influences on health. Advancing population health science may help BSSR reveal many important health and disease pathways, such as the mechanisms responsible for translating income and education inequalities into commensurate health outcomes. Population health science could enable researchers to identify major obstacles to implementation and develop innovative research designs to enhance uptake of interventions, particular at the community and societal levels. The potential of population health is summed up in a report issued by the Agency for Healthcare Research and Quality (AHRQ), in partnership with the NIH and OBSSR: “Although we may have less control of the levers of change in population health than in individually-based interventions, even small systemic shifts or “nudges” have considerable reach that produce large population impacts.” [Cite]

Population health studies can also shed light on where to target new interventions designed to address the complex interplay of biological, behavioral and social forces that contribute to unexpected health disparities. For instance, the recent NIH-supported research of Anne Case and 2015 Nobel laureate Angus Deaton reveals the surprising rise in premature deaths among the white, middle-aged population in the United States, a trend that reverses decades of progress in health. [cite] Although the many mechanisms and pathways underlying these trends have yet to be delineated, the data show that the increased death rates were primarily linked to drug and alcohol poisonings, suicide, and chronic liver diseases and cirrhosis. Increased deaths due to external causes were seen among all groups in this study; however, men with low levels of education saw the most marked increase in death rates. Self-reported health decline, chronic pain, and inability to work also suggest growing distress in this population.

A study of women who randomly received housing vouchers which enabled then to move from high poverty to low poverty neighborhoods were less likely to be obese and be diagnosed with diabetes as those who did not receive these vouchers. The women also experienced improved mental health, with measures of well-being more strongly associated with changes in economic surroundings than racial segregation. [cite]

A number of studies illustrate that even the most efficacious medical interventions may be less effective if they do not account for behavioral and social risk factors. In adherence studies, researchers documented that up to 20 percent of patients fail to fill new prescriptions, and 50 percent of people with chronic health conditions discontinue their medication within six months. [cite] Even greater problems exist for patients who take more than one medication
and may have co-occurring conditions. Other factors—such as cognitive decline, depression incarceration, and stigma—also influence adherence with both prescribed medications and behavioral treatments. OBSSR partnered with ICs across the NIH to form the Adherence Research Network, encouraging more research in the field and evaluating how NIH can best disseminate information on evidenced-based methods to improve adherence to medical interventions.

Research methods that facilitate the adoption of social and behavioral interventions are a crucial component of any effort to advance dissemination and implementation. NIH has supported dissemination and implementation research for over a decade, and this research has resulted in findings that influence how providers are trained, monitored, and supported, and how the systems in which they deliver treatment can be modified to facilitate the adoption of effective interventions. Critical to this effort is that social and behavioral interventions need to be evaluated in the context in which the interventions are anticipated to be delivered. These contexts, however, add challenges and complexities to the research design that need to be addressed through innovations in research methodology that retain as much internal validity as possible while strengthening external validity.

Over the years, NIH has supported many successful behavioral and social science interventions and related studies that hold the promise for improving health. However, without widespread adoption, their utility is diminished. Addressing barriers to adoption while encouraging intervention research that is relevant and responsive to those who deliver these interventions, and testing these interventions in the settings in which they are to be delivered are important efforts to bridge the research to practice chasm. Methodologies better suited to intervention evaluation in these settings, including natural experiments and quasi-experimental designs, may provide evidence which supports adoption. Broader consideration of the evidence produced from these designs, including in grant and publication review, are needed if these alternative designs are to be appropriately used.

Objective 3.1: Encourage research that studies mechanisms and interventions in context

3.1.1 Cultivate research that elucidates factors influencing the adoption of social and behavioral interventions, particularly analyses that consider effects at the individual, provider, and system levels.

