

# Consensus Statement on Future Directions for the Behavioral and Social Sciences in Oral Health

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D.W. McNeil<sup>1\*</sup>, C.L. Randall<sup>2\*</sup>, S. Baker<sup>3</sup>, B. Borrelli<sup>4</sup>, J.M. Burgette<sup>5</sup>,  
B. Gibson<sup>3</sup>, L.J. Heaton<sup>2</sup>, G. Kitsaras<sup>6</sup>, C. McGrath<sup>7</sup>, and J.T. Newton<sup>8</sup>

## Abstract

The behavioral and social sciences are central to understanding and addressing oral and craniofacial health, diseases, and conditions. With both basic and applied approaches, behavioral and social sciences are relevant to every discipline in dentistry and all dental, oral, and craniofacial sciences, as well as oral health promotion programs and health care delivery. Key to understanding multilevel, interacting influences on oral health behavior and outcomes, the behavioral and social sciences focus on individuals, families, groups, cultures, systems, societies, regions, and nations. Uniquely positioned to highlight the importance of racial, cultural, and other equity in oral health, the behavioral and social sciences necessitate a focus on both individuals and groups, societal reactions to them related to power, and environmental and other contextual factors. Presented here is a consensus statement that was produced through an iterative feedback process. The statement reflects the current state of knowledge in the behavioral and social oral health sciences and identifies future directions for the field, focusing on 4 key areas: behavioral and social theories and mechanisms related to oral health, use of multiple and novel methodologies in social and behavioral research and practice related to oral health, development and testing of behavioral and social interventions to promote oral health, and dissemination and implementation research for oral health. This statement was endorsed by over 400 individuals and groups from around the world and representing numerous disciplines in oral health and the behavioral and social sciences. Having reached consensus, action is needed to advance and further integrate and translate behavioral and social sciences into oral health research, oral health promotion and health care, and the training of those working to ensure oral health for all.

**Keywords:** behavioral science, social determinants, psychosocial factors, dental public health, health services research, psychology

Behavioral and social factors are critical interactive determinants of dental, oral, and craniofacial health (hereafter referred to as oral health). Behavioral and social factors also are central to oral health promotion efforts and oral health care service delivery—and, as such, oral health equity. A comprehensive understanding of such factors requires consideration of influences at individual, family, community, group, regional, national, and global levels. The following factors, among others, interact in complex ways to determine oral health: psychological phenomena; social, historical, cultural, and environmental contexts; and commercial, economic, and political forces. To achieve optimal oral health globally, there is consensus that action is needed to advance and further integrate behavioral and social sciences as applied to oral health, health care, and training, specifically through research related to the following 4 areas of emphasis.

## Behavioral and Social Theories and Mechanisms Related to Oral Health

The relevance of behavioral (e.g., knowledge, attitudes, beliefs, emotions) and social (e.g., economic, corporate, political, cultural) factors to oral health is widely accepted but not well understood across disciplinary groups in dentistry, dental

hygiene, allied oral health care, and beyond. The limited set of theories attempting to explain oral health behaviors focuses too

<sup>1</sup>West Virginia University, Morgantown, WV, USA

<sup>2</sup>University of Washington, Seattle, WA, USA

<sup>3</sup>University of Sheffield, Sheffield, S. Yorkshire, UK

<sup>4</sup>Boston University, Henry M. Goldman School of Dental Medicine, Boston, MA, USA

<sup>5</sup>University of Pittsburgh, Pittsburgh, PA, USA

<sup>6</sup>The University of Manchester, Manchester, UK

<sup>7</sup>University of Hong Kong Faculty of Dentistry, Hong Kong

<sup>8</sup>Kings College London, London, England, UK

\*Authors contributing equally to this article. Authors 3 to 10 are listed alphabetically.

A supplemental appendix to this article is available online.

### Corresponding Authors:

D.W. McNeil; Department of Dental Public Health & Professional Practice, School of Dentistry; Department of Psychology, Eberly College of Arts & Sciences; West Virginia University; One Medical Center Drive, PO Box 9415, Morgantown, WV 26506-9415, USA.  
Email: dmcneil@wvu.edu

C.L. Randall; Department of Oral Health Sciences, University of Washington, 1959 NE Pacific Street, Box 357475, B59e, Seattle, WA 98195, USA.