3.1.2 Promote hybrid effectiveness-implementation designs that test interventions in the environment in which they are delivered.
Objective 3.2: Enhance the relevance and scalability of social and behavioral interventions

1.2.1 Foster stakeholder involvement throughout BSSR, and rapid, relevant, and responsive research that serves stakeholder needs
1.2.2 Encourage the use of technologies to expand scalability and reach of social and behavioral interventions
1.2.3 Conduct or commission meta-analyses on selected topics that will facilitate adoption of evidence-based interventions

Objective 3.3: Foster collaborations with agencies and entities that utilize and/or deliver social and behavioral research findings, and evaluate systemic and policy changes that facilitate or impede adoption of effective approaches
Foundational Processes: Core and Strategic Functions of OBSSR

In addition to the three scientific priorities, OBSSR has core and strategic functions or foundational processes that are central to its office mission. These foundational processes support the three scientific priorities of this strategic plan and the broader OBSSR mission to *enhance the impact of behavioral and social sciences research, coordinate behavioral and social sciences research conducted or supported by the NIH, and communicate behavioral and social sciences research findings.*

These foundational processes are:

1. Communicating behavioral and social science research findings
2. Coordinating behavioral and social science research programs across the NIH and integrating behavioral and social sciences research within the larger NIH biomedical research enterprise
3. Training the next generation of behavioral and social science researchers
4. Evaluating the impact of behavioral and social sciences research and addressing scientific policies that support this research

**Foundational Process 1: Communicating behavioral and social science research findings**

“If you can't explain it simply, you don't understand it well enough.”
--Albert Einstein

Science thrives when scientists communicate more effectively. Public communication encourages scientists to think about the big picture and succinctly explain what is important and why. In behavioral and social sciences research (BSSR), public communication provides the opportunity to describe the science and methods behind what may seem “commonsensical” discoveries. The apparent accessibility of many behavioral and social science concepts can result in misunderstandings about the science that underpins some of these concepts. Therefore, the field may benefit more than other disciplines from a well-orchestrated and long-term communications effort to correctly frame the science and its impact.

Organizations should conceive of communications as integral to their essential functions. In the case of OBSSR, communication is a core function to accomplish our mission. Communications has been a key component of both the 1997 and 2007 OBSSR Strategic Plans, illustrating the importance of this foundational process over the Office’s 20-year history. OBSSR communications efforts need to encompass science communication and public engagement. OBSSR’s communications framework is inextricably linked to and in service of our mission and scientific priorities.
This communications framework is based on three guiding principles:

1. *Communication from start to finish.* An integrated approach that inherently considers that communication about specific projects may begin with internal NIH audiences and extramural researchers and will extend through reports to NIH leadership, peer-reviewed journal articles, and various media channels.

2. *Communication explains research findings and makes them relevant to multiple target populations.* Using terms that audiences understand facilitates broad dissemination and ease of integration and practice into everyday activities including thought, decisions, behavior, and policy—among other practices.

3. *Communication continuously adapts to new technologies and terms of engagement.* The lag between scientific journal publication and best practice is no longer necessary and can be shortened by leveraging the multiple media and/or channels through which people communicate. OBSSR will share research findings with new and more diverse audiences using new tools, as well as develop new spaces for interactivity and information sharing and exchange.

OBSSR communications efforts are intended to serve a broad and diverse audience or stakeholders. These include but are not limited to: OBSSR Staff, NIH BSSR program staff, NIH Leadership, BSSR community at large (academia, advocacy organizations, research institutions, associations, etc.), the broader biomedical research community, policy makers, health practitioners, and the general public.

**Communications Objectives**

OBSSR has been, and will continue to be, recognized as a leading resource, convener, supporter, and purveyor of health-related behavioral and social sciences research, both within NIH and across the wider scientific community. The office seeks to broaden awareness of the role of social and behavioral factors in health research and to disseminate impactful research findings to foster a collective understanding that behavioral and social sciences research is critical to solving our most urgent and long-term individual and societal health problems.

Within the NIH, the communications objectives of OBSSR are to:

- Ensure the NIH community knows and understands OBSSR’s priorities
- Provide opportunities for the NIH community to communicate BSSR needs and plans to OBSSR
• Obtain feedback regularly from the NIH community to ensure that OBSSR is fulfilling its mission, making progress towards its priorities, and serving the BSSR needs of NIH institutes, centers, and offices.
• Highlight the impact of BSSR research across the entire NIH research enterprise.

Beyond the NIH, the communications objectives of OBSSR are to:
• Provide relevant and accurate information about BSSR to key stakeholders
• Utilize the full range of communication channels to highlight BSSR research across the BSSR community, the biomedical community, the general public, and both mainstream and alternative digital media outlets.
• Serve as a resource for media by providing examples of BSSR’s impact on health.
• Highlight the work of leaders in the field.
• Describe innovative emerging areas of research.
• Serve as a resource for significant BSSR advances.

**Foundational Process 2: Coordinating behavioral and social science research programs across the NIH and integrating behavioral and social sciences research within the larger NIH biomedical research enterprise**

Program coordination has been a core mission of OBSSR since its inception. Each NIH IC has its own BSSR objectives consistent with its mission. These objectives often overlap, creating opportunities for cooperative and collaborative trans-NIH priorities and projects which OBSSR is charged with facilitating. BSSR research gaps also develop when new and emerging BSSR research areas are not fully aligned with NIH IC objectives. In such cases, OBSSR’s role is to identify these gaps and provide leadership to address them.

OBSSR is fortunate to have a diverse and dedicated BSSR community at NIH with whom it partners to achieve its program coordination goals. Program coordination across such a varied research agenda requires trust, mutual respect, and coordinated communications across the 27 institutes and centers. Over its 20 years of existence, OBSSR has developed a strong and functional network of NIH behavioral and social science program staff, and it is incumbent on OBSSR to continue to strengthen and expand this network.

OBSSR’s program coordination functions are also served by the Behavioral and Social Sciences Research Coordinating Committee (BSSR-CC). The BSSR-CC consists of representatives from each of the institutes, centers, and program offices of the NIH, appointed by their respective directors. The BSSR-CC is charged with facilitating the coordination of BSSR across the NIH and with advising the OBSSR Director on BSSR at the NIH. The BSSR-CC is critical to OBSSR’s program coordination mission. Strengthening the coordination and advisory functions of this body are crucial for meeting the various scientific and foundational objectives of this plan.
Integration of BSSR within the larger NIH biomedical research enterprise was one of the primary goals of the first OBSSR strategic plan, and the value of integrating BSSR within the broader biomedical research efforts of the NIH has increased since that time. Biology and behavior are inextricably linked. Our genes evolved from behaviors such as assortative mating and in response to various environmental challenges. Epigenetics studies the effects of genetic variations caused by environmental factors. Psychological stress and other environmental factors affect genetic, molecular, cellular, and organ functions. Health-risk behaviors such as smoking, poor diet, and sedentary behavior have powerful, long-term effects on health. Behavior and social systems are critical to preventing and managing infectious and chronic disease processes.

Integration of BSSR within the larger NIH biomedical research enterprise can take many forms. Behavioral and social science researchers can be encouraged to incorporate genetic, molecular, cellular, and organ function factors in their research. Genetic, molecular, cellular and organ system researchers can be encouraged to incorporate behavioral and social factors that impinge on these biomedical systems. Medical trials researchers can be encouraged to utilize more sophisticated measures of behavioral and social factors such as medication adherence and social context that potentially impact on treatment delivery and efficacy.

Epidemiological research, particularly recent cohort studies, is an area that has successfully integrated biomedical and behavioral/social factors to better understand the determinants of health. The Precision Medicine Initiative Cohort Program (PMI-CP), the Environmental Child Health Outcomes (ECHO), and the Adolescent Brain and Cognitive Development (ABCD) are all recent examples of behavioral and social determinants of health being integrated into the protocol. OBSSR, and the larger BSSR community, has an obligation to these large cohort programs to continue the work to improve the measurement of social and behavioral factors, increasing their precision and accuracy while reducing participant burden. The contributions of social and behavioral scientists to the larger biomedical research enterprise not only improves biomedical research efforts but also stimulates improvements in the methods and measures of the behavioral and social sciences.