Email: clr333@uw.edu

heavily on individual, proximal explanations of behavior, often without attention to the broader determinants of health, including both the social determinants (e.g., inequities related to gender, race, socioeconomic status, class) and the midrange determinants (e.g., family networks, social groupings, community values). Research on the social determinants of health has adopted broad frameworks and theoretical models that propose causal pathways from social factors to oral health and disease, but these pathways are complex to test and often ignore social and political theories of power and inequalities. In order to advance the understanding of how behavioral and social factors shape oral health, more “middle-range” theories are needed, and these theories should be testable. Such theories would reach beyond the individual and specify detailed causal pathways bridging the proximal and distal determinants, reflecting the complex nature of oral health.

### **Use of Multiple and Novel Methodologies in Social and Behavioral Research and Practice Related to Oral Health**

As types and sources of data available in oral health research become broader and more complex, so do the methodological opportunities and challenges faced by oral health researchers. To reach beyond our current understanding of the multifactorial and multidimensional relationships that affect oral health and oral health disparities, several goals related to research methodology should be prioritized. First, efforts are needed to develop a theoretically based core of clinically relevant outcomes and health service delivery measures, incorporating value-based and patient-reported outcomes whenever possible. Relatedly, efforts to create and validate useful gold-standard assessment measures must continue and expand. Ideally, researchers will engage with diverse qualitative, quantitative, and mixed-methods data approaches. Moreover, researchers will adopt methods for testing theories related to the cognitive, affective, and motivational basis of behavior. Finally, those engaged in behavioral and social oral health research will use causal analyses, complex systems science, and community-engaged research to account for the individual, environmental, and structural factors, as well as policies, that all interact to produce oral health outcomes. A robust, efficient, and integrated research approach is required—one that assesses and calibrates methods in relation to the need for data that focus on behaviors within clinical and public health settings. Researchers' ultimate goal should be to improve oral health worldwide by producing high-quality research that is both theoretically sound and clinically and socially relevant, with subsequent translation into practice.

### **Development and Testing of Behavioral and Social Interventions to Promote Oral Health**

Twenty-first-century interventions to promote oral health should focus on both the individual and population levels to

address person-centric, community, societal, structural, systemic, and environmental factors affecting oral health. Interventions should be scalable—yet customized and tailored to individuals and systems, while also attending to cultural factors—in order to promote optimal dissemination, implementation, engagement, behavior change, and sustainability. Technological approaches, such as mobile health, telehealth, bioinformatics, precision medicine, and predictive analytics/machine learning, have the potential to contribute to both intervention customization and diffusion through large systems, expanding reach to underserved populations, including those who are affected by health inequities. Effectiveness of interventions is enhanced by involving multiple groups (e.g., the target population, key stakeholders, external advisors in separate but related fields) at every stage of intervention development and testing, by designing interventions using a theoretical framework, by measuring the requisite testable mechanisms of change, and by ensuring treatment fidelity. Interventions should focus not only on individuals and systems that are ready and resourced for change but also on building motivation and skills among individuals and systems that are not motivated to change, ambivalent about change, or unaware that change is needed. In addition to interventions that leverage traditional contexts and existing infrastructure (e.g., dental and medical settings), interventions that involve novel and innovative channels for reaching both individuals and populations (e.g., in the context of public housing, use of social media) need further study. Priority should be given to the development of new interventions or culturally adapted existing evidence-based interventions for at-risk and disadvantaged communities, including racialized and ethnicized groups, refugees, rural populations, people with disabilities, those with low income and low literacy, and others who are minoritized or marginalized. Future oral health intervention research should also involve the application and testing of theories and intervention elements that have been shown to be effective in other health care disciplines.

### **Dissemination and Implementation Research for Oral Health**

Rigorous and systematic research on *how* to implement evidence-based information and practices is essential for accelerating the rate at which scientific developments reach individuals and communities. In some cases—and given the complexity of health care delivery and daily life—such research will be necessary for ensuring that the benefits of science are realized at all. Impactful dissemination and implementation (D&I) research in oral health will prioritize meaningful involvement of stakeholders, consideration of global and local context, contemporary study designs, characterization of causal mechanisms, and precisely specified and high-quality methods. Moreover, this research will be interdisciplinary and will embrace multidirectional interactions among researchers, community members, practitioners, and public policy makers. There are significant opportunities at the intersection of D&I science and oral health to 1) apply recent

advances in D&I research to improve dental care delivery, oral health programs, and the use of robust behavioral approaches for oral health promotion in both clinical and community settings and 2) advance D&I theory, methods, and practice by carrying out such research to improve oral health. There are also opportunities to use D&I research to leverage behavioral and social “big data” to reduce oral health inequities, as well as to inform public health and policy approaches that support upstream action and a commitment to equity. In taking advantage of these opportunities, the match of evidence-based practices and policies to people, their communities, and health service delivery systems will be maximized to achieve optimal oral health for all.