**Program Coordination and Integration Objectives:**

- Strengthen the functions of the BSSR-CC as the primary organizational vehicle by which the OBSSR plans and executes its coordination and integration functions
- Utilize co-funding and administrative supplements to facilitate coordination and integration of BSSR.
- Facilitate coordination between intramural behavioral and social scientists, and between intramural and extramural BSSR staff.
- Identify opportunities for the integration of BSSR into the broader biomedical research enterprise and coordinate with the entire NIH research community to improve integration.
Coordinate with other offices within the NIH/OD Division of Program Coordination, Planning, and Strategic Initiatives where BSSR can be used to foster common goals.

**Foundational Process 3: Training the next generation of behavioral and social science researchers**

OBSSR recognizes the importance of scientific stewardship, particularly in developing the scientific talent and skills needed to advance health-related behavioral and social sciences. Across the continuum from undergraduates through senior researchers, NIH training programs can nurture and expand the pool of researchers prepared to address the critical challenges in the behavioral and social sciences.

Training researchers in the behavioral and social sciences is foundational for implementing many of the strategic planning objectives of OBSSR. Basic and applied behavioral and social sciences researchers need to understand each other’s methods, key findings, and research needs to improve the synergy between basic and applied BSSR. As technologies produce varied and voluminous data about human behavior and context, BSSR researchers need to be able to generate, manage, and effectively analyze these data. Training in dissemination and implementation approaches provide key skills to move interventions from research to practice.

Training of scientists from various fields is an important component to strengthening the trans-disciplinary research approaches that are increasingly critical as the science becomes more complex and multi-level in nature. OBSSR has and will continue to offer training in behavioral and social sciences to a wide array of disciplines. Recent increased interest of computer scientists, engineers, and mathematicians in behavioral and social science problems has provided the field with an infusion of new ideas and approaches. Training programs can assist biomedical researchers to better integrate BSSR concepts into their studies, and training programs that expand behavioral and social scientist’s capabilities in areas such as genetics, neuroscience, and microbiome improve research integration.

Training has been a key part of OBSSR activities, and training has supported the various strategic objectives of the office over the years. The various training efforts that OBSSR supports are currently being evaluated, and evaluation of the impact of these training efforts will be a key component of future OBSSR training efforts. The breadth of potential training needs for a robust and effective behavioral and social science research workforce exceeds the resources of OBSSR to address these needs. Therefore, it is important for OBSSR to prioritize training needs and support those that: a) address important and emerging needs of behavioral and social science researchers, b) have impact and relevance for large proportions of the BSSR community, and c) that OBSSR is uniquely positioned to address.
Training Objectives

- Continue to focus efforts on the training of early-stage investigators (ESIs) in key research skills that will advance health-related BSSR
- Support post-doctoral training in emerging and transdisciplinary areas such as population health
- Facilitate mentoring programs in the behavioral and social sciences
- Expand training reach via the development and dissemination of online training programs
- Create and support fellowships addressing the strategic priorities of the office
- Provide training in support of the scientific priorities of this strategic plan
- Facilitate training of social and behavioral researchers on communicating BSSR to media, lay people, policymakers, etc.
- Inspire researchers from other fields to enter BSSR by offering cross-training opportunities
- Integrate evaluation in all OBSSR training efforts

**Foundational Process 4: Evaluating the impact of behavioral and social sciences research and addressing scientific policies that support this research**

In achieving its mission, the OBSSR is dedicated to ensuring stewardship of public resources. As a first step, the OBSSR strategic plan establishes clear goals and strategic objectives. To ensure its activities help attain these goals and objectives, the OBSSR is dedicated to strengthening ways to help manage and monitor the BSSR portfolio and to shaping scientific policies and procedures to facilitate an efficient and productive health-related behavioral and social sciences research agenda.