## Overarching Considerations and Conclusions

The behavioral and social sciences have an essential role in oral health. Promoting oral health maximally and globally requires the sustained robust application of behavioral and social sciences. Furthermore, as knowledge evolves, the advancement and refinement of concepts and methodologies—and the effective and efficient translation of research to practice—is critical. Moreover, to continue to advance science and practice, integration of the behavioral and social sciences in the education, training, and mentoring of all oral health clinicians and researchers is vital.

Historically, the behavioral sciences have been closely aligned with dentistry as a profession. Up to now, major focus areas of this alignment have been patient communication, fear assessment and reduction, evaluation and amelioration of pain, and adherence, among other topics. Sociological approaches historically have emphasized dentistry as a profession, dental public health policy, and oral health care access, utilization, and experiences among various groups. These issues, which were emphasized with early conferences, remain important in oral health research and practice; they should continue to be investigated and new or refined assessment tools and interventions should be developed. Nevertheless, the inclusion of the behavioral and social sciences as applied to oral health must be further extended.

Multi- and transdisciplinary collaborative and integrative efforts (including interprofessional ones) will be required to achieve the advances outlined in this Consensus Statement. Such work often is complex, as it requires dissolving academic, professional, industry, and systems-based silos. Truly integrating behavioral and social sciences in dental disciplinary, public health, and health services research is particularly challenging and may best be accomplished by the full inclusion of behavioral and social scientists and practitioners on research and other teams and dental program faculties, including in leadership positions.

The behavioral and social sciences encompass numerous fields, and so their application in oral health should be broad and far-reaching. The ideal application would be inclusive of those disciplines historically and typically involved in oral

health (e.g., psychology, sociology, economics) as well as those that are less often included (e.g., anthropology, communications, geography, history, linguistics, political science). These and other disciplines (e.g., public health, medicine, law, user experience) can offer their own frameworks and methods to oral health research, sparking new, integrative ideas. Inclusion of a diverse community of constituents (including patients; dental, medical, and other health care providers; and policy advocates) will broaden the questions asked and potential answers to be considered.

In these efforts, equitable inclusion across population groups, particularly those who have been marginalized and underserved in oral health care and research, is much needed. Involvement of minority racial, ethnic, and cultural groups in research—and sometimes a singular focus on these groups—is essential for the validity and relevance of research findings for all. In addition, full inclusion of marginalized people in the oral health research and practice workforce is a pressing need, as representation benefits those served by research and practice. Existing inequities related to social gradients can be addressed, in part, by harnessing the behavioral and social sciences to further change at various system levels, ranging from individual utilization to policy-determined access to even broader social determinants of health. Only with an intentional and increased focus on inequities and inclusivity, as well as facilitated by the application of behavioral and social science perspectives, can disparities be eliminated to achieve good oral health for all.

Ultimately, it will be imperative to optimize the translation of oral health research evidence related to the behavior of individuals, families, communities, and groups into improved clinical approaches, systems-level practices, and effective public policies for prevention and treatment. Robustly applying and integrating behavioral and social sciences in oral health research, training, and practice has the potential to shift the predominant current focus on dental, oral, and craniofacial diseases and disorders (even if prevention oriented) to include more positive aspects of oral health (e.g., wellness, resilience). Broadly, the behavioral and social sciences have much to offer in promoting oral health globally. Their full integration into oral health research and practice will require multifaceted approaches as well as sustained intensive efforts; however, the effects will be transformative.

*Details about the development of the Consensus Statement, a table summarizing key points, and a list of endorsers can be found in the Appendix.*

## Author Contributions

D.W. McNeil and C.L. Randall contributed to conception, design, data acquisition and interpretation, drafted and critically revised the manuscript; S. Baker contributed to conception, design and data interpretation, drafted and critically revised the manuscript; B. Borrelli, J.M. Burgette, B. Gibson, L.J. Heaton, G. Kitsaras, C. McGrath, J.T. Newton, contributed to design and data interpretation, drafted and critically revised the manuscript. All authors gave final approval and agree to be accountable for all aspects of the work.

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### ORCID iDs

D.W. McNeil  <https://orcid.org/0000-0002-0766-8455>

C.L. Randall  <https://orcid.org/0000-0002-5061-7450>

B. Gibson  <https://orcid.org/0000-0003-1413-4950>

G. Kitsaras  <https://orcid.org/0000-0002-1631-1730>