The OBSSR has begun a detailed process to review and characterize existing NIH investments in BSSR. A preliminary analysis of the general structure and characteristics of the NIH BSSR portfolio reveals that NIH supports a meaningful and substantive BSSR portfolio. Ongoing analyses will more accurately gauge the portfolio, identifying where research is concentrated, and where OBSSR guidance can help the NIH continue to support cutting-edge science. Employing new portfolio analytic tools, program evaluation, and other techniques also will help guide the OBSSR and the NIH ICs to understand better the scientific directions of BSSR, and whether BSSR investments can produce the type and quality of results expected.

Maintaining a robust BSSR research portfolio has many challenges. Research in the behavioral and social sciences tends to address complex and dynamic processes that are sometimes difficult to isolate or manipulate, thereby limiting the internal validity that is achievable. To the degree that reviewers focus more on internal than external validity of the grant application,
BSSR research may not perform as well in review. While NIH Institutes and Centers (ICs) generally view BSSR as important to their mission, this research is seldom the highest priority of the ICs. OBSSR does not have the authority to award grants so it must rely on IC funding priorities. Therefore, program coordination, including strategic use of co-funding and trans-NIH initiatives, supports and complements the policy and evaluation efforts of the office to assess the BSSR portfolio and address gaps in that portfolio.

**Policy and Evaluation Objectives**

- Lead and support ongoing review and analysis of the behavioral and social sciences research portfolio within and outside of the NIH
- Strengthen the portfolio analysis capabilities of OBSSR to monitor and track BSSR funding trends and research advances and to identify and evaluate strategic challenges and opportunities
- Direct and support program evaluation projects to assess the scientific progress and impact of behavioral and social sciences research programs and initiatives and OBSSR-specific initiatives by developing, identifying, and applying key metrics of success from BSSR initiatives and programs
- Monitor, identify, and address challenges unique to the behavioral and social sciences in the NIH scientific review process, in collaboration with Institutes and Centers and the Center for Scientific Review (CSR), including assisting CSR in recruiting reviewers with appropriate BSSR expertise
- Foster and maintain greater collaboration between BSSR program staff and scientific review officers
- Monitor and advise the NIH leadership on BSSR-related legislative and policy actions and initiatives that may impact NIH programs and the public
- Foster and maintain a supportive and collaborative working relationship with BSSR stakeholder organizations, and encourage collaborations across public-and private-sector partners to optimize the efficiency and effectiveness of OBSSR in advancing its mission
- Develop and disseminate reports and position papers on health-related behavioral and social sciences research, including a) responses to specific requests from NIH leadership, other federal agencies, or Congress on health-related BSSR projects and initiatives, and b) independent systematic reviews or consensus reports for evidence-based policy and decision making.
Integration of the OBSSR Strategic Plan with the NIH-Wide Strategic Plan

The OBSSR Strategic Plan was developed with reference to the recently released 2016-2020 NIH-Wide Strategic Plan, “Turning Discovery Into Health” and is intended to be consistent with and complementary to the NIH Strategic Plan. The framework for the NIH-Wide Strategic Plan focuses on four objectives:

1. Advance Opportunities in Biomedical Research
2. Foster Innovation by Setting NIH Priorities
3. Enhance Scientific Stewardship
4. Excel as a Federal Science Agency by Managing For Research

Under the first objective to advance opportunities in biomedical research, there are three key areas highlighted: a) fundamental science, b) treatments and cures, and c) health promotion and disease prevention. The first scientific priority of the OBSSR strategic plan, *Improve the Synergy of Basic and Applied Behavioral and Social Science Research*, is directly relevant to the fundamental science efforts outlined in the first objective of the NIH-Wide Strategic Plan which states that “Fundamental science also includes basic behavioral and social science research that generates knowledge of how living systems interact with and are influenced by experiences at the individual, family, social, organizational, and environmental levels.” The synergies envisioned between basic and applied BSSR research require a robust and relevant fundamental science of behavior and social influences that can feed new and innovative approaches to modifying behavior and social systems to improve health. This basic to applied synergy is also closely aligned with the second NIH-Wide Strategic Plan area of “treatments and cures”, translating fundamental science findings into new and innovate treatments for disease.

The two remaining scientific priorities of the OBSSR strategic plan, “Enhance the Methods, Measures, and Data Infrastructure Needed to Support a More Cumulative and Integrated Approach to Behavioral and Social Sciences Research,” and “Facilitate the Adoption of Behavioral and Social Science Research Findings in Health Research and in Practice,” are aligned with the NIH-Wide Strategic Plan Objective 1 regarding “treatments and cures” and “health promotion and disease prevention.” Findings from BSSR have contributed substantially to health promotion and disease prevention efforts, and many of the individual and population health advances outlined in this OBSSR Strategic Plan are examples from health promotion and disease prevention research that OBSSR will continue to support in collaboration with the NIH Office of Disease Prevention.

BSSR extends beyond prevention, however, and also provides approaches to manage disease, such as research on chronic disease management. The NIH-Wide Strategic Plan under “treatments and cures” refers to various efforts to “gain a better understanding of the cumulative and synergistic impacts that multiple chronic conditions and comorbidities can exert upon the human body, thereby informing efforts to develop therapeutic and preventive approaches for these complex challenges.” By enhancing the methods, measures, and data
infrastructure needs of BSSR and facilitating the adoption of BSSR findings, OBSSR’s strategic plan supports research that informs efforts to develop social and behavioral therapeutic and preventive approaches.

Among the Foundational Processes in the OBSSR Strategic Plan, the policy and evaluation component, “Evaluating the impact of behavioral and social sciences research and addressing scientific policies that support this research” is closely aligned with both Objective 2, “Foster Innovation by Setting NIH Priorities” and Objective 4, “Excel as a Federal Science Agency by Managing for Results” outlined in the NIH-Wide Strategic Plan. OBSSR supports the NIH-wide efforts to evaluate the impact of our activities on health science and prioritize activities that will produce the greatest impact on health science and ultimately on the health of the nation. The OBSSR Policy and Evaluation Objectives in this Strategic Plan will assist the office to manage for results and to use evaluation data to set priorities for the office and for the behavioral and social sciences research efforts of the NIH more broadly.

The OBSSR Foundational Process on “Training the next generation of behavioral and social science researchers” is closely aligned with the NIH-Wide Strategic Plan Objective 3 to “Enhance Scientific Stewardship.” Recruiting and retaining an outstanding biomedical research workforce includes recruiting and retaining an outstanding behavioral and social sciences research workforce. OBSSR’s training efforts as outlined in this strategic plan are designed to produce a diverse and productive BSSR community utilizing cutting-edge methods, measurement, and analytic approaches that will ensure the rigor and reproducibility of BSSR, consistent with the NIH-Wide Strategic Plan Objective 3.

The remaining two OBSSR Foundational Processes in the strategic plan, “Communicating behavioral and social science research findings” and “Coordinating behavioral and social science research programs across the NIH and integrating behavioral and social sciences research within the larger NIH biomedical research enterprise” do not map directly onto objectives of the NIH-Wide Strategic Plan but are processes that are supportive of the various objectives of the plan. These two foundational processes also are core to the research coordination functions of OBSSR as established by Congress, and are consistent with the goals and objectives of the NIH Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI) which is the organizational division of OBSSR.

By linking to and being influenced by the NIH-Wide Strategic Plan, the OBSSR Strategic Plan is an integral component in support of the NIH-wide mission and objectives. The Office and its strategic plan are in service to the broader NIH-wide mission to seek fundamental knowledge about the nature and behavior of living systems and to apply that knowledge to enhance health, lengthen life, and reduce illness and disability.
Sec 404A: [283c]¹ (a) There is established within the Office of the Director of NIH an office to be known as the Office of Behavioral and Social Sciences Research (in this section referred to as the “Office”). The Office shall be headed by a director, who shall be appointed by the Director of NIH.

(b)(1) With respect to research on the relationship between human behavior and the development, treatment, and prevention of medical conditions, the Director of the Office shall—

   (A) coordinate research conducted and supported by the agencies of the National Institutes of Health; and
   
   (B) identify projects of behavioral and social sciences research that should be conducted or supported by the national research institutes, and develop such projects in cooperation of such institutes.

(2) Research authorized under paragraph (1) includes research on teen pregnancy, infant mortality, violent behavior, suicide, and homelessness. Such research does not include neurobiological research, or research in which the behavior of the organism is observed for the purpose of determining activity at the cellular or molecular level.

OBSSR’s goal in this strategic planning process was to ensure that future directions and activities align with its mandated mission. Moreover, the strategic plan is meant to be adaptable to the rapidly changing nature of BSSR, allowing for updates as the field advances. This new strategic plan will position NIH to catalyze advances in science and capitalize on current and anticipated breakthroughs in biomedical and behavioral research over the next 5 or more years.

The OBSSR approached strategic planning as an iterative process, involving both external input from a wide range of disciplines and scientific content areas and internal input from the various NIH Institutes and Centers (ICs) and the Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI) Program Offices. The processes involved in developing this strategic prospectus are described in Appendix B and outlined briefly here:

- The Office formed a BSSR Strategic Planning Working Group (SPWG; Appendix C) to advise the Office on the process and provide input on the content of the prospectus.
- The OBSSR Director met with the NIH Director, Principal Deputy Director, and DPCPSI Director to discuss and obtain approval for the strategic planning process and to obtain feedback on initial directions.
- The Strategic Plan approach was presented and discussed with the NIH Behavioral and Social Sciences Research Coordinating Committee (BSSR-CC), the coordinating and advising body of the Office.
- The OBSSR Director and Deputy Director met with IC Directors and their leadership team to discuss future OBSSR directions and how the Office could serve the BSSR needs of the IC.
- In parallel, OBSSR staff met with the BSSR-CC member and other BSSR staff at the IC to discuss future OBSSR directions and how the Office could serve the BSSR needs of the IC.
- OBSSR issued a “Request for Information (RFI): Soliciting Input for the Office of Behavioral and Social Sciences Research (OBSSR) FY 2016-2020 Strategic Plan”. Response was requested from researchers in academia and industry, health care professionals, patient advocates and advocacy organizations, scientific or professional organizations, Federal agencies, and other interested members of the public.
- OBSSR and the SPWG identified key thought leaders in the behavioral and social sciences external to the NIH to participate in a BSSR Strategic Planning Expert Panel (Appendix D).
- Public webinars were conducted that provided a draft overview of the OBSSR strategic prospectus, including specific priorities and objectives, and participants provided feedback on the prioritization of strategies to achieve these objectives.
• An outline of the strategic prospectus was presented the NIH Council of Councils for input.
• A draft of the strategic prospectus was reviewed by the SPWG, Expert Panel, and members of the BSSR-CC for input.
• A pentultimate draft of the OBSSR Strategic Prospectus was reviewed and approved by the NIH Director, Principal Deputy Director, and DPCPSI Director before being finalized for public release.
APPENDIX C: Behavioral and Social Sciences Strategic Planning Working Group

Comprised of senior behavioral and social scientists and leaders from across the NIH, the goal of the Strategic Planning Working Group is to advise the OBSSR during the comprehensive strategic planning effort and offer suggestions on best ways to coordinate and implement related activities in the future.

Wilson Compton, MD, MPE, Deputy Director, National Institute on Drug Abuse

Robert Croyle, PhD, Director, Division of Cancer Control and Population Sciences, National Cancer Institute

Lawrence Fine, MD, PhD, MPH, Chief, Clinical Applications and Prevention Branch, National Heart, Lung, and Blood Institute

James Griffin, PhD, Deputy Branch Chief, Child Development and Behavior Branch, Eunice Kennedy Shriver National Institute of Child Health and Human Development

Christine Hunter, PhD, ABPP, Director of Behavioral Research, National Institute of Diabetes and Digestive and Kidney Diseases

David Murray, PhD, Associate Director for Prevention and Director of the Office of Disease Prevention

Lisbeth Nielsen, PhD, Chief, Individual Processes Branch, Division of Behavioral and Social Research, National Institute on Aging

G. Stephane Philogene, PhD, Deputy Director, Office of Behavioral and Social Sciences Research, Division of Program Coordination, Planning and Strategic Initiatives, Office of the Director

Kevin Quinn, PhD, Director, Office of Science Policy, Planning, and Communications, National Institute of Mental Health

William T. Riley, PhD, Director, Office of Behavioral and Social Sciences Research, Division of Program Coordination, Planning and Strategic Initiatives, Office of the Director

Karyl Swartz, PhD, Director, Division of AIDS, Behavioral and Population Sciences, Center for Scientific Review
APPENDIX D: Behavioral and Social Sciences Research Strategic Planning Expert Panel

Comprised of key thought leaders, external to the NIH, in the behavioral and social sciences related to health, the Expert Panel provided important input to help shape OBSSR’s strategic directions. The Expert Panel included the following individuals.

BJ Casey, PhD, Director, Sackler Institute for Developmental Psychobiology, and Professor of Developmental Psychobiology, Weill Medical College of Cornell University

Fay Lomax Cook, PhD, Assistant Director, Directorate for Social, Behavioral, and Economic Sciences, National Science Foundation

Ana V. Diez Roux, MD, PhD, MPH, Distinguished University Professor of Epidemiology and Dean, Drexel University School of Public Health

Elissa Epel, PhD, Professor, Department of Psychiatry, University of California, San Francisco (UCSF); Director, Aging, Metabolism, and Emotions Lab, and Center for Obesity Assessment, Study, and Treatment; Associate Director, Center for Health and Community; Associate Director, UCSF Nutrition and Obesity Research Center

Sarah Gehlert, PhD, MSW, MA, E. Desmond Lee Professor of Racial and Ethnic Diversity, Brown School, and Professor, Department of Surgery, School of Medicine, Washington University in St. Louis; Co-Program Leader, Prevention and Control Program, Alvin J. Siteman Cancer Center; Co-Director, Transdisciplinary Center on Energetics and Cancer; Training Program Director, Program for the Elimination of Cancer Disparities; Co-Chair, Center for Community-Engaged Research

Shiriki Kumanyika, PhD, MPH, Emeritus Professor of Epidemiology, Department of Biostatistics and Epidemiology, University of Pennsylvania Perelman School of Medicine; President, American Public Health Association for 2015; Founder and Chair, African American Collaborative Obesity Research Network

Alan I. Leshner, PhD, Chief Executive Officer Emeritus, American Association for the Advancement of Science

David Mohr, PhD, Professor in Departments of Preventive Medicine, Psychiatry, and Medical Social Science, Northwestern University Feinberg School of Medicine; Director, Center for Behavioral Intervention Technologies

Tracy Orleans, PhD, Senior Scientist, Robert Wood Johnson Foundation
Ken A. Resnicow, PhD, Irwin M. Rosenstock Collegiate Professor, Health Behavior and Health Education, School of Public Health, University of Michigan (UM) School of Public Health; Director of Health Disparities Research, UM Cancer Center; senior leader, UM Center for Health Communications Research

James F. Sallis, PhD, Chief and Distinguished Professor, Division of Behavioral Medicine, Family and Preventative Medicine, University of California, San Diego; Adjunct Professor, Department of Psychology, San Diego State University; Co-Director, International Physical Activity and Exercise Network
APPENDIX E: Acronyms

[TO BE GENERATED AFTER DRAFT IS FINALIZED]